# Zygmunt J. Haas


| Section # | Title | Pages |
|---|---|---|
| I. | *General Information* | 2 – 4 |
| II. | *Talks, Invited Talks, Keynote Speeches* | 5 – 9 |
| III. | *Publications* | 10 – 31 |
| (i) | *Refereed Journal & Archival Publications* | 10 – 17 |
| (ii) | *Refereed Conference & Workshop Papers* | 17 – 29 |
| (iii) | *Books & Book Chapters* | 29 – 30 |
| (iv) | *Miscellaneous Publications* | 31 |
| IV. | *Teaching & Advising* | 32 – 33 |
| (i) | *Courses Taught* | 32 – 33 |
| V. | *Professional & Scientific Service* | 34 – 43 |
| (i) | *University Committees* | 34 – 35 |
| (ii) | *Editorial Service* | 35 – 36 |
| (iii) | *Service to the Scientific Community at Large* | 36 – 48 |
| (iv) | *Technical Program Committees* | 38 – 43 |
| VI. | *Patents: Granted & Pending* | 44 – 45 |




Headwater Research LLC
Ex. 2010, IPR2023-01336

# I. GENERAL INFORMATION

## (i) Personal Information

**Name:** Zygmunt J. Haas

**Titles:** ① Professor and Distinguished Chair in Computer Science (Univ. of Texas at Dallas)
② Professor Emeritus (Cornell University; Electrical and Computer Engineering)

**Professional Contact Information:**

② **Cornell University:**
**Address:** School of Elect. & Comp. Eng, Ithaca, NY 14853
**E-mail:** *zhaas@cornell.edu*
**URL:** *http://people.ece.cornell.edu/~haas*
**Lab URL:** *http://wnl.ece.cornell.edu*

① **University of Texas at Dallas**
**Address:** Erik Jonsson School of Engineering and Computer Science
ECSS Room 4.405
Richardson, TX 75080
**Phone:** (972)-883-3571
**E-mail:** *haas@utdallas.edu*
**URL:** *http://www.utdallas.edu/~haas*

**Private Contact Information:**
**Phone:** (607) 592-0467
**Fax:** (888) 990-1956
**E-mail:** *haas@acm.org*

## (ii) Main Research Interests

- **Wireless and Mobile Systems and Networks**
  - Wireless Communications
  - Communication Protocols for Wireless Networks
  - Security in mobile and wireless networks
  - Ad Hoc and Sensor Networking Technologies
  - Energy-efficient Protocols
- **Information Assurance and Network Security**
- **Cyber-Physical Systems (CPS) and Internet of Things**
- **Design, Modeling, and Implementation of Multimedia Protocols and Systems**
- **Modeling of Communication Systems**
  - Complex Networks
  - Stochastic Routing
- **Cross-Disciplinary Research Initiatives**



Headwater Research LLC
Ex. 2010, IPR2023-01336

## (iii) Education/Degrees (in reverse chronological order)

- ✱ **Ph.D.,** Electrical Engineering, Stanford University, CA, May 1988
  - **Advisor:** Prof. David Cheriton, Computer Science, Stanford University
  - **Thesis:** "Packet Switching in Fiber-Optic Networks"
- ✱ **M.Sc.,** (*Summa Cum Laude*) Electrical Engineering, Tel-Aviv University, Israel, Feb. 1985
- ✱ **B.Sc.,** (*Summa Cum Laude*) Electrical Engineering, Technion (IIT), Israel, August 1979

## (iv) Employment History (in reverse chronological order)

**8/13 – present:** University of Texas at Dallas, Computer Science Department
Erik Jonsson School of Engineering and Computer Science, Richardson, TX
**Title:** Professor and Distinguish Chair in Computer Science

**8/95 – present:** Cornell University, School of Electrical and Computer Engineering, Ithaca, NY
**Title:** Professor Emeritus (as of 10/13)

- 7/2004 –10/2013: Tenured Full Professor
- 11/1998 - 6/2004: Tenured Associate Professor
- 8/1995 - 10/1998: Associate Professor

**5/10 – 6/11:** National Science Foundation, Engineering Directorate, Arlington, VA; **Title:** Program Director; **Comment:** on leave from Cornell University

**1/03-05/03:** Visiting Fellow, Princeton University, EE Department

**09/94 - 7/95:** AT&T Business Communication Services, Murry Hill, NJ; **Title:** Member of Technical Staff

**05/88 - 7/95:** AT&T Bell Laboratories, Network Research, Holmdel, NJ; **Title:** Member of Technical Staff

**09/85 - 5/88:** Electrical Eng. Dept., Stanford University, CA, **Title:** Research Assistant

**10/79 - 8/85:** R&D Department Tel-Aviv, Israel; **Title:** Engineer

**10/81 - 6/85:** Electrical Eng. Dept., Tel-Aviv University, Israel; **Title:** Teaching Assistant

**8/79 - 10/79:** Philips Research Laboratories, Eindhoven, Holland; **Title:** Engineer

## (v) Selected Awards and Honors

- ✱ Fellow of the *Association for Computing Machinery (ACM)*, 2021 (UTD ann.) (certificate)
- ✱ "How 5G Technology May Improve and Impact Our Lives" *Authority Magazine* Interview, June 4, 2021 (link) (UTD Announcement)
- ✱ Fellow of the AAIA (Asia-Pacific Artificial Intelligence Association), 6/2021 (9/28/2021)
- ✱ Best Paper Award for the paper [Z.J. Haas and Z. Zheng, "Engineering a Network in the Sky," The 35th International Conference on Information Networking, (*ICOIN21*), January 13−16, 2021, Jeju Island, S. Korea] (UTD announc.) (Cornell announc.)
- ✱ *Guide2Research* Scientists 2020 Ranking: 315th (US) and 495 (Worldwide)
- ✱ Distinguished Member of the European Alliance for Innovation (EAI), 2021
- ✱ Fellow of the *European Alliance for Innovation (EAI)*, May 2019 (Fellow selection)
- ✱ Fellow of *The Institute of Engineering and Technology (IET)*, March 2019
- ✱ "5 Things to Know About 5G" *UT Dallas Magazine*, October 14, 2019
- ✱ 2016 IEEE ComSoc AHSN Recognition Award ("for outstanding contributions to securing ad hoc and sensor networks") presented at *IEEE Globecom 2016*, December 5, 2016, Washington DC (*AHSN Recognition Award*); Cornell's faculty awards
- ✱ Elevation to *IEEE Fellow*, January 2007, *"for contribution to wireless and mobile ad hoc networks"* (award letter)
- ✱ Status of "Professor Emeritus" at Cornell University (as of October 15, 2013)



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **2012 IEEE ComSoc WTC Recognition Award (the award recognizes individuals for "*outstanding technical contributions in the field and for his service to the scientific and engineering communities*") presented at *IEEE Globecom 2012*, December 5, 2012, Anaheim, CA *(WTC Recognition Awards)***
- **Distinction of *Classic Paper by Google Scholar* for the paper "Gossip-based Ad Hoc Routing," *IEEE/ACM Transactions on Networking*, vol.14, no.3, June 2006**
- **"Best Paper Award" for the paper "Collaborating with Correlation for Energy Efficient WSN," [M. Nikolov and Z.J. Haas], *First ACM Annual International Workshop on Mission-oriented Wireless Sensor Networking (ACM MiSeNet 2012)*, in conjunction with *ACM MobiCom 2012*, Istanbul, Turkey, August 26, 2012**
- **IEEE Distinguished Lecturer Tour, Scandinavian Countries, May 25 – June 5, 2009**
- **Promotion to the rank of *Full Professor*, School of ECE, Cornell Univ., July 1, 2004**
- **Distinguish Lecturer, IEEE Communications Society, (two terms) 01/2004 - 12/2005, 01/2005 - 12/2007**
- **IEEE Distinguished Lecturer Tour, Australia, September 26-October 3, 2005**
- **Expert Lecturer, IEEE Communications Society, 2002-2004**
- **Michael Tien'72 Excellence in Teaching Award, Cornell College of Engineering for 2002-2003 academic year, November 2003**
- **"Best Paper Award" for the paper "Optimal Resource Allocation for UWB Wireless Ad Hoc Networks," [C. Zou and Z.J. Haas], IEEE 16th International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC'05), ICC Berlin, Germany, September 11-14, 2005**
- **Michael Tien'72 Excellence in Teaching Award, Cornell College of Engineering for 2002-2003 academic year, November 2003**
- **"Highly Commended Paper Award" for the paper "Performance Evaluation of the Modified IEEE 802.11 MAC for Multi-Channel Multi-Hop Ad Hoc Network," [J. Li, Z.J. Haas, M. Sheng, and Y. Chen], IEEE International Conference on Advanced Information Networking and Applications (AINA 2003)**
- **Elected Chair of the IEEE Technical Committee on Personal Communications (TCPC), Jan. 2001 – Nov. 2002 (previously elected Vice Chair and Secretary)**
- **Michael Tien'72 Excellence in Teaching Award, Cornell College of Engineering for 1999-2000 academic year, September 2000**
- **Election to *Indefinite Tenure*, Cornell University, October 1998**
- **Michael Tien'72 Excellence in Teaching Award, Cornell College of Engineering for 1996-1997 academic year, September 1997 (letter) (banquet)**
- **AT&T Foundation Award, September 1995**
- **President Award, Technion, Israel (1976, 1977, 1978, and 1979)**
- **B.Sc. w/ "*Summa Cum Laude*," Aug. 1979; M.Sc. w/ "*Summa Cum Laude*," Feb. 1985**

## (vi) Memberships in Professional Societies

- **IEEE Communications Society (ComSoc)**
- **Association for Computing Machinery (ACM)**
- **Special Interest Group on Mobile Communications (SIGMOBILE)**

## (vii) Membership in Graduate Fields + Affiliate Membership (date awarded)

- **Electrical and Computer Engineering, Cornell University, August 1995**
- **Computer Science, Cornell University, February 2001**
- **Center for Applied Math, Cornell University, April 2003**
- **Electrical Engineering, University of Texas at Dallas, April 4, 2015**



Headwater Research LLC
Ex. 2010, IPR2023-01336

# II. TALKS, INVITED TALKS, & KEYNOTE SPEECHES

**Invited and Keynote Talks (in reverse chronological order)**

- **Zygmunt J. Haas, "Reconfigurable Distributed MIMO for Physical-layer Security in Mobile Networks," *Invited Talk*, 40th IEEE Sarnoff Symposium, NJIT, Newark, NJ, Sep. 23, 2019 (Invited Talks) (plaque)**
- **Z.J. Haas, "Reconfigurable Distributed MIMO for Physical-layer Security in Mobile Networks," *ECE Seminar Series*, Stevens Institute of Technology, March 27, 2019 (announcement)**
- **Z.J. Haas, "Reconfigurable Distributed MIMO for Physical-layer Security in Mobile Networks," *Invited Talk*, Joint ECE/CS Seminar, Stony Brook University, February 28, 2019 (announcement)**
- **Z.J. Haas, "Reconfigurable Distributed MIMO for Physical-layer Security in Mobile Networks," *ACCESS* Distinguished Lecture, KTH Royal Institute of Technology, Stockholm, Sweden, September 13, 2018 (announcement)**
- **Z.J. Haas, "Challenges of Internet of Things," Spring 2017 Computer Science Distinguished Lecture Series, Norfolk State University, Computer Science Department, April 6, 2017 (plaque)**
- **Z.J. Haas, "Research Directions of the Wireless Networks Lab," Computer Science Department, Wesleyan University, Fort Worth, TX, March 31, 2016**
- **Z.J. Haas, "Challenges of Internet of Things," Fourth Annual International Workshop on Mission-Oriented Wireless Sensor Networking (*MiSeNet 2015*), Dallas, TX, October 19, 2015**
- **Z.J. Haas, "Security of Big Data," Third Annual International Workshop on Mission-Oriented Wireless Sensor Networking (*MiSeNet 2014*), Philadelphia, PA, October 27, 2014**
- **Z.J. Haas, "Big Data and Its Security Implications," National Taiwan University (NTU), Taipei, Taiwan, December 16, 2013**
- **Z.J. Haas, "Big Data and Its Security Implications," National Sun Yat-sen University, Kaohsiung, Taiwan, December 18, 2013**
- **Z.J. Haas, "Big Data and Its Security Implications," National Tsing Hua University, Hsinchu, Taiwan, December 19, 2013**
- **Z.J. Haas, "Big Data and Security Implications," Keynote Speech, *EUSPN'13, 4th International Conference on Emerging Ubiquitous Systems and Pervasive Networks*, Niagara Falls, Ontario, Canada, October 21-24, 2013 (certificate)**
- **Z.J. Haas, "Security of Big Data," at the Cornell Engineering Alumni Association conference, Washington, DC, May 13, 2013**
- **Z.J. Haas, "Stochastic Routing," DIMACS Workshop on Connectivity and Resilience for Large-Scale Networks, Rutgers University, Piscataway, NJ, April 12-13, 2012**
- **Z.J. Haas, "*Information Assurance for Sensor Networks*," Winter 2012 CIS Distinguished Lecture Series, Computer and Information Science Department, College of Engineering and Computer Science. University of Michigan-Dearborn, March 16, 2012**
- **Z.J. Haas, "*Information Assurance for Sensor Networks*," Invited Talk, Department of Electrical Engineering and Computer Science, UC Berkeley, Berkeley, CA, September 7, 2011**
- **Z.J. Haas, "*Information Assurance for Vehicular Sensor-based Networks*," Closing Keynote, 4th *IEEE International Symposium on Wireless Vehicular Communications (WiVeC'11)*, San Francisco, CA, September 6, 2011**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Z.J. Haas, "*Information Assurance for Sensor Networks,*" Invited Talk, Department of Electrical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan, August 15, 2011 (program)**
- **Z.J. Haas, "*New Directions and Challenges in Information Assurance with Applications for Sensor Networks,*" Invited Talk, Department of Electrical Engineering, NCTU, Hsinchu, Taiwan, August 12, 2011**
- **Z.J. Haas, "*New Directions and Challenges in Information Assurance with Application to Sensor Networks,*" Invited Talk, Department of Electrical Engineering, Boston University, July 14, 2011**
- **Z.J. Haas, "*Information Assurance and Sensor Network Security,*" Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL, April 14, 2011**
- **Z.J. Haas, "*Information Assurance and Sensor Network Security,*" Computer and Information Sciences department, Temple University, Philadelphia, PA, March 31, 2011**
- **Z.J. Haas, "*Information Assurance for Sensor Networks,*" Keynote Speech, *IEEE PerCom 2011 (Information Quality and Quality of Service (IQ2S) Workshop*), Seattle, WA, March 21, 2011**
- **Z.J. Haas, "*Stochastic Routing for Delay Tolerant Networks,*" Invited Talk, IEEE Communications Society North Jersey Chapter, NJIT Department of ECE, Newark, NJ, November 29, 2010**
- **Z.J. Haas, "*Stochastic Routing for Delay Tolerant Networks,*" Keynote Talk, *Symposium for Emerging Trends in Mobile, Sensor, and Social Networks (MSS 2010), CReWMaN 10th Anniversary Celebration,* University of Texas at Arlington, October 7-8, 2010**
- **Z.J. Haas, "On Networking in the `Final Frontier'," Invited Talk, Air Force Research Laboratory, Rome, NY, August 6, 2010**
- **Z.J. Haas, "*The Ad Hoc and Sensor Networking Technology: Past, Presence, and Future,*" Keynote Speech, *The Second International Conference on Ubiquitous and Future Networks (ICUFN'10),* Jeju Island, South Korea, June 16-18, 2010**
- **Z.J. Haas, "Engineering Education for the 21st Century," Invited Talk, *Kookmin University,* Seoul, South Korea, June 21, 2010**
- **Z.J. Haas, "Three-Dimensional Wireless Sensor Networks," Computer Science Colloquium, *University of Texas at Dallas*, May 7, 2010**
- **Z.J. Haas, "*3D Wireless Networks,*" Plenary Speaker, *Wireless Telecommunications Symposium (WTS 2010),* April 21-23, 2010, Tampa, FL (*WTS 2010*)**
- **Z.J. Haas, "*Stochastic Routing for Delay Tolerant Networks,*" Electrical and Computer Engineering Seminar, *Technion, Israel Institute of Technology,* July 13, 2009**
- **Z.J. Haas, "*Stochastic Routing for Delay Tolerant Networks,*" Nordic IEEE/ComSoc Distinguish Lecturer Tour (DLT), May 24, 2009 – June 5, 2009:**
    - **KTH Royal Institute of Technology, Stockholm, Sweden**
    - **Helsinki University of Technology (TKK), Helsinki, Finland**
    - **Linköpings Universitet, Dept. of Computer & Info. Science, Linköpings, Sweden**
    - **Lund Technical University and Ericsson, Lund, Sweden**
    - **Oulu University, Oulu, Finland**
    - **Aalborg University, Aalborg, Denmark**
    - **Danmarks Tekniske Universitet (DTU), Copenhagen, Denmark**
- **Z.J. Haas, "*Implications of Reconfiguration at the Network Layer,*" US-Australia NSF Workshop: Self-Organizing Wireless Networks Based on Cross-Layer Interactions, Darling Harbour, Sydney, Australia, December 17-19, 2008**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Z.J. Haas, "*Stochastic Routing,*" US-Australia NSF Workshop: Self-Organizing Wireless Networks Based on Cross-Layer Interactions, Darling Harbour, Sydney, Australia, December 17-19, 2008**
- **Z.J. Haas, "*Stochastic Routing for Sensor- and Ad Hoc-Networks,*" Keynote Speech, *International Conference on Intelligent Sensors, Sensor Networks, and Information* Processing (ISSNIP 2008), December 15-18, 2008, Sydney, Australia**
- **Z.J. Haas, "What's in My Crystal Bowl," Keynote Speech, Australasian Telecommunication Networks and Applications Conference 2008 (ATNAC 2008), Adelaide, South Australia, December 7-10, 2008**
- **Z.J. Haas, "*On Networking in the Final Frontier*," University of South Florida, Tampa, FL, December 5, 2008**
- **Z.J. Haas, "*On Networking in the Final Frontier*," CSE Colloquium, Department of Computer Science and Engineering, University of Buffalo, Buffalo, NY, Nov. 6, 2008**
- **Z.J. Haas, "*On Networking in the `Final Frontier'*," ECE Seminar Series, Carnegie Mellon University, Pittsburgh, PA, November 20, 2008**
- **Z.J. Haas, "Stochastic Routing," *Brown-Bag Series,* Computer Science Department, Cornell University, Ithaca, NY, March 4, 2008**
- **Z.J. Haas, "The Untold Story about the Romance between Mr. *A.H Network* and Mrs. *S. Network* and about their Son, Mr. *D.-T Network," ECE Colloquium,* Department of Electrical and Computer Engineering, Boston University, February 22, 2008**
- **Z.J. Haas, "Research in Wireless Ad Hoc Networks at the Cornell's Wireless Networks Laboratory," Iowa State University, Computer Science Department, July 6, 2007**
- **Z.J. Haas et al, "How to Circumvent the Scalability Curse," IMANET Workshop, Arlington, VA, March 7, 2006**
- **Z.J. Haas, "On Some Choices in QoS Design of Ad Hoc and Sensor Networks," *Bell Laboratories, Lucent Technologies,* Murray Hill, NJ, January 27, 2006**
- **Z.J. Haas, "On Some Choices in QoS Design of Ad Hoc and Sensor Networks," Keynote Speech, 2nd *IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS 2005),* Washington, DC, November 9, 2005**
- **Z.J. Haas, "Research in Wireless Ad Hoc Networks at the Cornell's Wireless Networks Laboratory," Keynote Speech, *2005 Asia-Pacific Conference on Communications*, Perth, Australia, October 3-5, 2005**
- **Z.J. Haas, "Mobility and its Effects on Networks Performance," *MiNEMA Summer School 2005*, Klagenfurt University, Klagenfurt, Austria, July 11-15, 2005**
- **Z.J. Haas, "Research in Wireless Ad Hoc Networks at the Cornell's Wireless Networks Laboratory," *IEEE Communications Society and IEEE Aerospace and Electronics Systems,* Joint Chapter, Rochester, NY, *Rochester Institute of Technology*, Rochester, NY, October 19, 2004**
- **Z.J. Haas, "Research in Wireless Ad Hoc Networks at the Cornell's Wireless Networks Laboratory," *University of Pennsylvania, Electrical Engineering Department,* Philadelphia, PA, November 8, 2004**
- **P. Papadimitratos and Z.J. Haas, "Secure Routing for Mobile Ad Hoc Networks," *Working Session on Security in Wireless Ad Hoc Networks,* Swiss Federal Institute of Technology – Lausanne (EPFL), Switzerland, June 12, 2002**
- **Z.J. Haas and E.Y. Hua, "Multipath Routing – A Cross-Layer Design Tool for QoS Provisioning in MANETs," Cross-Layer Design Workshop, Naval Research Laboratory, Washington, DC, June 2, 2004**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Z.J. Haas, "Ad Hoc Research at the Wireless Networks Laboratory (WNL) at Cornell University," EE Seminar, Columbia University, April 16, 2001**
- **Z.J. Haas, "Predictive Distance-Based Mobility Management for PCS Networks," Telcordia, Morristown, NJ, April 7, 2000**
- **Z. Haas, "The Design and Performance of Mobile TCP for Wireless Networks," *Seminar on Networks Research, Center for Advanced Technology in Telecommunications,* March 26, 1999**
- **Z.J. Haas, "Scalability of Wireless Ad Hoc Networks," *The International Workshop on Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless and Peer-to-Peer Networks,* Keynote Speech, Fort Lauderdale, FL, February 20−21, 2004**
- **Z. J. Haas, "Next Generation Wireless Data: WAP over GPRS," International Courses for Telecom Professionals, CEI-Europe, Helsinki, Finland, May 13−15, 2002**
- **Speaker at the "NSF Networking Principal Investigators' Workshop," session on Wireless/Mobile, Loews L'Enfant Plaza Hotel, Washington, DC, January 21−23, 1999**
- **Z. Haas, "Networking Issues in Wireless Technologies," *IEEE Multiaccess, Mobility and Teletraffic for Personal Communications* Workshop 1998, Washington, DC, October 21, 1998**
- **Z.J. Haas, "Zone Routing: A New Routing Protocol for the Reconfigurable Wireless Networks," *Science Advisory Board Associates (SABA),* Motorola, Arlington Heights, November 18, 1997**
- **Z.J. Haas, "Routing in Highly Reconfigurable Wireless Networks," *8th Maryland Workshop on Very High Speed Networks,* University of Maryland Baltimore County, November 12-13, 1997**
- **Z. J. Haas, "The Multiply-Detected Macrodiversity Scheme for Wireless Cellular Systems," *EE Colloquium, School of Electrical Eng.,* Cornell University, April 22, 1997**
- **Z. J. Haas, J. H. Winters, and D. S. Johnson, "Simulation Results of Cellular Capacity Bounds," *5th Maryland Workshop on Very High Speed Networks,* Baltimore, MD, March 14-16, 1994**
- **Z. J. Haas, J. H. Winters, and D. S. Johnson, "On the Capacity Bounds in Cellular Systems," *Allerton Conf. on Comm., Control, and Comp.,* Monticello, IL, Sept. 29 - Oct. 1, 1993**
- **Z. Haas, "Gigabit Connectivity with the `Staggering Switch': An Electronically Controlled Optical Packet Switch," *4th Maryland Workshop on Very High Speed Network,* March 15-17, 1993**
- **Z. Haas, "The `Staggering Switch' – A Scheme for Collision Resolution in Optical Packet Switches," ECE Seminar, Amherst University, Feb. 22, 1993**
- **Zygmunt Haas, "Communication in the Gbps Era: Some Answers," *Washington University at St. Louis,* St. Louis, MO, September 1990**

## Tutorial Courses:

- **Z.J. Haas, "The Ad Hoc Networking Technology," *Thales Communications, Land and Joint Systems Division,* Clarksburg, MD, May 21-24, 2006**
- **Z.J. Haas, "Mobility and Its Effects On Network Performance," ESF'05 Workshop, November 7, 2005**
- **Z.J. Haas, "Mobility and Its Effects On Network Performance," *Middleware for Network Eccentric and Mobile Applications (MiNEMA) Workshop, MiNEMA Summer School,* Klagenfurt University, Klagenfurt, Austria, July 11-15, 2005**
- **Z.J. Haas, "Inside the Communication Protocols: Teletraffic Engineering & Performance Evaluation," *Telefocal Asia,* Singapore, March 22, 2004**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Z. Haas, Ad Hoc Networks – A New Communication Paradigm?" *Mobile Terrestrial & Space Networking Workshop,* NASA Ames Research Center, Moffett Field, CA, June 26, 2001**
- **Z.J. Haas, "Mobile Ad Hoc Networks," IEEE Wireless Communications and Networking Conference (WCNC'00), Chicago, IL, September 23-28, 2000**
- **Z.J. Haas, "Mobile Ad-Hoc Networks," *DIMACS Summer School on Foundations of Wireless Networks and Applications,* Rutgers University, Piscataway, NJ, Aug. 7 - 18, 2000**
- **Z.J. Haas, "Wireless Networks: from Cellular to Ad-Hoc," *DIMACS Summer School on Foundations of Wireless Networks and Applications,* Rutgers University, Piscataway, NJ, August 7 - 18, 2000**
- **Z.J. Haas, "Queueing Theory for Network Engineering," *MITRE Corporation,* Eatontown, NJ, 2000**
- **Z.J. Haas, "Wireless Networks - from Cellular to Ad Hoc," IEEE Military Communications Conference (MILCOM'99), Atlantic City, NJ, Oct. 31 – Nov. 3, 1999**
- **Z.J. Haas, "Mobile Ad Hoc Networks," IEEE Wireless Communications and Networking Conference (WCNC'99), New Orleans, LA, September 21-24, 1999**
- **Z.J. Haas, "Mobile Ad Hoc Networks," IEEE Military Communications Conference (MILCOM'98), Bedford, MA, October 20-23, 1998**
- **Z.J. Haas, "Mobile Ad Hoc Networks," Tutorial 9, 48th IEEE Vehicular Technology Conference, Pathway to Global Wireless Revolution (VTC'98), Ottawa, Ontario, Canada, May 18–21, 1998**
- **Z.J. Haas, "Mobility Management in TCP/IP Networks," IEEE Military Communications Conference (MILCOM'97), Monterey, CA, November 2-5, 1997**
- **Z.J. Haas, "Wireless Cellular Networks," ACM/IEEE Mobicom'97, Budapest, Hungary, September 27- 30, 1997**
- **Z.J. Haas, "Mobility Management in TCP/IP Networks," IEEE ICC'97, Montreal, Quebec, Canada, June 8-12, 1997**
- **Z.J. Haas, "Mobility Management in TCP/IP Networks," IEEE GLOBECOM'97, London, United Kingdom, November 22, 1996**
- **Z.J. Haas, "Mobility Management in Wireless Networks," ICUPC'96, Cambridge, MA, September 29, 1996**
- **Z.J. Haas, "Mobility Management in Wireless Networks," ICC'96, Dallas, TX, June 23-27, 1996**
- **Z.J. Haas, "Mobile Communication Networks," *6th IFIP International Conference on High Performance Networking (HPN'95),* Palma De Mallorca, Balearic Islands, Spain, September 11-15, 1995**
- **Z.J. Haas, "Mobility in TCP-IP Networks," IEEE Wireless'95, 1995**
- **Z.J. Haas, "Mobile Communication Networks," ICC'95, Seattle, WA, June 18-22, 1995**
- **Z.J. Haas, "Mobile Communication Networks," APCC, Osaka, Japan, June 13-16, 1995**
- **Z.J. Haas, "Mobile Communication Networks," IPCCC, Scottsdale, AZ, March 28, 1995**
- **Z.J. Haas, "Mobile Communication Networks," GLOBECOM'94, San-Francisco, CA, November 27, 1994**
- **Z.J. Haas, "Personal Communication Services and Networks," SIGCOMM'94, University College London, London, UK, August 30 – September 2, 1994**
- **Z.J. Haas, "Optical Networks," GLOBECOM'93, Houston, TX, December 3, 1993**
- **Z.J. Haas, "Optical Networks," SIGCOMM'92, Baltimore, Maryland, USA, August 17-20, 1992**



Headwater Research LLC
Ex. 2010, IPR2023-01336

# III. PUBLICATIONS

## (i) Refereed Journal/Archival Publications (in reverse chronological order)

1. **T.-L. Nguyen, G. Kaddoum, T.-N. Do, D.B. da Costa, and Z.J. Haas, "Adaptive Decoding Mechanisms for UAV-enabled Double-Uplink Coordinated NOMA," accepted for publication in the *IEEE Transactions on Vehicular Technology*, 2023**
2. **K. Singh, A.F. Makarim, H. Albinsaid, C.-P. Li, and Z.J. Haas, "Passive Beamforming Design and DNN-Based Signal Detection in RIS-Assisted MIMO Systems with Generalized Spatial Modulation," *IEEE Transactions on Vehicular Technology*, vol.72, no.2, pp. 1879-1892, February 2023; DOI: 10.1109/TVT.2022.3208830**
3. **T.-L. Nguyen, G. Kaddoum, T.-N. Do, D.B. da Costa, and Z.J. Haas, "Adaptive Decoding Mechanisms for UAV-enabled Double-Uplink Coordinated NOMA," arXiv:2206.13370v1 [cs.IT] 27 Jun 2022**
4. **T.-L. Nguyen, T.-N. Do, G. Kaddoum, D.B. da Costa, and Z.J. Haas, "Channel Characterization for RIS-aided Terahertz Communications: A Stochastic Approach," *IEEE Wireless Communications Letters*, June 24, 2022, pp. 1890−1894; DOI: 10.1109/LWC.2022.3185977**
5. **L. Xi, R. Wang, and Z.J. Haas, "Data-correlation-aware Unsupervised Deep-Learning Model for Anomaly Detection in Cyber-Physical Systems," *IEEE Internet of Things Journal*, vol.9, no.22, pp.22410−22421, Nov. 15, 2022; DOI: 10.1109/JIOT.2022.3150048**
6. **T.-N. Do, G. Kaddoum, T.-L. Nguyen, D.B. da Costa, and Z.J. Haas, "Multi-RIS-aided Wireless Systems: Statistical Characterization and Performance Analysis," *IEEE Transactions on Communications*, vol. 69, no. 12, pp: 8641−8658, December 2021; DOI: 10.1109/TCOMM.2021.3117599**
7. **T.N. Do, G. Kaddoum, T. L. Nguyen, D.B. da Costa, and Z.J. Haas, "Aerial Reconfigurable Intelligent Surface-Aided Wireless Communication Systems," arXiv:2106.05380v1 [cs.IT] 9 Jun 2021 (arXiv)**
8. **Z.J. Haas, T.L. Culver, and K. Sarac, "Vulnerability Challenges of Software-Defined Networks," *IEEE Communications Magazine*, July 2021, vol. 59, no. 7, pp. 88−93; DOI: 10.1109/MCOM.001.2100128**
9. **H. Albinsaid, K. Singh, A. Bansal, S. Biswas, C.-P. Li, and Z.J. Haas, "Multiple Antenna Selection and Successive Signal Detection for SM-based IRS-aided Communication," *IEEE Signal Processing Letters*, vol. 28, April 9, 2021, pp. 813−817; DOI: 10.1109/LSP.2021.3071981**
10. **T.N. Do, G. Kaddoum, T. L. Nguyen, D.B. da Costa, and Z.J. Haas, "Multi-RIS-aided Wireless Systems: Statistical Characterization and Performance Analysis," arXiv:2104.01912v1 [cs.IT] 5 Apr 2021 (arXiv)**
11. **M. Stanacevic, A. Athalye, Z.J. Haas, S. Das, and P. Djuric, "Backscatter Communications with Passive Receivers: From Fundamentals to Applications," *ITU Journal on Future and Evolving Technologies*, volume 1 (2020), issue 1, December 11, 2020**
12. **C. Liu, Z.J. Haas, and Z. Tian, "On the Design of Multi-Hop Tag-to-Tag Routing Protocol for Large-Scale Networks of Passive Tags," *IEEE Open Journal of the Communications Society*, Special Issue on *Large-Scale Wireless Powered Networks with Backscatter Communications*, vol. 1, 2020, pp. 1035-1055, July 24, 2020; DOI: 10.1109/OJCOMS.2020.3011171**



Headwater Research LLC
Ex. 2010, IPR2023-01336

13. **T-N. Do and Z.J. Haas, "On the Design of RD-MIMO: Spatial Multiplexing versus Opportunistic Transmission Schemes," *IEEE Access*, vol.8, no.1, pp. 22733–22747, January 29, 2020; DOI: 10.1109/ACCESS.2020.2970049**
14. **R. Duan, Z. Zheng, R. Jäntti, J. Hämäläinen, and Z.J. Haas, "Asymptotic Analysis for Spectrum-sharing Systems with TAS/MRC Using Extreme Value Theory: An Overlooked Aspect," *IEEE Access*, vol. 7, September 23, 2019, pp. 138062–138078, DOI: 10.1109/ACCESS.2019.2943083**
15. **A. Jindal and Z.J. Haas, "On the Performance of Distributed MIMO with Full-Duplex Jamming," *IEEE Transactions on Communications*, vol. 67, no. 3, pp. 1972–1985, March 2019, DOI: 10.1109/TCOMM.2018.2884721**
16. **Z. Zheng, Z.J. Haas, and M. Kieburg, "Secrecy Rate of Cooperative MIMO in the Presence of a Location Constrained Eavesdropper," *IEEE Transactions on Communications*, vol. 67, no. 2, pp. 1356–1370, ISSN: 0090-6778, February 2019; DOI: 10.1109/TCOMM.2018.2877329; arXiv:1709.05383v3 [cs.IT] 15 Oct 2018**
17. **Y.-M. Chen, W-C. Cheng, C.-P. Li, and Z.J. Haas, "Low-complexity Generalized Spatial Modulation Schemes Using Codebook-assisted MIMO Detectors," *IEEE Transactions on Vehicular Technology*, vol. 67, no. 12, pp. 12358–12362, September 2018, DOI: 10.1109/ TVT.2018.2871577**
18. **J. Huang, Z. Liu, Q. Duan, M. Atiquzzman, M. Jo, and Z.J. Haas, "Green Computing and Communications for Smart Portable Devices," Editorial, Hindawi Wireless Communications and Mobile Computing, Vol. 2018, Article ID 6839604, DOI: https://doi.org/10.1155/2018/6839604**
19. **Z.J. Haas and A. Yousefpour, "A Privacy Scheme for Monitoring Devices in the Internet of Things," In: N. Oliver *et al.* (eds) 'Pervasive Computing Paradigms for Mental Health,' Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol. 207, pp. 153-165, 2018, Springer, Cham; DOI: 10.1007/978-3-319-74935-8_22; Print ISBN: 978-3-319-74934-1; Online ISBN: 978-3-319-74935-8 (March 1, 2018)**
20. **M. Nikolov and Z.J. Haas, "Encoded Sensing for Energy Efficient Wireless Sensor Networks," *IEEE Sensors Journal*, 2017, Special Issue on "*Power-efficient sensors for long-term applications,"* vol. 18, no. 2, January 2018, pp. 875–889, DOI: 10.1109/JSEN.2017.2756865**
21. **J. Huang, C.C Xing, Y. Qian, and Z.J. Haas, "Resource Allocation for Multi-cell Device-to-Device Communications Underlying 5G Networks: A Game-Theoretic Mechanism with Incomplete Information," *IEEE Transactions on Vehicular Technology*, vol. PP, no. 99, October 23, 2017, DOI: 10.1109/TVT.2017.2765208**
22. **J. Ugirumurera and Z. J. Haas, "Optimal Sizing of a Completely Green Charging System for Electric Vehicles," *IEEE Transactions on Transportation Electrification*, vol. 3, no. 3, Sept. 2017, pp. 565–577, DOI: 10.1109/TTE.2017.2713098**
23. **Z. Zheng and Z.J. Haas, "On the Performance of Reconfigurable Distributed MIMO in Mobile Networks," *IEEE Transactions on Communications*, vol. 65, no.4, April 2017, pp. 1609–1622; DOI: 10.1109/TCOMM.2017.2656129**
24. **S.N. Premnath and Z.J. Haas, "Supporting Privacy of Computations in Mobile Big Data Systems," *Future Internet 2016, 8(2), 17;* DOI: 10.3390/fi8020017**
25. **M. Nikolov and Z.J. Haas, "Relay Placement in Wireless Networks: Minimizing Communication Cost," *IEEE Transactions on Wireless Communications*, vol.15, no.5, May 2016**

26. **Z. Li and Z.J. Haas, "On Residual Path Lifetime in Mobile Networks," *IEEE Communications Letters*, vol. 20, no.3, March 2016, DOI: 10.1109/LCOMM.2016.2520467**
27. **S.N. Premnath and Z.J. Haas, "Security and Privacy in the Internet-of-Things under Time-and-Budget-limited Adversary Model," IEEE Wireless Communications Letters 4(3), pp. 277–280 , 2015, DOI: 10.1109/LWC.2015.2408609**
28. **S.M.N. Alam and Z.J. Haas, "Coverage and Connectivity in Three-Dimensional Networks with Random Node Deployment," Elsevier *Ad Hoc Networks Journal*, special issue on *Underwater Communications*, 2014, DOI: 10.1016/j.adhoc.2014.09.008, *http://dx.doi.org/10.1016/j.adhoc.2014.09.008***
29. **Z.J. Haas and M. Nikolov, "Towards Optimal Broadcast in Wireless Networks," *IEEE Transactions on Mobile Computing*, vol. 14, no. 7, pp. 1530–1544, July 2015, DOI: 10.1109/TMC.2014.2356466**
30. **E.Y. Hua and Z.J. Haas, "Mobile-Projected Trajectory Algorithm with Velocity-Change Detection for Predicting Residual Link Lifetime in MANET," *IEEE Transactions on Vehicular Technology*, March 2015, vol. 64, no. 3, pp. 1065–*1078*, *http://dx.doi.org/10.1109/TVT.2014.2327232***
31. **Z.J. Haas and M. Nikolov, "Towards Optimal Broadcasting," CoRR abs/1301.7101 (2013)**
32. **M.Z. Chowdhury, Y.M. Jang, and Z.J. Haas, "Priority based Bandwidth Adaptation for Multi-class Traffic in Wireless Networks," International Journal of Multimedia and Ubiquitous Engineering vol. 7, no. 2, pp. 445–450, April 2012 (also in https://arxiv.org/abs/1412.4322 )**
33. **M.Z. Chawdhury, Y.M. Jang, and Z.J. Haas, "Call Admission Control based on Adaptive Bandwidth Allocation for Wireless Networks," IEEE/KICS *Journal of Communications and Networks (JCN)*. vol. 15, no. 1, pp. 15–24, Feb. 2013. (SCI)**
34. **F. Losilla, A.-J. Garcia-Sanchez, F. Garcia-Sanchez, J. Garcia-Haro, and Z.J. Haas, "A Comprehensive Approach to WSN-based ITS Applications: A Survey," *Sensors* 2011, *11*, 10220-10265, October 28, 2011, doi:10.3390/s111110220**
35. **C. Garcia-Costa, E. Egea-Lopez, J. Tomas-Gabarron, J. Garcia-Haro, Z.J. Haas, "A stochastic model for chain collisions of vehicles equipped with vehicular communications," *IEEE Transactions on Intelligent Transportation Systems*, vol. 13, no.2, June 2012, pp. 503-518; DOI: 10.1109/TITS.2011.2171336**
36. **G.Y. Lee and Z.J. Haas, "*Simple, Practical, and Effective Opportunistic Routing for Short-haul Multi-hop Wireless Networks, IEEE Transactions on Wireless Communications*, 2011, pp. 3583–3588, DOI: 10.1109/TWC.2011.11.101713**
37. **M.F. Elhawary and Z.J. Haas, "Energy-Efficient Protocol for Cooperative Networks," *IEEE Transactions on Networking*, vol. 19, no.2, April 2011, pp. 561–574, DOI: 10.1109/TNET.2010.2089803**
38. **M.Z. Chowdhury, Y.M. Jang, and Z.J. Haas, "Cost-Effective Frequency Planning for Capacity Enhancement of Femtocellular Networks," *Wireless Personal Communications*, vol. 60, pp. 83–104, March 2, 2011, DOI: https://doi.org/10.1007/s11277-011-0258-y**
39. **ChuanYun Zou, Zygmunt J. Haas, and Sheng Zou, "Throughput maximization in UWB-based ad hoc networks," *SCIENCE CHINA, Information Sciences*, vol.53, no.12: 2538–2547, DOI: 10.1007/s11432-010-4120-8**
40. **M.Z. Chowdhury, Y.M. Jang, and Z.J. Haas, "Network Evolution and QoS Provisioning for Integrated Femtocell/Macrocell Networks," *International Journal of Wireless & Mobile Networks (IJWMN)*, vol.2, no.3, August 2010 (.pdf)**

41. J. Oh and Z.J. Haas, "Personal Environment Service based on the Integration of Mobile Communications and Wireless Personal Area Networks," *IEEE Communications Magazine*, vol. 48, no. 6, June 2010, pp. 66–72; DOI: 10.1109/MCOM.2010.5473866
42. S.M. Nazrul Alam and Z.J. Haas, "Hierarchical and Honhierarchical Three-Dimensional Underwater Wireless Sensor Networks," CoRR abs/1005.3073, 2010
43. E.Y. Hua and Z.J. Haas, "An Algorithm for Prediction of Link Lifetime in MANET Based on Unscented Kalman Filter," *IEEE Communications Letters*, vol.13, no.10, October 2009, pp. 782–784
44. Z. Wang, R.J. Thomas, and Z.J. Haas, "Performance comparison of Bluetooth Scatternet formation protocols for multi-hop networks," Springer *Wireless Networks (WINET)*, Volume 15, Number 2 / February, 2009, pp. 209–226, published online on April 14, 2007 (color copy); DOI: 10.1007/s11276-007-0036-7
45. G.Y. Lee, Y. Lee, and Z.J. Haas, "Hybrid Location-Update Scheme for Mobile Networks," *IEEE Transactions on Vehicular Technology*, vol. 58, no. 1, January 2009, pp. 338–348
46. J. Jeong and Z.J. Haas, "Predeployed Secure Key Distribution Mechanism in Sensor Networks: Current State-of-the-Art and a New Approach Using Time Information," *IEEE Wireless Communication*, August 2008, pp. 42–51
47. S.M.N. Alam and Z.J. Haas, "Coverage and connectivity in three-dimensional underwater sensor networks," Wireless Communications and Mobile Computing, vol. 8, no. 8, pp. 995–1009, October 2008; (Published online 10 July 2008 in Wiley InterScience, www.interscience.wiley.com); DOI: 10.1002/wcm.661
48. J. Oh and Z.J. Haas, "A Scheme for Location-Based Internet Broadcasting and Its Applications," *IEEE Communications Magazine*, vol. 45, no. 11, November 2007, pp. 136–141, DOI: 10.1109/MCOM.2007.4378333
49. Z.J. Haas and T. Small, "Quality of Service and Capacity in Constrained Intermittent-Connectivity Networks," *IEEE Transactions on Mobile Computing*, vol.6, no.7, July 2007, pp. 803–814, DOI: 10.1109/TMC.2007.1033
50. Z.J. Haas and R. Barr, "Density-Independent, Scalable Search in Ad Hoc Networks," Springer *International Journal of Wireless Information Networks*, special issue on "PIMRC 2005," vol. 14, no. 2, June 2007, pp. 93–105
51. J. Jeong and Z.J. Haas, "An Integrated Security Framework for Open Wireless Networking Architecture," *IEEE Wireless Communications Magazine*, special issue on "Technologies On Future Converged Wireless And Mobility Platform," vol.14, no.2, April 2007, pp.10–18, DOI: 10.1109/MWC.2007.358959
52. O. Arpacioglu and Z.J. Haas, "On the Scalability and Capacity of Single-User-Detection Based Wireless Networks with Isotropic Antennas," *IEEE Transactions on Wireless Communications*, vol.6, no.1, January 2007, pp.8–15
53. S.M. Nazrul Alam, Z.J. Haas "Topology Control and Network Lifetime in Three-Dimensional Wireless Sensor Networks," September 11, 2006, arXiv:cs/0609047 (2006)
54. Ben Liang and Zygmunt J. Haas, "Hybrid Routing in Ad Hoc Networks with Dynamic Virtual Backbone," *IEEE Transactions on Wireless Communications*, vol. 5, no. 6, June 2006, pp. 1392–1405; DOI: 10.1109/TWC.2006.1638660
55. S.M. Nazrul Alam, Z.J. Haas "Coverage and Connectivity in Three-Dimensional Networks," August 13, 2006, CORR/abs/cs/0609069 (2006)
56. Z.J. Haas, J.Y. Halpern, and E.L. Li, "Gossip-based Ad Hoc Routing," *IEEE/ACM Transactions on Networking*, vol.14, no.3, June 2006, pp.479–491

57. **Y.S. Han, Jing Deng, and Z.J. Haas, "Analyzing multi-channel medium access control schemes with ALOHA reservation," IEEE Transactions on Wireless Communications, vol.5, no.8, August 2006, pp. 2143–2152; DOI: 10.1109/TWC.2006.1687730**
58. **J. Deng, Y.S. Han, Z.J. Haas, "Analyzing Split Channel Medium Access Control Schemes," *IEEE Transactions on Wireless Communications,* vol.5, no.5, May 2006, pp. 967–971; DOI: 10.1109/TWC.2006.1633347**
59. **Z.J. Haas and Tara Small, "A New Networking Model for Biological Applications of Ad Hoc Sensor Networks," *ACM/IEEE Transactions on Networking,* vol.14, no.1, February 2006, pp. 27–40**
60. **P. Papadimitratos and Z.J. Haas, "Securing Data Communication in Mobile Ad Hoc Networks," *IEEE Journal on Selected Areas in Communications (JSAC),* special issue on "Security in Wireless Ad Hoc Networks," vol. 24, no. 2, February 2006, pp.343–356; DOI: 10.1109/JSAC.2005.861392**
61. **L.E. Miller and Z.J. Haas, "Public Safety Applications of Wireless Communication and Networking Technologies," Editorial, *IEEE Communications Magazine,* vol.44, no.1, January 2006, pp. 28–29 (issue cover)**
62. **R. Barr, Z.J. Haas, and R. van Renesse, "JiST: An Efficient Approach to Simulation Using Virtual Machines," *Software Practice and Experience,* 2005; 35:539-576; published on-line Feb. 16, 2005 in *Wiley InterScience;* DOI: 10/1002/spe.647**
63. **O. Arpacioglu and Z.J. Haas, "On the Capacity of Wireless Sensor Networks with Omnidirectional Antennas," Revista de Sociedade Brasileira de Telecommunicações, vol.19, no.3, December 2004, pp.81–93**
64. **M. Fang, Z.J. Haas, B. Liang, and Y.-B. Lin, "TTL Prediction Schemes and Effects of Inter-Update Time Distribution on Wireless Data Access," Kluwer Academic Publishing, *Wireless Network,* 10, 2004, pp.607–619**
65. **J. Cho and Z.J. Haas, "On the Throughput Enhancement of the Downstream Channel in Cellular Radio Networks through Multi-hop Relaying," *IEEE Journal on Selected Areas in Communications,* issue on "Quality-of-Service Delivery in Variable Topology Networks," vol.22, no.7, September 2004, pp.1206–1219**
66. **P. Samar, M.R. Pearlman, and Z.J. Haas, "Independent Zone Routing: An Adaptive Hybrid Routing Framework for Ad Hoc Wireless Networks," *ACM/IEEE Transactions on Networking,* vol.12, no.4, August 2004, pp.595–608;** DOI: **10.1109/TNET.2004.833153**
67. **O. Arpacioglu and Z.J. Haas, "On the Scalability and Capacity of Planar Wireless Networks with Omnidirectional Antennas," Wiley & Sons, *Wireless Communications and Mobile Computing* journal, vol.4, no.3, May 2004, pp.263–279**
68. **A. Tsirigos and Z. J. Haas, "Analysis of Multipath Routing, Part 2: Mitigation of the effects of frequently changing network topologies," *IEEE Transactions on Wireless Communications,* vol.3, no.2, March 2004, pp.500–511**
69. **B. Krishnamachari, R-H. Gau, S. B. Wicker, and Z. J. Haas, "Optimal Sequential Paging in Cellular Networks," *ACM/Kluwer Wireless Networks* , vol.10, no.2, March 2004, pp.121–131**
70. **R-H. Gau and Z. J. Haas, "Concurrent Search of Mobile Users in Cellular Networks," *ACM/IEEE Transactions on Networking,* vol.12, no.1, February 2004, pp.117–130**

71. A. Tsirigos and Z. J. Haas, "Analysis of Multipath Routing, Part 1: The effect on the packet delivery ratio," *IEEE Transactions on Wireless Communications,* vol.3, no.1, January 2004, pp.138–146

72. Z.J. Haas and J. Deng, "On Optimizing the Backoff Interval for Random Access Schemes," *IEEE Transactions on Communications*, vol.51, no.12, December 2003, pp. 2081–2090

73. D-S. Kim, H-J. Moon, J-H. Bahk, W.H. Kwon, and Z. J. Haas, "Efficient Computations for Evaluating Extended Stochastic Petri Nets using Algebraic Operations," *International Journal of Control, Automation and Systems,* vol. 1, no. 4, December 2003, pp.431–443

74. Sajama and Z. J. Haas, "Independent-Tree Ad hoc MulticAst Routing (ITAMAR)," *ACM MONET* journal, special issue on "Ad Hoc Networks," vol. 8, no. 5, October 2003, pp. 551–566

75. B. Liang and Z. J. Haas, "Predictive Distance-Based Mobility Management for Multi-Dimensional PCS Networks," *ACM/IEEE Transactions on Networking*, vol.11, no.5, October 2003, pp.718–732, DOI: 10.1109/TNET.2003.815301

76. J. Li, Z. J. Haas, M. Sheng, and Y. Chen, "Performance Evaluation of Modified IEEE 802.11 MAC For Multi-Channel Multi-Hop Ad Hoc Network," *Journal of Interconnection Networks (JOIN), s*pecial issue on "Advanced Information Networking: Architectures and Algorithms," vol. 4, no. 3, September 2003, pp. 345–359

77. J. Li, Z.J. Haas, and M. Sheng, "Capacity Evaluation of Multi-channel Wireless Ad Hoc Networks," *Journal of Electronics (China),* vol.20, no.5, September 2003, pp.344–352, DOI:10.1007/s11767-003-0044-4

78. P. Papadimitratos and Z. J. Haas, "Secure Message Transmission in Mobile Ad Hoc Networks," Elsevier *Ad Hoc Networks Journal*, vol. 1, no. 1, July 2003, pp.193–209

79. R-H. Gau and Z. J. Haas, "Concurrently Searching for Mobile Users in Cellular Networks," *IEEE Communications Letters,* vol. 7, no. 6, June 2003, pp. 287–289

80. P. Papadimitratos and Z. J. Haas, "Secure Routing for Mobile Ad Hoc Networks," *ACM Mobile Computing and Communications Review (MC2R),* vol. 1, no. 2, October 2002, pp.1

81. P. Papadimitratos and Z. J. Haas, "Securing the Internet Routing Infrastructure," *IEEE Communications Magazine*, October 2002, pp.60–68

82. Z.J. Haas, J.Y. Halpern, E.L. Li, "Gossip Based Ad Routing," CoRR vol. cs.NI/020911 (2002)

83. Z. J. Haas and Jing Deng, "Dual Busy Tone Multiple Access (DBTMA): A Multiple Access Control Scheme for Ad Hoc Networks," *IEEE Transactions on Communications*, vol. 50, no. 6, June 2002, pp. 975–985

84. R-H. Gau, Z.J Haas, and B. Krishnamachari "On Multicast Flow Control for Heterogeneous Receivers," *ACM/IEEE Transactions on Networking,* vol.10, no.1, February 2002, pp. 86–101

85. A. Tsirigos and Z.J. Haas, "Multipath Routing in the Presence of Frequent Topological Changes," *IEEE Communications Magazine,* vol. 39, no.11, November 2001, DOI: 10.1109/35.965371

86. Z.J. Haas, "Design Methodologies for Adaptive and Multimedia Networks," Guest Editorial, *IEEE Communications Magazine,* vol. 39, no. 11, November 2001, DOI: 10.1109/MCOM.2001.965366

87. Z.J. Haas and A. Warkhedi, "The Design and Performance of Mobile TCP for Wireless Networks," *Journal of High Speed Networks,* vol. 10, no. 3, October 2001, pp.187–207

88. **R. Prakash, Z.J. Haas, and M. Singhal, "Load-Balanced Location Management for Mobile Systems using Dynamic Hashing and Quorums," ACM *Wireless Networks* journal, vol. 7, no. 5, September 2001, pp.497-512, DOI: 10.1023/A:1016774627097**

89. **Z.J. Haas and M.R. Pearlman, "The Performance of Query Control Schemes for the Zone Routing Protocol," *IEEE/ACM Transactions on Networking,* vol.9, no.4, August 2001, pp.427–438, DOI: 10.1109/90.944341**

90. **Z.J. Haas, "A Communication Infrastructure for Smart Environments -- A Position Article," *IEEE Personal Communications Magazine,* special issue on "Networking the Physical World," vol. 7, no. 5, October 2000, pp.54–58, DOI: 10.1109/98.878540**

91. **Z.J. Haas and A. Warkhedi, "The Design and Performance of Mobile TCP for Wireless Networks," *DIMACS Series in Discrete Mathematics and Theoretical Computer Science,* issue on "Mobile Networks and Computing," *American Mathematical Society,* vol. 52, 2000, pp.85–122**

92. **Zygmunt J. Haas and Yi-Bing Lin, "Demand Re-registration for PCS Database Restoration," ACM *Mobile Networks and Applications (MONET),* vol.5, no.3, September 2000, pp.191–198, DOI: 10.1023/A:1019160629147**

93. **L. Zhou and Z.J. Haas, "Securing Ad Hoc Networks," *IEEE Network Magazine,* vol. 13, no. 6, November/December 1999, pp. 24–30; DOI: 10.1109/65.806983**

94. **M.R. Pearlman and Z.J. Haas, "Determining the Optimal Configuration for the Zone Routing Protocol," *IEEE Journal of Selected Areas in Communications,* vol. 17, no.8, August 1999, pp. 1395–1414, DOI: 10.1109/49.779922**

95. **Z.J. Haas, M. Gerla, D.B. Johnson, C.E. Perkins, M.B. Pursley, M. Steenstrup, C.-K. Toh, "Wireless Ad Hoc Networks," Guest Editorial, *IEEE Journal of Selected Areas in Communications,* vol. 17, no.8, August 1999, pp. 1329–1332, DOI: 10.1109/JSAC.1999.779916**

96. **D.A. Dyson and Z.J. Haas, "A Dynamic Packet Reservation Multiple Access Scheme for Wireless ATM," *Mobile Networks and Applications (MONET),* no.4, no.2, June 1999, pp. 87–99**

97. **Z.J. Haas and B. Liang, "*Ad Hoc* Mobility Management with Uniform Quorum Systems," *IEEE/ACM Transactions on Networking,* vol. 7, no.2, April 1999, pp. 228–240, DOI: 10.1109/90.769770**

98. **Z.J. Haas and Y-B. Lin, "On Optimizing the Location Update Costs in the Presence of Database Failures," *Wireless Networks* journal, vol.4, no.5, September 1998, pp. 419–426, DOI: 10.1023/A:1019137213933**

99. **Z.J. Haas and C-P. Li, "The Multiply-Detected Macrodiversity Scheme for Wireless Cellular Systems," *IEEE Transactions on Vehicular Technology,* vol.47, no.2, May 1998, pp. 506–530**

100. **Z. J. Haas, J. H. Winters, and D. S. Johnson, "Simulation Results of the Capacity Bounds in Cellular Systems," *IEEE Transactions on Vehicular Technology,* vol.46, no.4, November 1997, pp. 805–817**

101. **M. J. Karol, Z. J. Haas, C. B. Woodworth, and R. D. Gitlin, "Time-Frequency-Code Slicing: Efficiently Allocating the Communications Spectrum to Multirate Users," *IEEE Transactions on Vehicular Technology,* vol.46, no.4, November 1997, pp. 818–826**

102. **Z.J. Haas and I. Akyildiz, "Mobile Computing and Networking," *Wireless Networks,* Editorial, vol.3, no. 5, October 1997, pp 309–310; DOI: 10.1023/A:1019125805388**



Headwater Research LLC
Ex. 2010, IPR2023-01336

**103. Z. J. Haas, "Location-Independent Access in Mobile Systems," Kluwer Journal of *Wireless Personal Communications*, special issue on "Mobile and Wireless Computing," vol.4, no.2, March 1997, pp. 163–184**

**104. C.-P. Li and Z.J. Haas, "Macrodiversity Technique for Improvement in BER of Wireless Systems," *IEEE Electronics Letters*, vol.33, no.7, March 27, 1997, pp. 556–557; DOI: 10.1049/el:19970373**

**105. A. Ganz, Z. J. Haas, C. M. Krishna, and D. Tang, "On Optimal Design of Multi-Tier Wireless Cellular Systems," *IEEE Communications Magazine*, vol.35, no.2, February 1997, pp. 88–93 (erratum vol. 35, no. 8, August 1997, pp. 143)**

**106. Z.J. Haas, R. Alonso, D. Duchamp, and B. Gopinath, "Mobile and Wireless Computing Networks," Guest Editorial, *IEEE Journal on Selected Areas in Communications*, vol. 13, no. 5, June 1995, pp. 836–838**

**107. Z. J. Haas and S. Paul, "Limited-lifetime Shared-access in Mobile Systems," *Wireless Networks* journal, vol. 1, no. 2, June 1995, pp. 139–146, DOI: 10.1007/BF01202537**

**108. G. Pollini and Z. Haas, "E-BAMA vs. RAMA," *IEEE Network* magazine, vol. 8, no. 2, March/April 1994, pp. 18–25, DOI: 10.1109/65.272937;**

**109. Z. Haas and M. A. Santoro, "A Mode-Filtering Scheme for Improvement of the Bandwidth-Distance Product in Multimode Fiber Systems," *IEEE Journal of Lightwave Technology*, vol. 11, no. 7, July 1993, pp. 1125–1131**

**110. Z. Haas "The `Staggering Switch': An Electronically Controlled Optical Packet Switch," IEEE *Journal of Lightwave Technology*, vol. 11, no. 5/6, May/June 1993, pp. 925–936**

**111. Z. Haas, D. Cohen, G.M Parulkar, and A.N. Tantawy, "Protocols for Gigabit Networks," Guest Editorial, *IEEE Journal on Selected Areas in Communications*, vol. 11, no.4, May 1993, pp. 477–479**

**112. Z. Haas, "Optical Slot Synchronization Scheme," *IEEE Electronics Letters*, vol. 28, no. 23, November 1992, pp. 2184–2185**

**113. Z. Haas, " `Staggering Switch': an `Almost-all' optical packet switch," *Electronics Letters*, vol. 28, no. 17, August 1992, pp.1576–1577**

**114. Z. Haas and M. A. Santoro, "Extending the Bandwidth-Distance Product for Multimode Fiber Systems," *Fiber and Integrated Optics Journal*, vol. 11, no. 2, April 1992, pp. 111–122**

**115. Z. Haas and R. D. Gitlin "Optical Distribution Channel: An `Almost-all' Optical LAN based on the Field-coding Technique," *Journal of High Speed Networks, IOS Press*, vol. 1, no. 3, pp. 193–214, 1992**

**116. Z. Haas, "Adaptive Admission Congestion Control," *ACM SIGCOMM Comp. Comm. Rev.*, vol. 21, no. 5, October 1991, pp. 58–76**

**117. Zygmunt Haas, "A Protocol Structure for High-speed Communication over Broadband ISDN," *IEEE Network Magazine*, vol. 5, No. 1, January 1991, pp. 64–70; DOI: 10.1109/65.67861**

**118. Zygmunt Haas, "Loop Concatenation and Loop Replication to Improve Blazelan Performance," *IEEE Journal on Selected Areas in Communications*, vol. 8, no. 8, October 1990, pp. 1574–1581 ;** DOI: **10.1109/49.62835**

**119. Z. Haas and D. R. Cheriton, "BLAZENET: A Packet-Switched Wide Area Network with Photonic Data Path," *IEEE Transactions on Communications*, vol. 38, no. 6, June 1990, pp.818–829; DOI: 10.1109/26.57474**

## (ii) Refereed Conference & Workshop Papers (in reverse chronological order)

1. **T.N. Do, G. Kaddoum, T. L. Nguyen, D.B. da Costa, and Z.J. Haas, "Aerial Reconfigurable Intelligent Surface-Aided Wireless Communication Systems," *IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'21)*, Virtual Conference, September 13–16, 2021**
2. **Z.J. Haas and Z. Zheng, "Engineering a Network in the Sky," *35th International Conference on Information and Networking* (*ICOIN 2021*), Jeju Island, Korea & Virtual Conference, January 13 − 16, 2021**
3. **Z. Tian and Z.J. Haas, "Multi-Modulation Scheme for RFID-based Sensor Networks," *EAI ChinaComm'20*, Cyberspace, Nov. 20 − 21, 2020, *in* Gao H., Fan P., Wun J., Xiaoping X., Yu J., Wang Y. (eds) Communications and Networking. *ChinaCom 2020*. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 352, pp. 17 – 36, Springer, Cham, 2021; DOI: https://doi.org/10.1007/978-3-030-67720-6_2**
4. **Z.J. Haas and Z. Tian, "Congestion-Tolerant framework for IoT Applications," *Invited Paper*, 16th IEEE International Conference on Mobile Ad-Hoc and Smart Systems (*IEEE MASS'19)*, pp. 245 – 255 , Monterey, CA, November 4–7, 2019**
5. **C. Liu and Z.J. Haas, "Multi-hop Routing Protocols for RFID Systems with Tag-to-Tag Communication," *36th IEEE Military Communications Conference*, Baltimore, MD, October 23–25, 2017; DOI: 10.1109/MILCOM.2017.8170764**
6. **C. Liu and Z.J. Haas, "Routing Protocol Design in Tag-to-Tag Networks with Capability-enhanced Passive Tags," *IEEE International Symposium on Personal, Indoor and Mobile Radio Communications*, Montreal, QC, Canada, October 8-13, 2017**
7. **Z. Zheng and Z.J. Haas, "On the Improvement of Spectral Efficiency in Mobile Networks: Rate and Mobility Analysis," *51st Annual Conference on Information Sciences and Systems*, Johns Hopkins University, Whiting School of Engineering's Department of Electrical and Computer Engineering, Baltimore, MD, March 22-24, 2017; DOI: 10.1109/CISS.2017.7926073**
8. **C. Hasan and Z.J. Haas, "Deadline-aware Energy Management in Data Centers," *8th IEEE International Conference on Cloud Computing Technology and Science (CloudCom)*, Luxembourg, December 12 – 15, 2016**
9. **J. Ugirumurera and Z. J. Haas, "Optimal Capacity Sizing for a Completely Green Village with Programmable Appliances," *PowerEnergy2016*, Charlotte, NC, June 26-30, 2016**
10. **Z. Zhong, L. Wei, Z.J. Haas, and V. Tarokh, "Transmit Beamforming in Rayleigh Product MIMO Channels: Ergodic Mutual Information and Symbol Error Rate," *IEEE ICC 2016*, Kuala Lampur, Malaysia, May 23-27, 2016**
11. **Z.J. Haas and S. Gu, "On Power Management Policies for Data Centers," *2015 IEEE International Conference on data Science and Data Intensive Systems (DSDIS), 11th IEEE International Conference on Green Computing and Communications (GreenCom 2016)*, Sydney, NSW, Australia, Dec 11-13, 2015, DOI: 10.1109/DSDIS.2015.82**
12. **Z.J. Haas and A. Yousefpour, "A Privacy Scheme for Monitoring Devices in the Internet of Things," Second International Summit, IoT 360° 2015, Rome, Italy, October 27-29, 2015**
13. **H. Chenji, Z.J. Haas, and P. Xue, "Low Complexity QoE-aware Bandwidth Allocation for Wireless Content Delivery," *IEEE MILCOM 2015*, Tampa, FL, Oct. 26-28, 2015**

14. **J. Ugirumurera and Z. J. Haas, "Power Scheduling for Programmable Appliances in Microgrids," *IEEE CAMAD 2015*, Special Session on ICT-Based Solutions for the Smart Energy Grid, September 7-9, 2015, University of Surrey, Guildford, UK**
15. **H. Chenji and Z.J. Haas, "Enhancement of Wireless Bandwidth Utilization through User's QoE," in Proceedings of *IEEE Wireless Communications and Networking Conference (WCNC 2015)*, New Orleans, LA, March 9-12, 2015**
16. **S. N. Premnath and Z.J. Haas, "A Practical, Secure, and Verifiable Cloud Computing for Mobile Systems," in Proceedings of *11th International Conference on Mobile Systems and Pervasive Computing (MobiSPC'14)*, Procedia Computer Science, volume 34, 2014, Pages 474–483, DOI: 10.1016/j.procs.2014.07.033.**
17. **M. Nikolov and Z.J. Haas, "Collaborating with Correlation for Energy Efficient WSN," *The First ACM Annual International Workshop on Mission-oriented Wireless Sensor Networking (ACM MiSeNet 2012)*, in conjunction with *ACM MobiCom 2012*, Istanbul, Turkey, August 26, 2012, DOI: 10.1145/2348656.2348665 (technical program)**
18. **G.E. Arrobo, Z.J. Haas, and R.D. Gitlin, "Temporal Diversity Coding for Improving the Performance of Wireless Body Area Networks," 7th International Conference on Body Area Networks (*BodyNets 2012*), Oslo, Norway, September 24–26, 2012**
19. **Q. Wang and Z.J. Haas, "Analytical Model of Epidemic Routing for Delay-Tolerant Networks," *ACM MSWiM 2012* Workshop on *High Performance Mobile Opportunistic Systems* (*HP-MOSys 2012*), Paphos, Cyprus, October 21-25, 2012**
20. **Z.J. Haas and M. Nikolov, "Towards Optimal Broadcasting in Wireless Networks," *14th ACM* International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (*MSWiM 2011)*, Miami Beach, FL, October 31 – November 4, 2011, pp. 213-222**
21. **G. Arrobo, R. D. Gitlin, and Z.J. Haas, "Effect of Link-Level Feedback and Retransmissions on the Performance of Cooperative Networking," *IEEE WCNC*, Quintana-Roo, Mexico, March 28-31, 2011, pp. 1131 - 1136**
22. **G. Arrobo, R. D. Gitlin, and Z.J. Haas, "Cooperative Network Coding," 2010 ONR Naval Science & Technology Partnership Conference, Poster Session, Hyatt Regency Crystal City, Arlington, VA, November 8-10, 2010**
23. **Z.J. Haas and T-C. Chen, "Cluster-based Cooperative Communication with Network Coding in Wireless Networks," *IEEE MILCOM 2010*, San Jose, CA, October 31 – November 3, 2010, pp. 2082−2089; DOI: 10.1109/MILCOM.2010.5680471**
24. **S-K. Yoon and Z.J. Haas, "Application of Linear Coding in Delay Tolerant Networks," *The Second International Conference on Ubiquitous and Future Networks (ICUFN 2010), Invited Paper*, Jeju Island, South Korea, June 16-18, 2010**
25. **M.Z. Chowdhury, Y. M. Jang, and Z.J. Haas, "Interference Mitigation Using Dynamic Frequency Re-use for Dense Femtocell Network Architectures," *The Second International Conference on Ubiquitous and Future Networks (ICUFN 2010)*, Jeju Island, South Korea, June 16-18, 2010; DOI:10.1109/ICUFN.2010.5547193**
26. **Ivan S. Lysiuk and Zygmunt J. Haas, "Controlled Gossiping in Ad Hoc Networks," *IEEE WCNC*, Sydney, Australia, April 18-21, 2010, DOI: 10.1109/WCNC.2010.5506346**
27. **M.Z. Chowdhury, M.J. Yeong, and Z.J. Haas, "Call Admission Control based on adaptive bandwidth allocation for multi-class services in wireless networks," 2010 International Conference on Information and Communication Technology Convergence (ICTC), pp. 358−361, Jeju Island, South Korea, Nov. 17−19, 2010**
28. **S-K. Yoon, Z.J. Haas, and J.H. Kim, "Tradeoff between Energy Consumption and Lifetime in Delay-Tolerant Mobile Networks," *IEEE Military Communications Conference (MILCOM)*, San Diego, CA, November 17-19, 2008**



Headwater Research LLC
Ex. 2010, IPR2023-01336

29. **Z.J. Haas, and E.Y. Hua, "Residual Link Lifetime Prediction for Best Path Selection in Mobile Ad Hoc Networks," *The 27th Conference on Computer Communications (IEEE INFOCOM 2008), Mini-conference*, Phoenix, AZ, April 14, 2008**
30. **M. Elhawary and Z.J. Haas, "Busy Tone Multi Channel (BTMC): a New Multi Channel MAC protocol for Ad Hoc Networks," 6th Annual IEEE International Conference on Pervasive Computing and Communications (PerCom'08), Poster Session, Hong Kong, March 17 - 21, 2008, pp 234-238**
31. **S-K Yoon and Z.J. Haas, "Efficient Tradeoff of Restricted Epidemic Routing in Mobile Ad-Hoc Networks," *IEEE Military Communications Conference (MILCOM)*, Orlando, FL, October 29-31, 2007, Digital Object Identifier 10.1109/MILCOM.2007.4455272**
32. **Ke Shi and Zygmunt J. Haas, "Quantitative Analysis of Partition Statistics and their Impact on Data Replication in MANETs," 6th International Symposium on Parallel and Distributed Computing (ISPDC 2007), Hagenberg, Austria, July 5-8, 2007, pp. 359−366**
33. **J. Jeong, G.Y Lee, and Z.J. Haas, "Prevention of Black-Hole Attack Using One-Way Hash Chain Scheme in Ad Hoc Networks," *International Conference on Information Networking (ICOIN)*, Estoril, Portugal, January 22-25, 2007**
34. **X. Zhang, X. Du, and Z. Haas, "Performance Evaluation of Sip-Based Session Establishment Over DSR-Routed MANETs," in Proceedings of *IEEE MILCOM 2006*, Washington, DC, October 23-25, 2006; DOI: 10.1109/MILCOM.2006.301985**
35. **Chris Davis, Zygmunt J. Haas, and Stuart D. Milner, "On How to Circumvent the MANET Scalability Curse," in Proceedings of *IEEE MILCOM 2006*, Washington, DC, October 23-25, 2006; DOI: 10.1109/MILCOM.2006.302358**
36. **P. Papadimitratos, J.-P. Hubaux, and Z.J, Haas, "How to Specify and How to Prove Correctness of Secure Routing Protocols for MANET," *Invited Paper, 3rd International Conference on Broadband Communications, Networking and Systems (BroadNets 2006)*, San Jose, CA, October 1-5, 2006; (also: arXiv:0912.5497v1) DOI: 10.1109/BROADNETS.2006.4374344**
37. **Qin Wang and Zygmunt J. Haas, "BASS: an adaptive sleeping scheme for wireless sensor network with bursty arrival," International Wireless Communications and Mobile Computing Conference (IWCMC 2006), Vancouver, British Columbia, Canada, July 3-6, 2006, pp. 945-950**
38. **Z.J. Haas and T. Small, "Evaluating the Capacity of Resource-Constrained DTNs," International Wireless Communications and Mobile Computing Conference (IWCMC 2006) – International Workshop on Delay Tolerant Mobile Networks (DTMN) Vancouver, British Columbia, Canada, July 3-6, 2006, pp. 545-550; DOI: 10.1145/1143549.1143658**
39. **J. Oh and Z.J. Haas, "Personal Environment Service for Mobile Users," in Proceedings of 64th *IEEE Vehicular Technology Conference, VTC Fall 2006*, Montréal, Québec, Canada, September 25-28, 2006, DOI: 10.1109/VTCF.2006.588**
40. **S.M.N Alam and Z.J. Haas, "Coverage and Connectivity in Three-Dimensional Networks," the *Twelfth Annual International Conference on Mobile Computing and Networking (ACM MOBICOM'06)*, Los Angeles, CA, September 23-29, 2006, pp.346-357**
41. **E. Hua and Z.J. Haas, "Path Selection Algorithm in Homogeneous Mobile Ad Hoc Networks," *ACM International Wireless Communications and Mobile Computing Conference (IWCMC 2006)*, Vancouver, BC, Canada, July 7-10, 2006, pp. 275-280**
42. **G.Y Lee, Y. Lee, and Z. J. Haas, "Multi-States Based Hybrid Location Update Strategy in Wireless Communication System," *IEEE Wireless Communications and Networking Conference (WCNC 2006)*, Las Vegas, NV, April 3-6, 2006 , pp. 599-605 (program)**
43. **Hua, E. Y., and Haas, Z. J., "Study of the Effects of Mobility on Residual Path Lifetime in Mobile Ad Hoc Networks," *2nd IEEE Upstate New York Workshop on Communications and***

*Networking,* **Rochester Institute of Technology, Rochester, NY, November 18, 2005, pp.33-37 (cfp)**

44. **Z.J. Haas and R. Barr, "Scalable Ad Hoc Network Broadcast,"** ***16th Annual IEEE International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC 2005),*** **International Congress Center (ICC), Berlin, Germany, September 11-14, 2005**
45. **C. Zou and Z.J. Haas, "Optimal Resource Allocation for UWB Wireless Ad Hoc Networks,"** ***16th Annual IEEE International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC 2005),*** **International Congress Center (ICC), Berlin, Germany, September 11-14, 2005; DOI: 10.1109/PIMRC.2005.1651477**
46. **Y. Lee and Z.J. Haas, "Authentication in Very Large Ad Hoc Networks using Randomized Groups,"** ***16th Annual IEEE International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC 2005),*** **International Congress Center (ICC), Berlin, Germany, September 11-14, 2005; DOI: 10.1109/PIMRC.2005.1651788**
47. **Z.J. Haas and R. Barr, "Density-independent, Scalable Search in Ad Hoc Networks,"** ***16th Annual IEEE International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC 2005),*** **International Congress Center (ICC), Berlin, Germany, September 11-14, 2005; DOI: 10.1109/PIMRC.2005.1651669**
48. **T. Small and Z.J. Haas, "Resource and Performance Tradeoffs in Delay-Tolerant Wireless Networks,"** ***ACM SIGCOMM'05,*** **workshop on** ***Delay Tolerant Networking and Related Topics*** **(WDTN-05), Philadelphia, PA, August 22-26, 2005**
49. **H-Y. Wei, S. Ganguly, R. Izmailov, and Z.J. Haas, "Interference-Aware IEEE 802.16 WiMax Mesh Networks,"** ***61st IEEE Vehicular Technology Conference (VTC 2005 Spring),*** **Stockholm, Sweden, May 29-June 1, 2005; pp. 3102–3106 (session)**
50. **P. Papadimitratos and Z.J. Haas, "Secure on-demand distance vector routing in ad hoc networks," IEEE Sarnoff Symposium on Advances in Wired and Wireless Communication, Princeton, NJ, April 18-19, 2005; pp. 202-205; DOI: 10.1109/SARNOF.2005.1426537**
51. **P. Papadimitratos and Z.J. Haas, "Secure route discovery for QoS-aware routing in ad hoc networks," IEEE Sarnoff Symposium on Advances in Wired and Wireless Communication, Princeton, NJ, April 18-19, 2005; pp. 214-217; DOI: 10.1109/SARNOF.2005.1426539**
52. **Dong-Sung Kim and Zygmunt J. Haas, "Virtual Factory Communication System and Its Application to Networked Factory Machine," the 30th Annual Conference of the IEEE Industrial Electronics Society (IECON'04), FC4-5, Paradise Hotel, Busan, Korea, November 2-6, 2004, pp. 2389−2393; DOI: 10.1109/IECON.2004.1432174**
53. **R. Barr, Z.J. Haas, and R. van Renesse, "JiST: Embedding Simulation Time into a Virtual Machine," 5th EUROSIM Congress on Modelling and Simulation (EuroSim'04), Paris, France, September 6-10, 2004**
54. **J. Cho and Z.J. Haas, "Impact of Concurrent Transmissions on Downstream Throughput in Multi-hop Cellular Networks," 2004 IEEE International Conference on Communications (ICC 2004), Paris, France, June 20-24, 2004, vol. 6, no. 1, pp. 3748-3753**
55. **T. Small and Z.J. Haas, "Designing Markov Models for Mobile Sensor Systems," First IEEE Upstate NY Workshop on Communications and Networking," Rochester, NY, November 12, 2004, pp. 172-176**
56. **Z.J. Haas, "Multipath Routing -- A Cross-Layer Design Tool for QoS Provisioning in MANETs," poster session,** ***Cross-Layer Issues in the Design of Tactical Mobile Ad Hoc Wireless Networks,*** **Naval Research Office, Washington, DC, June 2-3, 2004**



Headwater Research LLC
Ex. 2010, IPR2023-01336

57. **O. Arpacioglu and Z.J. Haas, "On the scalability and capacity of wireless networks with omnidirectional antennas," *3rd International Symposium on Information Processing In Sensor Networks (IPSN 2004),* Berkeley, CA, April 26-27, 2004, pp.169-177**
58. **J. Deng, P. K. Varshney, and Z. J. Haas, "A new backoff algorithm for the IEEE 802.11 distributed coordination function," in Proceedings of the Communication Networks and Distributed Systems Modeling and Simulation (CNDS'04) Conference, San Diego, CA, January 18-24, 2004**
59. **J. Deng, Y.S. Han, and Z.J. Haas, "Analyzing Split Channel Medium Access Control Schemes with ALOHA Reservations," Second International Conference on Ad-Hoc Networks and Wireless (ADHOC-NOW'03), Montreal, Canada, October 8 -10, 2003, pp.128−139**
60. **J. Cho and Z.J. Haas, "Throughput Enhancement by the Multi-hop Relaying in Cellular Radio Networks with Non-uniform Traffic Distribution," 58th IEEE Vehicular Technology Conference (VTC'03-Fall), Orlando, FL, October 4-9, 2003, vol. 5, pp. 3065–3069; DOI: 10.1109/VETECF.2003.1286187**
61. **H. Inaltekin and Z.J. Haas, "The Analysis of Power-Controlled MAC Layer for Wireless Ad-hoc Networks," 58th IEEE Vehicular Technology Conference (VTC'03-Fall), Orlando, FL, October 4-9, 2003, vol. 3, pp.1406−1411; DOI: 10.1109/VETECF.2003.1285256**
62. **S. Lee, A. Ahmad, K. Kim, and Z.J. Haas, "A Novel Packet Scheduling in an Enhanced Joint CDMA/NC-PRMA Protocol for Wireless Multimedia Communications," 58th IEEE Vehicular Technology Conference (VTC'03-Fall), Orlando, FL, October 4-9, 2003, vol. 5, pp. 3493−3497; DOI: 10.1109/VETECF.2003.1286369**
63. **P. Papadimitratos and Z.J. Haas, "Secure Data Transmission in Mobile Ad Hoc Networks," ACM Workshop on Wireless Security (WiSe 2003), San Diego, CA, September 19, 2003, pp. 41−50; DOI: https://doi.org/10.1145/941311.941318**
64. **T. Small and Z.J. Haas, "The Shared Wireless Infostation Model -- A New Ad Hoc Networking Paradigm (or Where there is a Whale, there is a Way)," *ACM MOBIHOC'03,* Annapolis, Maryland, June 1-3, 2003, pp 233–244; DOI: 10.1145/778415.778443**
65. **V. Ramasubramanian, Z.J. Haas, and E.G. Sirer, "SHARP: A Hybrid Adaptive Routing Protocol for Mobile Ad Hoc," 4th ACM international symposium on Mobile Ad Hoc Networking & Computing *(MOBIHOC'03),* Annapolis, Maryland, June 1-3, 2003, pp. 303-314; DOI: 10.1145/778415.778450**
66. **Jiandong Li, Zygmunt J. Haas, and Ben Liang, "Performance Analysis of Random Database Group Scheme for Mobility Management in Ad hoc Network," IEEE International Conference on Communications (ICC'03), Anchorage, Alaska, May 11–15, 2003, pp. 313-317; DOI: 10.1109/ICC.2003.1204191**
67. **Ben Liang and Zygmunt J. Haas, "Optimizing Route-Cache Lifetime in Ad Hoc Networks," IEEE INFOCOM 2003, San Francisco, CA, March 30 – April 3, 2003**
68. **Jiandong Li, Zygmunt J. Haas, Min Sheng, and Yanhui Chen, "Performance Evaluation of Modified IEEE 802.11 MAC for Multi-Channel Multi-hop Ad Hoc Network," 17th International Conference on Advanced Information Networking and Applications (AINA 2003), Xidian University, Xian, China, March 27-29, 2003, pp.312−317**
69. **P. Papadimitratos and Z.J. Haas, "Secure Link State Routing for Mobile Ad Hoc Networks," Workshop on Security and Assurance in Ad hoc Networks (WSAAN'03), in conjunction with *International Symposium on Applications and the Internet,* pp. 379−383, Orlando, FL, January 28, 2003; DOI: 10.1109/saintw.2003.1210190**
70. **Z. Wang, Z.J. Haas, and R. J. Thomas, "Bluenet II - A Detailed Realization of the Algorithm and Performance Analysis," Hawaii International Conference in System Sciences (HICSS-36), Hilton Waikoloa Village, Big Island, Hawaii, January 6-9, 2003**

71. **J. Li, Z.J. Haas, and M. Sheng, "Capacity Evaluation of Multi-Channel Multi-Hop Ad Hoc Networks," IEEE International Conference on Personal Communications (ICPWC 2002), New Delhi, India, December 15−17, 2002**
72. **B. Liang, M. Pearlman, J. Deng, and Z.J. Haas, "Elective Participation in Ad Hoc Networks Based on Energy Consumption," IEEE GLOBECOM 2002, Ad Hoc Networks Symposium, vol. 1, pp. 26-31, Taipei, Taiwan, November 17-21, 2002, pp. 26−31;** DOI: **10.1109/GLOCOM.2002.1188035**
73. **B. Liang and Z.J. Haas, "Minimizing the Routing Delay in Ad Hoc Networks through Route-Cache TTL Optimization," Networking Technologies, Services, and Protocols; Performance of Computer and Communication Networks; Mobile and Wireless Communications (NETWORKING 2002), pp. 1153–1158 also in Lecture Notes in Computer Science, LNCS, vol. 2345, Springer, Berlin, Heidelberg** DOI: **10.1007/3-540-47906-6_100**
74. **P. Samar and Z.J. Haas, "Strategies for Broadcasting Updates by Proactive Routing Protocols in Mobile Ad hoc Networks," IEEE MILCOM 2002, Anaheim, CA, October 7−10, 2002**
75. **M. Pearlman, Z. Haas, P. Sholander, and S.S. Tabrizi, "Alternate Path Routing in Mobile Ad Hoc Networks," IEEE MILCOM 2002, Anaheim, CA October 7−10, 2002**
76. **P. Papadimitratos and Z.J. Haas. "Performance Evaluation of Secure Routing Protocol for Mobile Ad Hoc Networks," Poster presentation in the First ACM Workshop on Wireless Security (WiSe'02), in conjunction with ACM MobiCom 2002, Atlanta, GA, September 28, 2002.**
77. **Z. Haas, J .Y. Halpern, and L. Li, "Gossip-based Ad Hoc Routing," IEEE INFOCOM 2002, New York, NY, June 23−27, 2002**
78. **P. Papadimitratos, Z.J. Haas, and E.G. Sirer, "Path Set Selection in Mobile Ad Hoc Networks," 3rd ACM International Symposium on Mobile Ad Hoc Networking & Computing (MobiHoc'02), June 9−11, 2002, EPFL, Lausanne, Switzerland, pp. 1−11; DOI: https://doi.org/10.1145/513800.513802**
79. **P. Papadimitratos and Z.J. Haas, "Secure routing for mobile ad hoc networks," SCS Communication Networks and Distributed Modeling and Simulation Conf., (CNDS 2002), San Antonio, TX, January 27−31, 2002**
80. **Z. Wang, R.J. Thomas, and Z. Haas, "BlueNet – a new scatternet formation scheme," Hawaii International Conference in System Sciences (HICSS-35), Big Island, Hawaii, January 7−10, 2002**
81. **S. Sajama and Z.J. Haas, "Independent-tree ad hoc multicast routing (ITAMAR)," *54th Vehicular Technology Conference (VTC 2001 Fall)*, pp.(vol.2) 600-604, Atlantic City, NJ, October 7−11, 2001**
82. **B. Krishnamachari, R.-H. Gau, S.B. Wicker, and Z.J. Haas, "On the performance of Sequential Paging for Mobile User Location," *54th Vehicular Technology Conference (VTC 2001 Fall)*, pp. 92-96, Atlantic City, NJ, October 7−11, 2001; DOI: 10.1109/VTC.2001.956562**
83. **A. Tsirigos and Z.J. Haas, "Multipath Routing in Mobile Ad Hoc Networks or How to Route in the Presence of Topological Changes," *IEEE MILCOM 2001*, Tyson Corner, McLean, VA, October 28−31, 2001**
84. **M.R. Pearlman, Z.J. Haas, P. Scholander, and S.S. Tabrizi, "On the Impact of Alternate Path Routing for Load Balancing in Mobile Ad Hoc Networks," *ACM MobiHoc' 2000*, Boston, MA, August 11, 2000, pp.3–10; DOI: 10.1109/MOBHOC.2000.869207**
85. **Z. Haas, J.Y. Halpern, Li Li, and S.B. Wicker, "A decision-theoretic approach to resource allocation in wireless multimedia networks," 4th international workshop on Discrete**



Headwater Research LLC
Ex. 2010, IPR2023-01336

**algorithms and methods for mobile computing and communications (DIAL-M'00), pp. 86–95, Boston, MA, August 11, 2000; (program) DOI: 10.1145/345848.345870**

86. **B. Liang and Z.J. Haas, "Virtual Backbone Generation and Maintenance in Ad Hoc Network Mobility Management," IEEE INFOCOM 2000, March 26-30, 2000, pp.1293-1302;** DOI: **10.1109/INFCOM.2000.832522**
87. **Z. J. Haas, J. Deng, and S. Tabrizi, "Collision-free Medium Access Control Scheme for Ad Hoc Networks," *IEEE Military Communications Conference (MILCOM '99),* vol. 1, pp. 276-280, Atlantic City, NJ, October 31 - November 3, 1999; DOI: 10.1109/MILCOM.1999.822687**
88. **Z.J. Haas and D.A. Dyson, "On the performance of the dynamic packet reservation multiple access scheme," *IEEE Military Communications Conference (MILCOM '99),* vol. 1, pp. 256–260, Atlantic City, NJ, October 31 - November 3, 1999; DOI: 10.1109/MILCOM.1999.822683**
89. **Z.J. Haas and Y-B. Lin, "Demand re-registration for PCS database restoration," *IEEE Military Communications Conference (MILCOM '99),* pp. 887–892, Atlantic City, NJ, October 31 - November 3, 1999; DOI: 10.1109/MILCOM.1999.821331**
90. **M. Sanchez, P. Manzoni, and Z. J. Haas, "Determination of Critical Transmission Range in Ad-Hoc Networks," Workshop on *Multiaccess, Mobility and Teletraffic for Wireless Communications (MMT'99),* Venice, Italy, October 6–8, 1999**
91. **Z. J. Haas and J. Deng, "Dual Busy Tone Multiple Access (DBTMA) - Performance Results," *IEEE Wireless Communications and Networking Conference (WCNC '99),* vol. 3, pp. 1328-1332, New Orleans, LA, USA, September 21–24, 1999**
92. **Z.J. Haas and M. Pearlman, "The Performance of Query Control Schemes for the Zone Routing Protocol," *ACM DIALM 1999,* pp. 23–29, Seattle, WA, August 20, 1999**
93. **Z.J. Haas and B. Liang, "Ad-hoc mobility management with randomized database groups," IEEE International Conference on Communications (ICC'99), pp. 1756–1762, Vancouver, BC, Canada, June 6–10, 1999; DOI: 10.1109/ICC.1999.765546**
94. **Z. J. Haas and J. Deng, "Dual Busy Tone Multiple Access (DBTMA) - Performance Evaluation," *IEEE 49th Vehicular Technology Conference (VTC '99),* Houston, TX, USA, May 16-20, 1999, vol. 1, pp. 314–319**
95. **B. Liang and Z.J. Haas, "Predictive distance-based mobility management for PCS networks," IEEE INFOCOM, March 21-25, 1999, New York, NY, pp. 1377–1384, DOI: 10.1109/INFCOM.1999.752157**
96. **Z.J. Haas and Z. Tabrizi, "On some challenges and design choices in ad-hoc communications," *IEEE MILCOM 1998,* Boston, MA October 19–21, 1998; DOI: 10.1109/MILCOM.1998.722569 (session)**
97. **Z.J. Haas and Y-B. Lin, "On optimizing the location update costs in the presence of database failures," 9th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'98), pp. 650–654 , Boston, MA, Sept. 8–11, 1998; DOI: 10.1109/PIMRC.1998.734326**
98. **Z.J. Haas and M.R. Pearlman, "The performance of query control schemes for the zone routing protocol," ACM conference on Applications, technologies, architectures, and protocols for computer communication (SIGCOMM '98), pp. 167–177, Vancouver, British Columbia, Canada, Aug. 31–Sept. 04, 1998; DOI: 10.1145/285237.285279 (program)**
99. **J. Deng and Z. J. Haas, "Dual Busy Tone Multiple Access (DBTMA): A New Medium Access Control for Packet Radio Networks," IEEE *International Conference on Universal Personal Communications (ICUPC '98),* volume 2, pages 973–977, October 5–9, 1998, (conference); DOI: 10.1109/ICUPC.1998.733652**

100. **Z.J. Haas and M.R. Pearlman, "The Performance of a New Routing Protocol for the Reconfigurable Wireless Networks," 1998 IEEE International Conference on Communications (ICC'98), pp. 156–160, Atlanta, GA, June 7−11, 1998, DOI: 10.1109/ICC.1998.682608 (session) (cfp)**
101. **Z.J. Haas and D.A. Dyson, "The dynamic packet reservation multiple access scheme for multimedia traffic," 1998 IEEE International Conference on Communications (ICC'98), pp. 1640–1644, Atlanta, GA, June 7−11, 1998, DOI: 10.1109/ICC.1998.683108 (session) (cfp)**
102. **Z.J. Haas and C-P. Li, "Study of the outage probability of the multiply-detected macrodiversity scheme," IEEE International Conference on Communications (ICC'98), pp. 1365–1369, Atlanta, GA, June 7−11, 1998, DOI: 10.1109/ICC.1998.683049 (session) (cfp)**
103. **Z.J. Haas and C.-P. Li, "Improving the Performance of IS-54/136 through the Use of the MDM Scheme," 48th IEEE Vehicular Technology Conference, Pathway to Global Wireless Revolution (VTC'98), Ottawa, Ontario, Canada, May 18–21, 1998, pp. 1080-1084; DOI: 10.1109/VETEC.1998.686406**
104. **Z.J. Haas and M.R. Pearlman, "On the performance of a routing protocol for the reconfigurable wireless network," 48th IEEE Vehicular Technology Conference, Pathway to Global Wireless Revolution (VTC'98), Ottawa, Ontario, Canada, May 18–21, 1998, pp. 102–106; DOI: 10.1109/VETEC.1998.686483**
105. **Z.J. Haas and D.A. Dyson, "Z.J. Haas and M.R. Pearlman, "On the performance of a routing protocol for the reconfigurable wireless network," 48th IEEE Vehicular Technology Conference, Pathway to Global Wireless Revolution (VTC'98), Ottawa, Ontario, Canada, May 18–21, 1998, pp. 1121–1126; DOI: 10.1109/VETEC.1998.686414**
106. **Z.J. Haas, "On the Performance of a Medium Access Control Scheme for the Reconfigurable Wireless Networks," IEEE MILCOM'97, Monterey, CA, November 3–5, 1997; DOI: 10.1109/MILCOM.1997.645029**
107. **D.A. Dyson and Z.J. Haas, "A Dynamic Packet Reservation Multiple Access Scheme for Wireless ATM," IEEE MILCOM'97, Monterey, CA, November 3–5, 1997; DOI: 10.1109/MILCOM.1997.646708**
108. **Z.J. Haas, "A New Routing Protocol for the Reconfigurable Wireless Networks," IEEE ICUPC'97, San Diego, CA, October 12–16, 1997, pp. 562–566; DOI: 10.1109/ICUPC.1997.627227**
109. **Z.J. Haas and P. Agrawal, "Mobile-TCP: An Asymmetric Transport Protocol Design for Mobile Systems," IEEE ICC'97, Montreal, Quebec, Canada, June 8–12, 1997, pp.1054–1058;** DOI: **10.1109/ICC.1997.610040**
110. **Z.J. Haas, "The Relaying Capability of the Reconfigurable Wireless Networks," IEEE Vehicular Technology Conference, IEEE 47th Vehicular Technology Conference (VTC'97), vol. 2, pp. 1148–1252, Phoenix, AZ, May 4–7, 1997**
111. **Z.J. Haas, "The Medium Access Control for the Reconfigurable Wireless Networks," Sixth WINLAB Workshop on Third Generation Wireless Information Networks, New Brunswick, NJ, March 20-21, 1997**
112. **Z.J. Haas and C-.P. Li, "On the Performance Evaluation of the Multiply-Detected Macrodiversity Scheme for Wireless Cellular Networks," IEEE GLOBECOM'96, pp. 224–228, London, United Kingdom, November 18–22, 1996; DOI: 10.1109/GLOCOM.1996.594364**
113. **Z.J. Haas and C.-P. Li, "The Case for Multiply-Detected Macrodiversity Scheme in Mobile Systems," *IEEE Military Communications Conference (MILCOM'96),* pp. 928–932, McLean, VA, October 21-24, 1996; DOI: 10.1109/MILCOM.1996.571418**

114. **Z.J. Haas, "Mobile-TCP: An Asymmetric Transport Protocol Design for Mobile Systems," 3rd International Workshop on Mobile Multimedia Communications -- MoMuc-3, Princeton, NJ, September 25–27, 1996; (program)**
115. **Z.J. Haas and C.-P. Li, "A Simple Scheme to Improve the Performance of Your Cellular System," IEEE PIMRC'96, pp. 813–817, Taipei, Taiwan, October 15–18, 1996; DOI: 10.1109/PIMRC.1996.568394**
116. **Z.J. Haas and C.-P. Li, "The Multiply-Detected Macrodiversity Scheme for Wireless Systems," IEEE International Conference on Universal Personal Communications, ICUPC'96, Cambridge, MA, September 29 – October 2, 1996, pp. 255-259; DOI: 10.1109/ICUPC.1996.557881**
117. **Z.J. Haas, "Location-Independent Access in Mobile Systems," ICC'96, pp. 255–259, Dallas, TX, June 23–27, 1996; DOI: 10.1109/ICC.1996.542193**
118. **A. Ganz, Z.J. Haas, and C. M. Krishna, "Multi-Tier Wireless Networks for PCS," IEEE Vehicular Technology Conference, Atlanta, GA, pp. 436–440, April 29, 1996 - May 1, 1996; DOI: 10.1109/VETEC.1996.503485**
119. **Z.J. Haas, "The Progressive Execution Technique for Mobile Systems," IEEE MILCOM'95, pp. 501–507, San-Diego, CA, November 5-8, 1995; DOI:10.1109/MILCOM.1995.483517**
120. **M.J. Karol, Z.J. Haas, and C.B. Woodworth, "Performance Advantages of Time-Frequency-Sliced Systems," 6th International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'95), pp. 1104–1111, Toronto, Canada, September 27-29, 1995; DOI: 10.1109/PIMRC.1995.477319**
121. **Z.J. Haas and S. Paul, "Limited-lifetime shared-access in mobile systems," IEEE International Conference on Communications (ICC'95), Seattle, WA, June 18-22, 1995, pp. 1404–1408; DOI: 10.1109/ICC.1995.524434**
122. **Z.J. Haas, J. H. Winters, and D. S. Johnson, "Additional Results of the Capacity Bounds in Cellular Systems," GLOBECOM'94, San Francisco, CA, November 29 - December 1, 1994, pp. 1652–1658; DOI: 10.1109/GLOCOM.1994.513156**
123. **Z.J. Haas, "On the Design of a Mobile System," MOBIDATA Workshop, Rutgers University, Piscataway, NJ, November 1, 1994; (program) (attendees)**
124. **Z.J. Haas, "MobiNet: The Mobile Computing Environment," AT&T Workshop on Wireless Communications and Mobile Computing, Holmdel, NJ, October 3-4, 1994**
125. **Z.J. Haas and S. Paul, "Secure Access to Electronic Newspaper," 5th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'94), Wireless Networks, pp. 805–809, The Hague, Holland, September 19-23, 1994; DOI: 10.1109/WNCMF.1994.529075**
126. **Z.J. Haas, J. H. Winters, and D. S. Johnson, "Simulation Study of Capacity Bounds in Cellular Systems," PIMRC'94, The Hague, Holland, September 19-23, 1994, paper no. B.7.2, vol. 4. pp. 1114-1120**
127. **C. B. Woodworth, M. J. Karol, Z.J. Haas, and R. D. Gitlin, "Spectrally Efficient Universal Time Slots Using Time-Frequency-Code Slicing," 5th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, (PIMRC'94), pp 1009–1013, The Hague, Holland, September 19-23, 1994; DOI: 10.1109/WNCMF.1994.529110**
128. **Z.J. Haas, J. H. Winters, and D. S. Johnson, "Simulation Results of Cellular Capacity Bounds," 5th Maryland Workshop on Very High Speed Networks, Baltimore, MD, March 14-16, 1994**

129. R. Izmailov and Z. Haas, "Performance Evaluation of the Optical Staggering Switch," GLOBECOM'93, Houston, TX, November 29 - December 3, 1993; DOI: 10.1109/GLOCOM.1993.318111
130. Z. Haas and C-L. I, "On Handoffs in Packetized Wireless Systems," GLOBECOM'93, Houston, TX, pp. 1808–1814, November 29 – December 2, 1993
131. Zygmunt Haas, "Comparison of feedforward and feedback configurations of the staggering switch architecture," 1993 SPIE International Symposium on Optics, Imaging, and Instrumentation, Multigigabit Fiber Communication Systems, pp. 244–256, November 1, 1993, San Diego, CA; DOI: 10.1117/12.161329
132. Z. Haas and C-L. I, "On Handoffs in Packetized Wireless Systems," ICUPC'93, Ottawa, Ontario, Canada, October 12-15, 1993
133. Z. Haas, "Comparison of Feedforward and Feedback Configurations of the *Staggering Switch* Architecture," 31st Annual Allerton Conference on Communication, Control, and Computing, September 29 - October 1, 1993, pp. 556–565, Allerton House, Monticello, IL (Table of Content)
134. Z.J. Haas, J.H. Winters, and D.S. Johnson, "On the Capacity Bounds in Cellular Systems," *Invited Paper*, 31st Annual Allerton Conference on Communication, Control, and Computing, September 29 - October 1, 1993, pp. 868–877, Allerton House, Monticello, IL (Table of Content)
135. Z. Haas, "Growability of the `Staggering Switch' Architecture," IEEE International Conference on Communications (ICC), Geneva, Switzerland, 23-26 May 1993, DOI: 10.1109/ICC.1993.397330
136. Z. Haas and C-L. I, "On Handoffs in Packetized Wireless Systems," VTC'93, Secaucus, NJ, May 18-20, 1993
137. Z. Haas, "Extensions to the Staggering Switch Architecture," INFOCOM'93, San-Francisco, CA, March 30-April 2, 1993
138. J. Winters, Z. Haas, M. Santoro, and A. Gnauck "Optical Equalization of Polarization Dispersion," SPIE'92, Boston, MA, September 8-9, 1992; also published in Proceedings of SPIE, Multigigabit Fiber Communications, L.G. Kazovsky and K. Liu, eds., volume 1787, December 17, 1992; DOI: 10.1117/12.139326
139. Z. Haas, "The 'staggering switch': an 'almost-all' optical packet switch," IEEE Globecom'92 – Communications for Global Users, Orlando, FL, December 6-9, 1992, pp. 1593 – 1599; DOI: 10.1109/GLOCOM.1992.276656
140. J. Winters, M. Santoro, and Z. Haas, "On the Experimental Measurements of PMD Effects," SPIE'92, vol. 1784, pp. 31–40, Boston, MA, September 8-9, 1992
141. Z. Haas, "The Staggering Switch: An Almost-all Optical Packet Switch," *OFC'92 Tech. Digests*, p. 133, San Jose, CA, Feb. 2-7, 1992
142. Z. Haas, "On the Design of the `Staggering Switch'," *LEOS 1992 Summer Topical Meeting Digest on Optical Multiple Access Networks*, Santa Barbara, CA, pp.17-18, August 3-5, 1992
143. R. Izmailov and Z. Haas, "Performance Evaluation of the Optical Staggering Switch in Underload Conditions," Conference on Information Sciences and Systems (CISS), 1992
144. Z. Haas "Gbps optical connectivity with the "Staggering Switch," *SPIE Vol. 1787: Multigigabit Fiber Communications (1992)*, Boston, MA, pp.180-191, December 17, 1992, also published in Proceedings of SPIE, Multigigabit Fiber Communications, L.G. Kazovsky and K. Liu, eds., Volume 1787: December 17, 1992; DOI: 10.1117/12.139308
145. J.H. Winters, M.A. Santoro, and Z. Haas, "Experimental measurement of PMD effects," Fibers'92, Boston, MA; also published in Proceedings of SPIE, Volume 1784, High-Speed



Headwater Research LLC
Ex. 2010, IPR2023-01336

**Fiber Networks and Channels II, K. Annamalai, ed., volume 1784, February 9, 1993; DOI: https://doi.org/10.1117/12.141092**

**146. Z. Haas, "On the Design of ATM-based, Broadband, Optical Communication Networks," AT&T Workshop on Control and Signaling of Broadband Services and Networks, Holmdel, NJ, October 15–16, 1992**

**147. Z. Haas and R.D. Gitlin, "Optical Distribution Channel: An `Almost–all' Optical LAN based on the Field-coding technique," International Workshop on Advanced Communications and Applications for High Speed Networks (IWACA'92), pp. 419-429, Munich, Germany, March 16-19, 1992 (conference program)**

**148. Z. Haas and R. D. Gitlin "Optical Distribution Channel: An `Almost-all' Optical LAN based on the Field-coding Technique," INFOCOM'92, pp. 57–67, Florence, Italy, May 4-8, 1992; DOI: 10.1109/INFCOM.1992.263569**

**149. Z. Haas, "Optical Distribution Channel: An "Almost-all" Optical LAN based on the Field-coding Technique," SPIE's International Symposium OE/FIBERS'91, Boston, MA, September 3- 6, 1991, also published in Proceedings of SPIE, High-Speed Fiber Networks and Channels, L.G. Kazovsky and K. Liu, eds., Volume 1577, March 1, 1992; DOI: 10.1117/12.139308**

**150. Z. Haas and M. M. Santoro, "Extending the bandwidth × distance product for multi-mode fibers," SPIE's International Symposium OE/FIBERS'91, Boston, MA, September 4-6, 1991 also published in Proceedings of SPIE, High-Speed Fiber Networks and Channels, K. Annamalai, ed., Volume 1577, March 1, 1992; DOI: 10.1117/12.134915**

**151. Z. Haas and J. H. Winters, "Congestion Control by Adaptive Admission," INFOCOM'91, pp. 560–569, Bal Harbour, FL, April 7-8, 1991**

**152. Z. Haas and R. D. Gitlin, "On the Packet Size in Integrated Networks," INFOCOM'91, pp. 732–740, Bal Harbour, FL, April 7-8, 1991; DOI: 10.1109/INFCOM.1991.147578**

**153. Z. Haas and R. D. Gitlin, "Field Coding: A High-speed `Almost-all' Optical Interconnect," *Twenty Fifth Annual Conference on Information Sciences and Systems* (CISS), Baltimore, MD, March 20-22, 1991**

**154. Z. Haas and J. H. Winters, "Congestion Control by Adaptive Admission," presented at the AT&T Joint Symposium on Performance Analysis and Teletraffic Research, Holmdel, NJ, December 12 & 13, 1990**

**155. Z. Haas, "Congestion Control by Adaptive Admission in Metropolitan Area Networks," presented at Fourth IEEE Workshop on MAN, Captiva, Fl, November 4-7, 1990**

**156. Zygmunt Haas, "A Gbps, 'Almost-all' Optical Switch and Local-area Network," Networks'90, June 1990, Birmingham, England**

**157. Z. Haas, "A Communication Architecture for High-speed Networking," IEEE INFOCOM'90, San-Francisco, CA, June 5–7, 1990, pp.433–441**

**158. Z. Haas, "BLAZELAN: A Photonic Local-area Network for Distributed and Parallel Processing," GLOBECOM '89, Dallas, TX, November 27-30, 1989, DOI: 10.1109/GLOCOM.1989.64109**

**159. Z. Haas, "BLAZELAN: A Photonic Network for Distributed and Parallel Processing," 6th IEEE International Workshop on Microelectronics and Photonics in Communications, New Seabury, Cape Cod, MA, June 7-9, 1989 (presentation)**

**160. Z. Haas and R. D. Gitlin, "On the Packet Size in Integrated Networks," AT&T Symposium on Teletraffic Research, AT&T Bell Laboratories, Holmdel, NJ, May 23-24, 1989**

**161. Z. Haas, "BLAZELAN: A Photonic Network for Distributed and Parallel Processing," Third IEEE Workshop on Metropolitan Area Networks, San Diego, CA, March 28-30, 1989 (presentation)**

162. **Z. Haas and D. R. Cheriton, "A Case for Packet-Switching in High-Performance Wide-Area Networks," SIGCOMM 87 Workshop, Stowe VT, August 11-13, 1987; CCR, vol.17, no.5, Oct./Nov. 1987 pp 402–409,** DOI**: 10.1145/55483.55525**
163. **Z. Haas and D. R. Cheriton, "Blazenet: A High Performance Wide-Area Network Using Optical Fibers," IEEE Pacific RIM Conference on Communications, Computers and Signal Processing, Victoria, Canada, June 4-5, 1987, pp. 478 - 484**

## (iii) Books & Book Chapters

1. **Z.J. Haas, R. Prakash, H. Ammari, and W. Wu (editors), "Wireless Internet," edited Proceedings of the 15th EAI International Conference, WiCON 2022, November 2022**
2. **Q. Wang, and Zygmunt J. Haas, "Performance Analysis of Epidemic Routing for Delay-Tolerant Networks," in *Resource Management in Mobile Computing Environments,* Modeling and Optimization in Science and Technologies, volume 3, (2014), *Springer International Publishing,* DOI: 10.1007/978-3-319-06704-9_26**
3. **Zygmunt J. Haas, Lin Yang, Meng-Ling Liu, Qiao Li, and Fangxin Li, "Current Challenges and Approaches in Securing Communications for Sensors and Actuators," Chapter 17 in the "Art of Wireless Sensor Networks," H.M. Ammari, ed., Springer-Verlag Berlin Heidelberg, 2014, pp. 569-608; DOI: 10.1007/978-3-642-40009-7_17**
4. **Zygmunt J. Haas, Seung-Keun Yoon, and J.H. Kim, "Energy-Efficient Routing in Delay-Tolerant Networks," in "Green IT: Technologies and Applications," chapter 5, Springer-Verlag, 2011**
5. **Seung-Keun Yoon and Zygmunt J. Haas, "Energy-aware Routing Protocol for Delay Tolerant Networks," in "Delay Tolerant Networks: Protocols and Applications," CRC Press, Editors: Edited by A. Vasilakos, Y. Zhang, and T. Spyropoulos, 2010, ISBN: 978-1-4398110-8-5**
6. **S.M. Nazrul Alam and Zygmunt J. Haas, "Topology Control of Three-Dimensional Underwated Wireless Sensor Networks," in *Underwater Acoustic Sensor Networks,* Y. Xiao, editor, CRC Press, Chapter 3, pp.45-70, May 2010; ISBN: 9781420067118 (book)**
7. **J. Jeong, G.Y Lee, and Z.J. Haas, "Prevention of Black-Hole Attack Using One-Way Hash Chain Scheme in Ad Hoc Networks," T. Vazão, M.M. Freire, and I. Chong (eds.), LNCS 5200, Springer-Verlag Berlin Heidelber, pp. 564-573, 2008, (revised paper from ICOIN 2007, Estoril, Portugal, January 22-25, 2007)**
8. **Z.J. Haas, J.Y. Halpern, L. Li, S.B. Wicker, "A Decision-Theoretic Approach to Resource Allocation in Wireless Multimedia Networks," in *Resource Allocation in Next Generation Wireless Networks, Volume 5,* W. Li and Y. Pan (eds), Nova Science Publishers, May 14, 2006, chapter 1, pp.1-23; ISBN-13: 978-1594545832**
9. **R. Barr, Z.J. Haas, and R. van Renesse, "Scalable Wireless Ad Hoc Network Simulation," *Handbook on Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless, and Peer-to-Peer Networks,* Jie Wu, Editor, CRC Press, 2005 (announcement)**
10. **P. Papadimitratos, and Z.J. Haas, "Securing Mobile Ad Hoc Networks," *Mobile Computing Handbook,* M. Ilyas and I. Mahgoub, Editors, Auerbach Publication, Chapter 21, pp. 457 -- 481, 2005**
11. **T. Small, Z.J. Haas, A. Purgue, and K. Fristrup, "A Sensor Network for Biological Data Acquisition," *Handbook of Sensor Networks: Compact Wireless and Wired Sensing Systems,* M. Ilyas and I. Mahgoub, Editors, CRC Press, 2004, ISBN 9780849319686, pp. 11-1 – 11-17**
12. **D-S. Kim and Z.J. Haas, "Virtual Factory Communication Systems using ISO 9506 standard and Its Application to Networked Factory Machine," *The Industrial Communication System Handbook,* CRC Press, FL, January, 2005**



Headwater Research LLC
Ex. 2010, IPR2023-01336

13. **P. Papadimitratos, and Z.J. Haas, "Secure Communication in Adverse Mobile Ad Hoc Networks," *Ad Hoc Wireless Networking,* X. Cheng, X. Huang, and D-Z. Du *eds.*, Kluwer Academic Publisher, 2004, pp. 447–485**
14. **P. Samar, M. R. Pearlman, and Z.J. Haas, "Hybrid Routing: The Pursuit of an Adaptable and Scalable Routing Framework for Ad Hoc Networks," *Ad Hoc Wireless Networking,* X. Cheng, X. Huang, and D-Z. Du *eds.*, Kluwer Academic Publisher, 2004, pp. 529–560**
15. **D-S. Kim, Z.J. Haas, and W.H. Kwon "Implementation of Virtual Factory Communication Systems using Manufacturing Message Specification," in *Industrial Information Technology Handbook,* R. Zurawski, ed., CRC Press, 2005, 1-14**
16. **P. Papadimitratos, and Z.J. Haas, "Secure Communication in Adverse Mobile Ad Hoc Networks," *The Handbook of Ad Hoc Wireless Networks,* CRC Press, Chapter 31, pp. 31-1 -- 31-17, 2003**
17. **Zygmunt J. Haas, Jing Deng, Ben Liang, Panagiotis Papadimitratos and S. Sajama, "Wireless Ad Hoc Networks," *Wiley Encyclopedia of Telecommunications.* Ed. John G. Proakis, vol. 5, New York, NY: Wiley, 2003, pp. 2883-2899**
18. **P. Samar, M. R. Pearlman, and Z.J. Haas, "Hybrid Routing: The Pursuit of an Adaptable and Scalable Routing Framework for Ad Hoc Networks," *The Handbook of Ad Hoc Wireless Networks,* CRC Press, Chapter 14, pp. 14-1 -- 14-18, 2003**
19. **Z.J. Haas "On the Performance of a Medium Access Control Scheme for the Reconfigurable Wireless Networks," in *Advances in Wireless Communications,* J.M. Holtzman and M. Zorzi (eds), *The International Series in Engineering and Computer Science,* vol. 435, pp. 269–284, Springer, Boston, MA, 2002**
20. **Z.J. Haas and M.R. Pearlman, "Evaluation of the Ad-Hoc Connectivity with the Zone Routing Protocols," *Wireless Personal Communications,* W.H. Tranter, T.S. Rappaport, B.D. Woerner, and J.H. Reed (eds), International Series in Engineering and Computer Science, vol. 482, 2002, pp. 201–212; Springer, Boston, MA, DOI: 10.1007/0-306-47046-2_19; presented at the 8th Virginia Tech/MPRG Symposium on Wireless Personal Communications, June 10–12, 1998, Blacksburg, VA**
21. **Z.J. Haas and M.R. Pearlman, "ZRP: a hybrid framework for routing in Ad Hoc networks," *Ad Hoc Networking,* C. Perkins, ed., pp. 221-253, Addison Wesley, March 2001**
22. **M. Sanchez, P. Manzoni, and Z.J. Haas, "Determination Of Critical Transmission Range In Ad-Hoc Networks," in *Multiaccess, Mobility and Teletraffic in Wireless Communications: Volume 4,* eds. Biglieri, Fratta, and Jabbari, pp.293–304, Kluwer Academic Publ., 1999**
23. **Z.J. Haas and M.R. Pearlman,, "Providing Ad-Hoc Connectivity with the Reconfigurable Wireless Networks," *Ad-Hoc Networks,* edited by Charlie Perkins, Addison Wesley, 1999**
24. **Z.J. Haas, "Mobile-TCP: An Asymmetric Transport Protocol Design for Mobile Systems," in *Mobile Multimedia Communications,* D. J. Goodman and D. Raychadhuri, (eds), pp. 117–128, Springer, Boston, MA, 1997**
25. **Z. Haas, "Optical Network Architectures," contributed chapter in *High Performance Networks: Technology and Protocols,* edited by A. N. Tantawy, Springer Science, 1994, Chapter 4, pp.85-107; DOI: 10.1007/978-1-4615-3194-4_4**
26. **Z. Haas, "Packet Switching," article in *Encyclopedia of Computer Science and Technology,* vol. 27, supplement 12, pp. 215–222, 1993**

## (iv) Miscellaneous Publications

1. **Z.J. Haas, R. Prakash, H. Ammari, and W. Wu, "15th EAI International Conference on Wireless Internet (WiCON 2022), Preface, November 17, 2022**
2. **S. Milner, C. Davis, Z. Haas, and P.R. Kumar, "Quantifying and Assuring Information Transfer in Dynamic Heterogeneous Wireless Networks," Final Report for Contract number: AFOSR FA9550-09-1-0121, July 31, 2012**
3. **Z.J. Haas, "A Quest for the Future of Wireless Communications or It's Tough to be a Seer," *Connections*, School of Electrical and Computer Engineering, Cornell University, Fall 2005, pp. 12-14**
4. **Zygmunt J. Haas, Samir R. Das, and Ravi Jain, Proceedings of the 10th Annual International Conference on Mobile Computing and Networking, MOBICOM 2004, 2004, Philadelphia, PA, USA, September 26 - October 1, 2004. ACM 2004, ISBN 1-58113-868-7**
5. **O. Arpacioglu, T. Small, and Z.J. Haas, "Notes on Scalability of Wireless Ad Hoc Networks," Internet Draft, October 20, 2003, draft-irtf-ans-scalability-notes-01.txt**
6. **O. Arpacioglu, T. Small, and Z.J. Haas, "Notes on Scalability of Wireless Ad Hoc Networks," Internet Draft, August 2, 2003, `draft-irtf-ans-scalability-notes-00.txt`**
7. **P. Papadimitratos, Z. J. Haas, and P. Samar, "The Secure Routing Protocol (SRP) for Ad Hoc Networks," Internet Draft, `draft-papadimitratos-secure-routing-protocol-00.txt`, December 2002**
8. **Z. J. Haas, M.R. Pearlman, P.Samar, "The Interzone Routing Protocol (IERP) for Ad Hoc Networks," Internet Draft, `draft-ietf-manet-zone-ierp-00.txt`, January 2001, (`draft-ietf-manet-zone-ierp-01.txt`, June 2001), (`draft-ietf-manet-zone-ierp-02.txt`, July 2002)**
9. **Z.J. Haas and M.R. Pearlman, "The Zone Routing Protocol (ZRP) for Ad Hoc Networks," Internet Draft, draft-haas-zone-routing-protocol.00.txt, November 1997 (draft-haas-zone-routing-protocol.01.txt, August 1998), (`draft-ietf-manet-zone-zrp-02.txt`, June 1999), (`draft-ietf-manet-zone-zrp-03.txt`, March 2000), (`draft-ietf-manet-zone-zrp-04.txt`, July 2002)**
10. **Zygmunt Haas, "Routing Protocol for Smart Radio Ad-Hoc Networks," AFRL-IF-RS-TR-1999-138, Air Force Research Laboratory, Information Directorate, Rome Research Site, Rome, NY, June 1999**
11. **Z.J. Haas, R-H. Gau, and E. McCarthy, "Reliable Mobile Multicast Protocols," Cornell University Report, 1999**
12. **Zygmunt Haas, "Packet-Switching in Future Fiber-Optic Wide-Area Networks," Ph.D. thesis, Stanford University, Electrical Engineering Department, May 1988**
13. **Z. Haas and D.R. Cheriton, "Blazenet and the Arguments for Very High-Speed Photonic Packet-Switching," *unpublished*, March 15, 1988**
14. **Z. Haas and D. Cheriton, "Blazenet: A Photonic Implementable Wide-Area Network," Technical Report, STAN-CS-87-1185 (and CSL-TR-87-346), Stanford University, Oct. 1987**
15. **Zygmunt Haas, "Local Area Networks and Access Techniques in Local Area Networks," *M.Sc. thesis*, Tel-Aviv University, Spring 1985**
16. **Zygmunt Haas, "Measuring Lag Phenomena in Plumbicons," Technical Report, Philips Research Labs., ELCOMA division, September 1979**

# IV. TEACHING & ADVISING

## (i) Courses Taught (semester; course #/title; number of students/credit hours)

- **Spring 2023: CS 6340/Wireless Networks; 20 students; UTD/CS**
- **Fall 2022: 3341/Probability and Statistics for CS; 115 students; UTD/CS**
- **Spring 2022: CS/CE 4390/Computer Networks; 81 students; UTD/CS**
- **Spring 2022: CS 6340/Wireless Networks; 13 students; UTD/CS**
- **Fall 2021: 3341.HON/Probability and Statistics for CS; 28 students; UTD/CS**
- **Spring 2021: CS 6340/Wireless Networks; 14 students/42 credit hours; UTD/CS**
- **Spring 2021: CS/CE 4390/Computer Networks; 68 students/204 credit hours; UTD/CS**
- **Fall 2020: 3341.HON/Probability and Statistics for CS; 31 students; UTD/CS**
- **Fall 2019: 3341.HON/Probability and Statistics for CS; 21 students; UTD/CS**
- **Spring 2019: CS 6390/Advanced Computer Networks; 19 students; UTD/CS**
- **Fall 2018: 3341.HON/Probability and Statistics for CS; 31 students; UTD/CS**
- **Fall 2018: CS 6301/Wireless Networks; 7 students; UTD/CS**
- **Spring 2018: CS 4390/Computer Networks; 43 students; UTD/CS**
- **Spring 2018: CS 6390/Advanced Computer Networks; 18 students; UTD/CS**
- **Fall 2017: CS 6301/Wireless Networks; 11 students; UTD/CS**
- **Spring 2017: CS 4390/Computer Networks; 40 students; UTD/CS**
- **Spring 2017: CS 6390/Advanced Computer Networks; 28 students; UTD/CS**
- **Fall 2016; CS 6301/Wireless Networks; 7 students; UTD/CS**
- **Spring 2016: CS 6390/Advanced Computer Networks; 31 students; UTD/CS**
- **Spring 2016: CS 4390/Computer Networks; 23 students; UTD/CS**
- **Spring 2015: CS 6301/Wireless Networks; 23 students; UTD/CS**
- **Spring 2015: CE/CS 6390/Advanced Computer Networks; UTD/CS**
- **Spring 2014: CS 6301/Wireless Networks; 42 students/126 credit hours; UTD/CS**
- **Fall 2013: CE/CS 6390/Advanced Computer Networks; 48 students/144 credit hours; UTD/CS**
- **Spring 2013:ECE 4960/Wireless Networks; 30 students/120 credit hours; Cornell/ECE**
- **Fall 2012: ECE 3100/Probability and Inference; 60 students/240 credit hours; Cornell/ECE**
- **Spring 2012: ECE 5660/Fundamentals of Networks; 11 students/44 credit hours; Cornell/ECE**
- **Fall 2011: "Wireless Networks", Technion, Israeli Institute of Technology, Haifa, Israel**
- **Spring 2011: Leave of Absence (NSF)**
- **Fall 2010: Leave of Absence (NSF)**
- **Spring 2010: ECE 3200/Networks and Systems; 36 students/144 credit hours; Cornell/ECE**
- **Fall 2009: ECE 5660/Fundamentals of Networks; 15 students/60 credit hours; Cornell/ECE**
- **Spring 2009: Sabbatical Leave; Cornell/ECE**
- **Fall 2008: ECE 5660/Fundamentals of Networks; 20 students/80 credit hours; Cornell/ECE**
- **Spring 2008: ECE 3100/Introduction to Probability and Random Phenomena; 79 students/316 credit hours; Cornell/ECE**
- **ECE 566/ Fundamentals of Networks; Fall 2007; 10 students/40 credit hours; Cornell/ECE**

- **ENGRG150/Freshmen Seminar; Fall 2007; 19 students/19 credit hours; Cornell/ECE**
- **ECE 310/Introduction to Probability and Random Phenomena; Spring 2007; 77 students/308 credit hours; Cornell/ECE**
- **ECE 566/ Fundamentals of Networks; Fall 2006; 27 students/108 credit hours**
- **ECE 691/ECE Colloquium; Fall 2006 (Plus); ECE Colloquium; 28 students; 28 student credit hours; Cornell/ECE**
- **ECE 310/Introduction to Probability and Random Phenomena; Spring 2006; 75 students/300 credit hours; Cornell/ECE**
- **ECE 566/Wireless Networks; Fall 2005; 26 students/104 credit hours; Cornell/ECE**
- **ECE 310/Introduction to Probability and Random Phenomena; Spring 2005; 71 students/284 credit hours; Cornell/ECE**
- **ECE 566/Wireless Networks; Fall 2004; 16 students/64 credit hours; Cornell/ECE**
- **ECE 566/Wireless Networks; Spring 2004; 28 students/112 credit hours; Cornell/ECE**
- **ECE 563/Communication Networks; Fall 2003; 19 students/76 credit hours; Cornell/ECE**
- **Spring 2003: Sabbatical Leave - no teaching assignment**
- **ECE 230/Introduction to Digital Logic Design; Fall 2002; Cornell/ECE**
- **ECE 563/Communication Networks; Fall 2002; 19 students/76 credit hours; Cornell/ECE**
- **ENGRG150/Freshmen Seminar; Fall 2003; 18 students/18 credit hours; Cornell/ECE**
- **ECE 566/Wireless Networks; Spring 2002; 73 students/292 credit hours; Cornell/ECE**
- **ECE 445/Computer Networks; Fall 2001; 146 students/584 credit hours; Cornell/ECE**
- **ECE 566/Wireless Networks; Spring 2001; 74 students/296 credit hours; Cornell/ECE**
- **ECE 445/Computer Networks; Fall 2000; 144 students/576 credit hours; Cornell/ECE**
- **EE 597/Wireless Information Technology Seminar (WITS); Fall 2000; 12 students/24 credit hours; Cornell/ECE**
- **ENGRG 150/Engineering Seminar; Fall 2000; 19 students/19 credit hours; Cornell/ECE**
- **EE 566/Wireless Networks; Spring 2000; 58 students/232 credit hours; Cornell/ECE**
- **EE 595/Wireless Information Technology Seminar (WITS); Spring 2000; 13 students/26 credit hours; Cornell/ECE**
- **ELE 936/Wireless Networks I; Fall 1999; 43 students; Polytechnic University, NYC, NY**
- **EE 566/Wireless Networks; Spring 1999; 42 students/168 credit hours; Cornell/ECE**
- **EE 445/Computer Networks; Fall 1998; 147 students/588 credit hours; Cornell/ECE**
- **EE 597/Wireless Information Technology Seminar (WITS); Fall 1998; 9 students/18 credit hours; Cornell/ECE**
- **EE 566/Wireless Networks; Spring 1998; 43 students/172 credit hours**
- **EE 597/Wireless Information Technology Seminar (WITS); Spring 1998; 11 students/22 credit hours**
- **EE 445/Computer Networks; Fall 1997; 99 students/396 credit hours**
- **EE 566/Wireless Networks; Spring 1997; 45 students/180 credit hours**
- **EE 445/Computer Networks; Fall 1996; 122 students/366 credit hours**
- **EE 595/Wireless Information Technology Seminar (WITS); Fall 1996; 20 students/40 credit hours**
- **EE 566/Wireless Networks; Spring 1996; 74 students/296 credit hours**
- **EE 445/Computer Networks; Fall 1995; 155 students/465 credit hours**

# V. PROFESSIONAL & SCIENTIFIC SERVICE

## (i) University Committees

- **Member of Jonsson School Academic Affairs Committee (AAC), 9/2023 - …**
- **Member of UTD Committee on Distance Learning, 9/2023-8/2025**
- **Member of the Search Committee for the Inaugural Associate Dean for Diversity and Strategic Initiatives, Eric Jonsson School of Engineering and Computer Science, UTD, 2021**
- **Member of Annual Review Committee, Computer Science Department, UTD, 2019-2023**
- **Member of Committee on Qualifications of Academic Personnel, UTD, 09/01/2020-08/31/2022**
- **Member of Dean's Teaching Task Force for Fall 2020, Jonsson School of Engineering and Computer Science, UTD, June 2020**
- **Member of Committee on Qualifications of Academic Personnel, UTD, 09/01/2018-08/31/2020**
- **Chair of Committee for Affiliated Faculty Appointment Rules, CS/UTD, Fall 2017**
- **Member of UTD Committee on Qualifications of Academic Personnel, UTD, 09/01/2016-08/31/2017**
- **Chair of "Ph.D. Committee," Computer Science Department, UTD, Fall 2016 - now**
- **Member of "Graduate Admission Committee," Computer Science Department, UTD, 2014-2019**
- **Member of "Web Design and Marketing Committee," Computer Science Department, UTD, 2014-2020**
- **Member of "Recruiting Committee," Computer Science, UTD, 2014-2016**
- **Member of *Center for Applied Math (CAM) Graduate Admission Committee*, Cornell University, 2012-2013**
- **Member of the *College Admissions Advisory Committee*, College of Engineering, Cornell University, June 2012 - June 2013**
- **Member of the *Engineering Courses Subcommittee*, CCGB, College of Engineering, Cornell University, 2009 – 2010**
- **Member of the *Technical Writing Subcommittee*, CCGB, College of Engineering, Cornell University, 2009 –2010**
- **Member of the *College Curriculum Governing Board (CCGB)*, College of Engineering, Cornell University, 2009 – 2010**
- **Member of the *Faculty Admissions Advisory Committee*, College of Engineering, Cornell University, (third term) June 2009 - June 2012**
- **Multiple *Ad Hoc Tenure Promotion*, School of Electrical Engineering, Cornell University 1998 – 2013**
- **Multiple *Ad Hoc Promotion Committees, Ad Hoc Reappointment Committees,* and *Ad Hoc Tenure Promotion*, College of Engineering, Cornell University 1998 – 2013**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Member of Policy Committee, School of Electrical and Computer Engineering, Cornell University, 2008 – 2010 (elected)**
    - **`Member of Graduate Committee, School of Electrical and Computer Engineering, Cornell University, 2007 – 2008**
- **Member of Recruiting Committee, School of Electrical and Computer Engineering, Cornell University, 2007 – 2008**
- **Member of the *Faculty Admissions Advisory Committee*, College of Engineering, Cornell University, (second term) June 2006 – June 2009**
- ***Associate Director for Academic Affairs*, School of Electrical and Computer Engineering, Cornell University, 2005 – 2006**
- **Review Board Member, *Learning Initiatives For Engineers (LIFE)*, Undergraduate Research Program, College of Engineering, Cornell University, 2005 – 2006**
- **Member of the *Policy Committee*, School of Electrical and Computer Engineering, Cornell University, 2005 – 2006 (elected)**
- **Member of *Curriculum and Standards Committee*, School of Electrical and Computer Engineering, Cornell University, 2005 – 2006**
- **Member of the *M. Eng Committee*, School of Electrical and Computer Engineering, Cornell University, 2004 – 2007**
- **Member of the *Faculty Admissions Advisory Committee*, College of Engineering, Cornell University, June 2004 – June 2006**
- **Member of *Recruiting Committees*, School of Electrical and Computer Engineering, Cornell University, 2004 – 2006**
- **Member of the *College of Engineering Nomination Committee*, Cornell University, 1997 – 1999**
- **Member of *Faculty Advisory Board on Information Technologies (FABIT)*, Cornell University, 1997/98 and 1999/00 (Cornell Faculty Senate appointment)**
- **Member of the *Computer Science Recruiting Committee*, Cornell University, 1996**
- **Member of the *Circuit Recruiting Committee*, Cornell Univ., School of EE, 1996 – 1997**
- **Member of the *Long Term Recruiting Committee*, Cornell Univ., School of EE, 1996 – 1997 (elected)**
- **Member of the *Engineering Distribution CCGB Standing Committee*, Cornell University, 1995 – 1998**

## (ii) Editorial Service

- **Member of the Editorial Board of *MDPI Drones, Section Board for Drone Communications***
- **Member of the Editorial Board of *MDPI Sensors, Section Board for Intelligent Sensors***
- **Editor-in-Chief of *eScripts*, a novel publication enterprise of the European Commission**
- **Served on the Advisory Board and the Editorial Board of the *Wireless Communications and Mobile Computing* journal (John Wiley & Sons)**
- **Served on the Editorial Board of Springer *Wireless Networks (WINET)* Journal**
- **Serving on the Editorial Board of *Journal of High Speed Networks* (JHSN)**
- **Served on the Editorial Board of *ACM/IEEE Transactions on Networking***
- **Served on the Editorial Board of *IEEE Transactions of Wireless Communications***
- **Served on the Editorial Board of *IEEE Communications Magazine***



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Served on the Editorial Board of *Computer Networks and ISDN Systems* Journal**
- **Served on the Editorial Board of *IEEE Personal Communications Magazine***
- **Served on the Editorial Board of *Elsevier Ad Hoc Networks* journal**
- **Lead guest editor for the *IEEE Journal on Selected Areas in Communications,* issue on "Mobile Computing Networks," vol.13, no.5, June1995**
- **Lead guest editor for the *IEEE Journal on Selected Areas in Communications,* issue on "Wireless Ad Hoc Networks," vol.17, no.8, August 1999**
- **Co-guest editor of special issue of Wireless Networks journal on "Mobicom'96," 1997**
- **Lead guest editor for the *IEEE Journal on Selected Areas in Communications,* issue on "Protocols for Gigabit Networks," vol. 12, no. 2, February 1993**

## (iii) Service to the Scientific Community at Large

- **General co-Chair of *EAI WiCON 2022*, November 17, 2022, Dallas, TX and Cyberspace (Technical Program) (Proceedings)**
- **Steering Committee co-Chair of the "Workshop on Securing Next-Generation Connected Healthcare Systems using Futuristic Technologies," *IEEE GLOBECOM'21*, December 7-11, 2021, Madrid, Spain (Hybrid: In-Person and Virtual) (abstract)**
- **International Advisory Committee Member of the 11th International Conference on ICT Convergence (ICTC 2020) Conference, October 21 – 23, 2020, Jeju Island, Korea**
- **International Advisory Committee of the *12th International Conference on Ubiquitous and Future Networks (ICUFN)* Conference, *June 30 – July 3, 2020, Porto, Portugal***
- **Technical Program Vice-Chair of the Research Track of Mobile and Wireless Computing of 39th IEEE International Conference on Distributed Computing System (ICDCS 2019), Dallas, Texas, July 7-10, 2019**
- **General and Technical Program Chair of the "Signal Processing for Wireless Network Security" Symposium at the *2018 6th IEEE Global Conference on Signal and Information Processing (GlobalSIP),* Anaheim, CA, November 26–29, 2018**
- **International Advisory Committee of the International Conference on Ubiquitous and Future Networks (ICUFN) Conference**
- **General Chair of the Fifth IEEE Annual International Workshop on Mission-Oriented Wireless Sensor Networking (IEEE MiSeNet 2016), in conjunction with IEEE INFOCOM 2016**
- **Workshop Technical Program Co-Chair of the *2015 IEEE International Conference on Healthcare Informatics,* Dallas, TX, October 21-23, 2015 (CFP)**
- **Member of the Advisory Committee of the *American Amazing Teens (AAT)* program (Role: Educator)**
- **Member of International Advisory Committee of the *IEEE ICUFN 2014, Sixth International Conference on Ubiquitous and Future Networks 2014*, Shanghai, China, July 8-11, 2014 (CFP)**
- **Member of the International Advisory Committee of the *International Conference on Information and Communication Technology Convergence 2013 (ICTC 2013),* Jeju Island, S. Korea, October 14-16, 2013 (CFP)**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Member of the Steering Committee of *The Second ACM Annual International Workshop on Mission-oriented Wireless Sensor Networking (ACM MiSeNet 2013),* in conjunction with ACM MobiCom 2013, Miami, FL, September 30, 2013**
- **Member of International Advisory Committee of the *IEEE ICUFN 2013, Fifth International Conference on Ubiquitous and Future Networks 2013,* Da Nang, Vietnam, July 2-5, 2013 (CFP)**
- **Member of the Steering Committee of *The First ACM Annual International Workshop on Mission-oriented Wireless Sensor Networking (ACM MiSeNet 2012),* in conjunction with ACM MobiCom 2012, Istanbul, Turkey, August 26, 2012 (technical program)**
- **Member of the International Advisory Committee of the *IEEE International Conference on Information and Communication Technology Convergence 2012 (ICTC 2012),* Jeju Island, S. Korea, October 15-17, 2012**
- **Member of the Steering Committee of *ACM MSWiM, 2012,* Istanbul, Turkey, August 26, 2012**
- **General co-chair of "*The Fourth International Workshop on Information Quality and Quality of Service for Pervasive Computing (IQ2S'12),*" in Conjunction with *IEEE PERCOM 2012,* Lugano, Switzerland, March 19-23, 2012 (website) (CFP)**
- **Member of International Advisory Committee of the *IEEE ICUFN 2012* (*The Fourth International Conference on Ubiquitous and Future Networks*), *Puket, Tailand, July 4-6, 2012***
- **Moderator and Presenter at the *2010 NSF ECSS Grantees' Conference, Hilton Hawaiian Village, Honolulu, Hawai'i, Nov. 30-Dec 2, 2010***
- **Moderator and Panelist of the "What's Next for Underwater Networks?" Panel, "*The Fifth International Workshop on UnderWater Networks (WUWNets'10),*" Woods Hole, MA, September 30 – October 1, 2010**
- **Member of the International Advisory of the "*International Conference on ICT Convergence 2010 (ICTC 2010),*" Jeju, Jeju Island, South Korea, Nov. 17-19, 2010**
- **Member of International Advisory Committee of the "*Second IEEE International Conference on Ubiquitous and Future Networks (ICUFN 2010*),*"* June 16-18, 2010, Jeju Island, Korea (*ICUFN 2010*) (CFP)**
- **Member of International Advisory Committee of the "*First IEEE International Conference on Ubiquitous and Future Networks (ICUFN 2009*),*"* June 7-9, 2009, Hong Kong, China**
- **Chair of the Steering Committee of *IEEE Pervasive Computing* magazine, January 1, 2005 – December 31, 2007**
- **Member of the *IEEE TCPC Award Committee*, September 2004 - September 2007**
- **Chair, Technical Program Committee, "*First Workshop on free and commercial Wireless Mesh Networks (OpComm'2006),*" Berlin, Germany, September 18-19, 2006 (cfp) (tpc)**
- **Member of the Steering Committee, *ACM MOBICOM,* 2004**
- **General Chair, Workshop on "Intermittently Connected Mobile Ad Hoc Networks (ICMAN), in conjunction with IEEE *PerCom 2007,* New York, NY, March 26-30, 2007 (message) (cfp)**
- **Member of Advisory Committee of "The First International Conference on Sensor Technologies and Applications (SENSORCOMM 2007), sponsored by IARIA, Valencia, Spain, October 14-20, 2007 (cfp)**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **General Co-Chair, "*Fifth Workshop on Applications and Services in Wireless Networks (ASWN 2005)*," Maison de la Chimie, Paris, France, June 28 - July 1, 2005 (cfp)**
- **General Chair, *ACM MOBICOM 2004*, Philadelphia, PA, Sept. 26 – Oct. 1, 2004**
- **Panelist and Moderator of the "Ad Hoc Networks" panel, *IEEE MILCOM'97*, Monterey, CA, November 2-5, 1997**
- **Steering Committee and TPC Member of the *Fourth High Performance Communication Subsystems Workshop*, Sani Beach, Chalkididi, Greece, June 23-25, 1997**
- **Elected and served as the secretary (01/01/1997-12/31/1998), vice-chair (01/01/199-12/31/2000), and chair (01/01/2001-12/31/2002) of *IEEE Technical Committee on Personal Communications (TCPC)*, later renamed as *IEEE Wireless Communications Technical Committee***
- **Member of the NSF-NCR Workshop on "Research Priorities in Networking and Communications," May 12-14, 1994, Airlie House, Virginia**
- **Representing AT&T on *the Personal Conferencing Specification Working Group***
- **Served on National Science Foundation review panels**
- **Vice-chair of the *2nd Workshop on High Performance Communication Subsystems (HPCS'93)***
- **Organized and chaired "Who needs all-optical networks?" panel at *INFOCOM'93***
- **Organized a session "Packet-switched Lightwave Networks: Comparison of Approaches" at the *Computer Communications Workshop*, Hilton Head Island, SC, October 20-22, 1992**
- **Member of *High-speed Protocols Panel* at *INFOCOM'91*, San-Francisco, CA, June 5-7, 1991**

## (iv) Technical Program Committees (chairing, co-chairing, and membership)

- **Member of Technical Program Committee of the 2023 International Conference on Mathematics, Intelligent Computing and Machine Learning (MICML'2023), December 15-17, 2023, Chengdu, China**
- **Member of Technical Program Committee of the 2023 IEEE International Conference on Internet of Things and Intelligence Systems (IoTaIS'2023), November 16-18, 2023, (Hybrid Conference) Bali, Indonesia**
- **Member of Technical Program Committee of the 15th International Conference on Communication Software and Networks (ICCSN 2023), July 21-23, 2023, Shenyang, China (CFP)**
- **Member of Technical Program Committee of the 2023 International Symposium on Electrical and Electronics Engineering (ISEE 2023), October 19–20, 2023, HCMC University of Technology, Ho Chi Minh City, Vietnam (CFP)**
- **Member of Technical Program Committee of the 14th International Conference on Ubiquitous and Future Networks (ICUFN 2023), July 4–7, 2023, Ecole d'ingénieur, Paris, France**
- **Member of Technical Program Committee of the 13th International Conference on Cloud Computing and Services Science (CLOSER 2023), March 26-28, 2023, Prague, Czech Republic**
- **Member of Technical Program Committee of the 5th International Conference on Artificial Intelligence in Information and Communication (ICAIIC 2023), February 20-23, 2023, Bali, Indonesia**

- **Member of Technical Program Committee of the 8th International Conference on Internet of Things, Big Data and Security (IoTBDS 2023), April 21-23, 2023, Prague, Czech Republic**
- **Member of Technical Program Committee of the IEEE Wireless Communications and Networking Conference (WCNC 2023), March 26-29, 2023, Glasgow, Scotland, UK**
- **Member of Technical Program Committee of the 13th International Conference on Information and Communication Technology Convergence (ICTC 2022), October 19-21, 2022, Jeju Island, South Korea**
- **Member of Technical Program Committee of the 2022 IEEE Autonomous and Trusted Vehicles Conference (ATC 2022), December 15-18, 2022, Haikou, China**
- **Member of Technical Program Committee of the 37th International Conference on Information and Networking (ICOIN 2023), January 11-14, 2023, Bangkok, Kingdom of Thailand**
- **Member of Technical Program Committee of the 2022 International Conference on Internet of Things and Intelligent Systems (IoTaIS'2022) Nov. 24-26, 2022, Bali, Indonesia**
- **Member of Technical Program Committee of the IEEE 9th International Conference on Communications and Electronics (ICCE 2022), July 27-29, 2022, Nha Trang City, Vietnam**
- **Member of Technical Program Committee of the 4th International Conference on Artificial Intelligence in Information and Communication (ICAIIC 2022), February 21-24, 2022, Guam, U.S.A and Cyberspace**
- **Member of Technical Program Committee of the 36th International Conference on Information Networking (ICOIN 2022), January 12-15, 2022, Thailand**
- **Member of Technical Program Committee of the Internet of Things and Intelligence Systems (IoTaIS'21), November 22-23, 2021, Cyberspace**
- **Member of Technical Program Committee of the 5th Symposium on Future Telecommunication Technologies (SOFTT'21), Dec. 6 – 7, 2021, Cyberspace (cert)**
- **Member of Technical Program Committee of the IEEE Wireless Communications and Networking Conference (WCNC'22), April 10-13, 2022, Austin, TX**
- **Member of Technical Program Committee of the *2021 IEEE International Conference on Industry 4.0, Artificial Intelligence, and Communication Technology (IAICT'21)*, July 27-28, 2021, Indonesia**
- **Member of Technical Program Committee of the 2021 International Conference on Advanced Technologies for Communications (ATC'21), October 7 – 9, 2021, Ho Chi Minh City, Vietnam**
- **Member of Technical Program Committee of the 3rd International Conference on Artificial Intelligence in Information and Communication (ICAIIC'21), April 20 – 23, 2021, Jeju Island, S. Korea (CFP)**
- **Member of Technical Program Committee of IEEE Wireless Communications and Networking Conference (WCNC'21), March 29 – April 1, 2021, Nanjing, China**
- **Member of Technical Program Committee of the 2021 International Symposium on Electrical and Electronics Engineering (ISEE 2021), April 15–16, 2022, HCMUT, Ho Chi Minh City, Vietnam (CFP)**
- **Member of Technical Program Committee of the 2020 International Conference on Advanced Technologies for Communications (ATC-2020), October 8–10, 2020, Nha Trang, Vietnam**
- **Member of Technical Program Committee of the 2021 Asia Pacific Conference on Wireless and Mobile (APWiMob'21), April 8 – 10, 2021, Bandung, Indonesia (CFP)**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Member of Technical Program Committee of The 35th International Conference on Information Networking (ICOIN 2021), January 13 – 16, 2021, Jeju Island, Korea (CFP)**
- **Member of Technical Program Committee of 2019 International Symposium on Electrical and Electronics Engineering (ISEE2019), October 10–12, 2019, Ho Chi Minh City, Vietnam**
- **Member of Technical Program Committee of 8th International Conference on Advances in Computing, Communications and Informatics (ICACCI'19), December 18–21, 2019, Trivandrum, Kerala, India**
- **Member of Technical Program Committee of *IEEE ATC 2019*, International Conference on Advanced Technologies for Communications, Oct. 17–19, 2019, Hanoi, Vietnam**
- **Member of Technical Program Committee of *IAICT 2019*, International Conference on Artificial Intelligence and Communications Technology, July 1–3, 2019, Bali, Indonesia**
- **Member of Technical Program Committee of *IEEE IoTaIS 2019*, International Conference on Internet of Things and Intelligence Systems, Nov. 5–7, 2019, Bali, Indonesia**
- **Member of Technical Program Committee of *IEEE ICUFN 2019*, 11th International Conference on Ubiquitous and Future Networks, July 2–5, 2019, Zagreb, Croatia**
- **Member of Technical Program Committee of *IEEE* Wireless Communications and Networking Conference (WCNC), 15–19 April 2019, Marrakech, Morocco**
- **Member of Technical Program Committee of the *3rd International Conference on Circuits, System and Simulation (ICCSS 2019)*, June 13–15, 2019, Nanjing, China**
- **Member of Technical Program Committee of *4th International Conference on Computer, Communication, and Control Technology*, 20 – 22 March 20-22, 2018, Krabi, Thailand**
- **Member of International Advisory Committee of the *IEEE ICUFN 2017, Eight International Conference on Ubiquitous and Future Networks 2017*, July 3 – July 7, 2017, Milan, Italy**
- **Member of Technical Program Committee of the *Second International Conference on Computing and Network Communications (CoCoNet'18)*, August 15-17, 2018, Astana, Kazakhstan**
- **Member of Technical Program Committee of the *IEEE Asia Pacific Conference on Wireless and Mobile (APWiMob 2016)*, September 13-15, 2016, Bandung, West Java, Indonesia**
- ***Member of Technical Program Committee of the 22nd Asia-Pacific Conference on Communications (APCC 2016), August 25-27, 2016, Yogyakarta, Indonesia***
- **Member of Technical Program Committee of the *The Eighth International Conference on Ubiquitous and Future Networks (ICUFN 2016)*, July 5-8, 2016, Vienna, Austria (CFP)**
- **Member of Technical Program Committee of the *4th International Conference on Connected Vehicles and Expo*, October 19-23, 2015, Shenzhen, China (CFP)**
- **Member of Technical Program Committee of the *6th International Conference on Data Communication Networking (DCNET 2015), July 20-22, 2015, Colmar, Alsace, France***
- **Member of Technical Program Committee of the *18th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM'15), November 2-6, 2015, Cancun, Mexico***



Headwater Research LLC
Ex. 2010, IPR2023-01336

- ***Member of Technical Program Committee of IEEE International Conference on Advanced Technologies for Communications 2015 (ATC'15), October 14-16, 2015, Ho Chi Minh City, Vietnam (CFP)***
- **Member of the Technical Program Committee of *IEEE 2014 Globecom, Wireless Networks Track*, December 8-12, 2014, Austin, TX**
- **Member of the Technical Program Committee of the Workshop on *Security in Ad Hoc Networks (SecAN)*, Benidorm, Spain, June 22-27, 2014 (CFP)**
- **Member of the Technical Program Committee of *IEEE Wireless Communications and Networking Conference, (WCNC'14) Track 3:NET*, Istanbul, Turkey, April 6-9, 2014**
- **Member of the Technical Program Committee of *IEEE 5th International Congress on Ultra Modern Telecommunications and Control Systems (ICUMT 2013)*, Almaty, Kazakhstan, September 10-13, 2013**
- **Member of the Technical Program Committee of *IEEE IFIP Networking 2013 Conference*, Brooklyn, New York, May 22-24, 2013 (CFP)**
- **Member of the Technical Program Committee of *IEEE ICUFN 2013, Fifth International Conference on Ubiquitous and Future Networks 2013*, Da Nang, Vietnam, July 2-5, 2013 (CFP)**
- **Member of Technical Program Committee of *IEEE WCNC 2013*, Shanghai, China, April 7-10, 2013 (CFP)**
- **Member of Technical Program Committee of *IEEE PIMRC'12* (*23rd IEEE International Symposium on Personal, Indoor and Mobile Radio Communications*), Sidney, Australia, September 9-12, 2012 (CFP)**
- **Member of the Technical Program Committee of ACM MSWiM 2012, Paphos, Cyprus Island, October 21-25, 2012 (CFP)**
- **Member of Technical Program Committee of ICUFN 2012 (The Fourth International Conference on Ubiquitous and Future Networks), Puket, Tailand, July 4-6, 2012 (CFP)**
- **Member of Technical Program Committee of IEEE WCNC 2012, Track 3 Mobile and Wireless, Paris, France, April 1-4, 2012**
- **Member of Technical Program Committee of IEEE ICUMT 2011, Budapest, Hungary, October 5-7, 2011**
- **Member of Technical Program Committee of the *"IEEE WCNC 2011, Network Track*," Cancun, Mexico, March 28-31, 2011**
- **Member of Technical Program Committee of the *"International Conference on ICT Convergence 2010 (ICTC 2010)*," Jeju, Jeju Island, South Korea, Nov. 17-19, 2010**
- **Member of the International Program Committee of the "*IASTED Asian Conference on Robotics and Control (AsiaRC 2010)*," November 24-26, 2010, Bangkok, Thailand (*cfp*)**
- **Member of the International Program Committee of the "*IASTED International Conference on Robotics and Applications (RA 2010)*," November 1-3, 2010, Cambridge, MA**
- **Member of the Technical Program Committee of "*The 16th Asia-Pacific Conference on Communications (APCC 2010)*," October 31-Nov. 3, 2010, Auckland, New Zealand**
- **Member of the International Program Committee (IPC) of the "*IASTED International Conference on Wireless Communications (WC 2010)*," July 15 – 17, 2010, Banff, Alberta, Canada**
- **Member of Technical Program Committee of the "*IEEE Wireless Communication and Networking Conference (WCNC 2010)*," April 18-21, 2010, Sydney, Australia**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Member of the International Technical Committee of the "*IASTED International Conference on Robotics, Telematics and Applications (RTA 2009)*," October 12-14, 2009, Beijing, China**
- **Member of Technical Program Committee of the "*IEEE Vehicular Technology Conference (VTC'09/Fall)*," Anchorage, Alaska, September 20-23, 2009**
- **Member of Technical Program Committee of the "*IFIP Second Joint IFIP Wireless and Mobile Networking Conference (WMNC)*," Gdansk, Poland, Sept. 9-11, 2009**
- **Member of the International Program Committee of the "*IASTED International Conference on Robotics, Telematics and Applications (*RTA 2009)," October 12 – 14, 2009, Beijing, China (http://www.iasted.org/conferences/home-661.html)**
- **Member of the Technical Program Committee of the "*Fifth IEEE International Conference on Mobile Ad-hoc and Sensor Systems (IEEE MASS 2008)*," Atlanta, GA, September 29 – October 2, 2008**
- **Member of the Technical Program Committee of the "*27th IEEE Conference on Computer Communications (INFOCOM 2008)*," Phoenix, AZ, April 13-19, 2008**
- **Chair, Technical Program Committee, "*Third IEEE International Conference on Mobile Ad Hoc and Sensor Systems (MASS 2006)*," Vancouver, Canada, October 9-12, 2006 (message from TPC chairs)**
- **Member of the Technical Program Committee of the "*Third International Conference on Broadband Communications, Networks, and Systems (BROADNETS 2006)*," San Jose, CA, October 1-5, 2006**
- **Member of the Technical Program Committee of the "*1st International Workshop on Decentralized Resource Sharing in Mobile Computing and Networking*," in conjunction with ACM MOBICOM 2006, Los Angeles, CA, September 25, 2006**
- **Member of the Technical Program Committee of the "*26th Annual IEEE Conference on Computer Communications (INFOCOM'07)*," Anchorage, Alaska, May 6-12, 2007**
- **Member of the Technical Program Committee of the "*IEEE VANET Workshop*, in conjunction with the *IEEE INFOCOM 2007* conference," May 6-12, 2007, Anchorage, AL**
- **Member of the Technical Program Committee of the "*Seventh ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc'06)*," Florence, Italy, May 22-25, 2006**
- **Member of the Technical Program Committee of "*MADNES'06*," Pythagorion, Samos, Greece, 2006**
- **Technical Program Committee member of the "*2006 IEEE International Conference on Networking, Sensing and Control*," Ft. Lauderdale, FL, April 23-25, 2006**
- **Member of the Technical Program Committee of "*International Workshop on Delay Tolerant Mobile Networks (DTMN)*," in conjunction with IWCMC 2006, Vancouver, Canada, July 3-6, 2006**
- **Member of the Technical Program Committee, "*The 16th Annual IEEE International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC 2005)*," International Congress Center (ICC), Berlin, Germany, September 11-14, 2005**
- **Member of the Technical Program Committee, "*1st International Workshop on Security, Privacy and Trust in Pervasive and Ubiquitous Computing (SecPerU'05),*" Santorini Island, Greece, July 14, 2005**
- **Member of the Technical Program Committee, "*The First International Workshop on Security, Privacy and Trust in Pervasive and Ubiquitous Computing (SecPerU 2005)*," Santorini Island, Greece, July 14, 2005**



Headwater Research LLC
Ex. 2010, IPR2023-01336

- **Member of the Technical Program Committee, "*ACM MobiHoc 2005*," Urbana-Champaign, IL, May 24-28, 2005**
- **Member of the Technical Program Committee, "*MADNES'05*," Singapore, 2005**
- **Member of the Technical Program Committee, "*2004 ACM Workshop on Security of Ad Hoc and Sensor Networks (SASN 2004)*," October 25, 2004, Wyndham City Hotel, Washington DC**
- **Technical Program Committee member, "*First IEEE International Conference on Sensor and Ad hoc Communications and Networks (SECON 2004)*," October 4-7, 2004, Santa Clara, CA**
- **Technical Program Committee member of the "*Fourth Annual ACM/IEEE International Conference on Mobile Computing and Networking (MobiCom'98)*," Dallas, TX, October 25–30, 1998**
- **Technical Program Committee member of the *IEEE Multiaccess, Mobility and Teletraffic for Personal Communications* Workshop 1998, Washington, DC, October 21-23 , 1998**
- **Technical Program Committee member of the "*Fourth Mobile Multimedia Communications Workshop (MoMuC'98)*," Berlin, Germany, October 12-14, 1998**
- **Technical Program Committee member of the "*Ninth IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'98)*," Boston, MA, September 8-11, 1998**
- **Technical Program Committee member of the "*IEEE International Conference on Universal Personal Communications (ICUPC'98)*," Florence, Italy, October 5−9, 1998**
- **Technical Program Committee member of the "*Ninth IEEE Workshop on Local and Metropolitan Area Networks,*" Banff, Alberta, Canada, May 17−20, 1998**
- **Technical Program Committee member of the "*Workshop on Nomadic Computing*," Geneva, Switzerland, April 1-5, 1997**
- **Technical Program Committee member of "*MOBICOM'97*"**
- **Technical Program Committee member of "*IEEE INFOCOM'97*"**
- **Technical Program Committee member of "*The Seventh IFIP Conference on High Performance Networking (HPN'97)*"**
- **Technical Program Co-Chair of "*ACM MOBICOM'96*"**
- **Technical Program Committee member of "*The 3rd International Workshop on Mobile Multimedia Communications (MoMuc-3)*," Princeton, NJ, Sept. 25-27, 1996**
- **Technical Program Committee member of "*The 6th IFIP International Conference on High Performance Networking (HPN'95),*" Palma De Mallorca, Balearic Islands, Spain, September 11-15, 1995**
- **Technical Program Committee member of the "*IEEE MILCOM'95*" conference**
- **Technical Program Committee member of the "*IEEE PIMRC'95*" conference**
- **Technical Program Committee member of the "*IEEE Wireless Computer Networks'94*" conference**
- **Technical Program Committee member of the "*IEEE GLOBECOM'94,*" representing the *IEEE Personal Communication Committee***
- **Served on the Technical Program Committee of "*ACM SIGCOMM'93*"**
- **Technical Program Committee member of the *4th IFIP Conference on High Performance Networking,* Liège, Belgium, December 14-18, 1992**
- **Served on the Technical Program Committees of "*IEEE INFOCOM'90*", "*IEEE INFOCOM'91*", "*IEEE INFOCOM'92*", "*IEEE INFOCOM '93*", and "*IEEE INFOCOM '94*"**



Headwater Research LLC
Ex. 2010, IPR2023-01336

# VI. PATENTS: GRANTED & PENDING

## (i) Granted

1. **Z.J. Haas and Z. Zheng, "Waveform Design for RF Power Transfer," US Patent Number: 10,931,148, date: Feb 23, 2021, assignee: The Board of Regents of the University of Texas System**

2. **Richard Gitlin, Zygmunt J. Haas, Huseyin Arslan, Gabriel E. Arrobo, and Chao He, "System and Method for User-Specific Quality of Service Scheduling in Wireless Systems," US Patent Number: 9,826,541, date: November 21, 2017, assignees: University of South Florida and Cornell University**

3. **Sriram Nandha Premnath and Zygmunt J. Haas, "System And Method For A Practical, Secure And Verifiable Cloud Computing For Mobile Systems," US Patent Number: 9,736,128, date: August 15, 2017, assignees: The Board of Regents of the University of Texas System and Cornell Research Foundation**

4. **Rimon Barr, Zygmunt J. Haas, and Robbert Van Renesse, "System for and Method of Improving Discrete Event Simulation Using Virtual Machines," U.S. patent number: 7,624,383, date: November 24, 2009, assignee: Cornell Research Foundation (D-3413)**

5. **Zygmunt J. Haas and S. Sajama, "Independent-Tree Ad hoc Multicast Routing," U.S. Patent Number: 7,035,937, date: April 25, 2006, assignee: Cornell Research Foundation**

6. **Rung-Hung Gau and Zygmunt J. Haas, "Methods and Systems for Concurrent Paging of Mobile Users in Cellular Networks," U.S. Patent Number: 7,031,731, date: April 18, 2006, assignee: Cornell Research Foundation**

7. **Zygmunt J. Haas and Miguel Sanchez, "Adaptive Patent Control for Wireless Networks," Patent Number: WO02/03567 A3, date: January 10, 2002, assignee: Cornell Research Foundation**

8. **Zygmunt J. Haas, "Routing and Mobility Management Protocols for Ad-Hoc Networks," U.S. Patent Number: 6,304,556, date: October 16, 2001, assignee: Cornell Research Foundation**

9. **Richard D. Gitlin, Zygmunt Haas, and Mark J. Karol, "System and Method for Optimizing Spectral Efficiency Using Time-Frequency-Code Slicing," U.S. Patent Number: 6,064,662, date: May 16, 2000, assignee: AT&T Corp.**

10. **Richard D. Gitlin, Zygmunt Haas, et al "System and Method for Optimizing Spectral Efficiency Using Time-Frequency-Code Slicing," U.S. Patent Number: 6,018,528, date: January 25, 2000, assignee: AT&T Corp.**

11. **Zygmunt J. Haas, "Multiply-Detected Macrodiversity Method and System for Wireless Communications," U.S. Patent Number: 5,774,814, date: June 30, 1998, assignee: Cornell Research Foundation**

12. **Zygmunt Haas and Sanjoy Paul, "Methods for Providing Secure Access to Shared Information," U.S. Patent Number: 5,719,938, date: February 17, 1998, assignee: Lucent Technologies**

13. **Zygmunt Haas, "Simultaneous Verify Local Database and Using Wireless Communication to Verify Remote Database," U.S. Patent Number: 5,598,534, date: January 28, 1997, assignee: Lucent Technologies**

14. **Zygmunt Haas and Chih-Lin I, "Beacon Based Packetized Cellular System with Real Time Processing," U.S. Patent Number: 5,577,168, date: November 19, 1996, assignee: Lucent Technologies**

15. **Zygmunt Haas, "Wireless Data Communications System for Detecting a Disabled Condition and Simulating a Functioning Mode in Response to Detection," U.S. Patent Number: 5,566,225, date: October 15, 1996, assignee: Lucent Technologies**

16. **Zygmunt Haas, "Progressive Execution Technique for Mobile Computing Devices," European Patent Number: EP0705014A1, date: April 3, 1996, assignee: AT&T Corp.**

17. **Zygmunt Haas, "Optical Packet Synchronization Circuit," U.S. Patent Number: 5,485,298, date: January 16, 1996, assignee: AT&T Corp.**

18. **Zygmunt Haas, "Optical Packet Switch," U.S. Patent Number: 5,469,284, date: November 21, 1995, assignee: AT&T IPM Corp.**

19. **Zygmunt Haas and Mario A. Santoro, "Lightwave Transmission System Using Selected Optical Modes," U.S. Patent Number: 5,416,862, date: May 16, 1995, assignee: AT&T Corp.**

20. **Zygmunt Haas, et al, "Fiber-Optic Transmission Polarization-Dependent Distortion Compensation," U.S. Patent Number: 5,311,346, date: May 10, 1994, assignee: AT&T Bell Laboratories**

21. **Richard D. Gitlin and Zygmunt Haas, "Gigabit Per-Second Optical Packet Switching with Electronic Control," U.S. Patent Number: 5,278,689, date: January 11, 1994, assignee: AT&T Bell Laboratories**

22. **Zygmunt Haas, "Communications Architecture for High-speed Networking," U.S. Patent Number: 5,115,432, date: May 19, 1992, assignee: AT&T Bell Laboratories**

23. **Zygmunt Haas, "Photonic Local/Metropolitan Area Network," U.S. Patent Number: 4,970,717, date: November 13, 1990, assignee: AT&T Bell Laboratories**

## (ii) Pending (in reverse order of filing dates)