Dirk Grunwald

Department of Computer Science
University of Colorado
Boulder, CO 80309-0430
W: (303) 492-0452
C: (720) 310-5432
Email: grunwald@colorado.edu

Research Overview

I am interested in the design of digital computer systems, including aspects of computer architecture, runtime systems, operating systems, networking and storage. My current research addresses resource and power control in microprocessor systems, power-efficient wireless networking and managing very large storage systems. I currently supervise seven Ph.D. students working on aspects of reconfigurable computing, performance for multi-core processors, software defined radio and storage systems.

Degrees Awarded

B.Sc. Computer Science	University of Illinois, Urbana-Champaign	1983
M.Sc. Computer Science	University of Illinois, Urbana-Champaign	1985
Ph.D. Computer Science	University of Illinois, Urbana-Champaign	1989

Academic Professional History

Faculty Director
2018-present, Univ. of Colorado Post-Baccalaureate Program, Dept. of Comp. Science
Associate-Chair
2013-2016, University of Colorado at Boulder, Department of Computer Science
Wilfred and Caroline Slade Endowed Professor
2009-2016, University of Colorado at Boulder, Department of Computer Science
Professor,
2009-Present, University of Colorado at Boulder, Department of Computer Science
Director,
2003-2005, Colorado Center for Information Storage
Associate Professor,
1996-2009, University of Colorado at Boulder, Department of Computer Science
Assistant Professor,
1989-1996, University of Colorado at Boulder, Department of Computer Science

Consulting and Other Professional History

- Non-testifying expert support In the Cause No. D-1-GN-16-000370; In re Volkswagen Clean Diesel Litigation; in the 353rd Judicial District, Travis County, Texas, 2021
- Testifying expert VLSI TECHNOLOGY LLC vs. Intel Corporation, Civil Action No.: 1:19-cv-977-ADA, 2020-2021
- Consulting advisor on unlicensed spectrum, Cable Labs
- Testifying special Master to Hon. Judge Kane, Colorado Federal District Court on software matters

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- Deposed expert witness on two internet-related sales tax issues, City of Fort Collins, City of Boulder
- Microsoft Corporation – 2011
  Authored paper on evolution of wireless radio and spectrum policy
- Verizon Communications – 2010
  Developed white paper on Internet Ecosystem regulation
- Intel Corporation – 2009-2010
  Initiated patent review for pending litigation that was later settled
- Telecommunications Industry Association – 2008
  Presented briefing on network management for Senate, Congressional and FCC
- Consulting, Cellport Technologies – 2007-2008
  IP Review & Product Planning
- Consultant, US Department of Justice, 2006-2007
  Expert witness and consultant on voting equipment
- Consultant, Fairpoint Telecommunications -- 2007
  Telecommunications Assessment for PUC review
- Member, Copan Systems – 2002 – 2005
  Technical Advisory Board member
- Consultant, Cellport Technologies – 2000
  IP Review & Product Planning
- Consultant & Visiting Researcher, Compaq Computer Corp – 1999-2000
- Consultant, Inktomi, Inc. – 1998
  (Technical assistance & development for first major customer)
- Consultant, Digital Equipment Corp. – 1996 (Compaq Western Research Lab)

Journal Publications

1. H. Lim J. Lee, S Sathyanarayana, J. Kim, A. Nguyen, K. Kim, Y. Im, M. Chiang, D. Grunwald and S. Ha, "An Empirical Study of 5G: Effect of Edge on Transport Protocol and Application Performance," in IEEE Transactions on Mobile Computing, doi: 10.1109/TMC.2023.3274708.

2. Jihoon Lee, Gyuhong Lee, Jinsung Lee, Youngbin Im, Max Hollingsworth, Eric Wustrow, Dirk Grunwald, and Sangtae Ha. 2021. Securing the wireless emergency alerts system. Commun. ACM 64, 10 (October 2021), 85–93. DOI:https://doi.org/10.1145/3481042

3. S. D. Sathyanarayana, J. Lee, J. Lee, D. Grunwald and S. Ha, "Exploiting Client Inference in Multipath TCP Over Multiple Cellular Networks," in IEEE Communications Magazine, vol. 59, no. 4, pp. 58-64, April 2021, doi: 10.1109/MCOM.001.2000911.

4. Dola Saha, A. Dutta, D. Grunwald and D. Sicker, "GRaTIS: Free Bits in the Network," in IEEE Transactions on Mobile Computing, vol. 14, no. 1, pp. 72-85, Jan. 2015. doi: 10.1109/TMC.2013.24

5. Eric Anderson, Caleb Philips, Douglas Sicker and Dirk Grunwald, “Optimization Decomposition for Scheduling and System Configuration in Wireless Networks, IEEE Transactions on Networking, Feb 2014

6. Caleb Phillips, Douglas Sicker and Dirk Grunwald, “Bounding The Practical Error of Path Loss Models”, International Journal of Antennas and Propagation, vol. 2012, Article ID 754158, 21 pages, 2012. doi:10.1155/2012/754158

7. Caleb Phillips, Douglas Sicker and Dirk Grunwald, “A Survey of Wireless Path Loss Prediction and Coverage Mapping Methods”, IEEE Communications Surveys and Tutorials, Issue 99, pp 1-16, 2012

8. Dirk Grunwald, “The Internet Ecosystem: The Potential for Discrimination”, Federal Communication Law Journal, 63, 411-553, 2011

9. Christian Doerr, Dirk Grunwald, and Douglas Sicker, Efficient Cross-Layer Optimization in Cognitive Radio Networks, in: Zhang, Zheng, and Chen (Eds.), Cognitive Radio Networks: Architectures, Protocols, and Standards, Taylor & Francis, 2010.

10. Christian Doerr, Dirk Grunwald, and Douglas Sicker, Swarm Intelligence in Heterogeneous Cognitive Radio Networks, in: Zhang, Zheng, and Chen (Eds.), Cognitive Radio Networks: Architectures, Protocols, and Standards, Taylor & Francis, 2010.

11. Eric Anderson, Caleb Phillips, Douglas Sicker, Dirk Grunwald, “Modeling environmental effects on directionality in wireless networks”, Mathematical and Computer Modeling, In Press, June 2010

12. Christian Doerr, Douglas Sicker and Dirk Grunwald, Local Control of Cognitive Radio Networks, Annals of Telecommunications, 2009

13. Troy Weingart, Douglas C. Sicker and Dirk Grunwald, “Identifying Opportunities for Exploiting Cross-Layer Interactions in Adaptive Wireless Systems,” Journal on Advances in Multimedia, November 2007. (12 pages)

14. Troy Weingart, Douglas C. Sicker, Dirk Grunwald, “A Statistical Model for Configuring a Cognitive Radio Network,” IEEE Wireless Networking, August 2007. (8 pages)

15. Douglas C. Sicker and Dirk Grunwald, “Measuring the Network,” International Journal of Communication (IJoC), University of Southern California. August 2007. (14 pages)

16. Joseph Dunn, Michael Neufeld, Anmol Sheth, Dirk Grunwald, John K. Bennett, “A Practical Cross-Layer Mechanism For Fairness in 802.11 Networks”. MONET 11(1): 37-45 (2006)

17. Marco Gruteser, Dirk Grunwald: “Enhancing Location Privacy in Wireless LAN Through Disposable Interface Identifiers: A Quantitative Analysis”. MONET 10(3): 315-325 (2005)

18. Michael Neufeld, Ashish Jain, Dirk Grunwald, “*Network Protocol Development with nsclick”.* Wireless Networks 10(5): 569-581 (2004)

19. Marco Gruteser and Dirk Grunwald, “A Methodological Assessment of Location Privacy Risks in Wireless Hotspot Networks”, Volume 2802 / 2004 Title: Security in Pervasive Computing, Published January, 2004, pages 10-24, ISBN: 3-540-20887-9 DOI: 10.1007/b95124

20. Artur Klauser, Srilatha Manne and Dirk Grunwald, “*Selective Branch Inversion”,* Intl. Journal of Parallel Processing, Feb. 2001

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21. Douglas Joseph and Dirk Grunwald, *"*Prefetching using Markov Predictors*", IEEE Trans. On Computers Special Issue on Memory Systems*, January 1999.

22. Brad Calder and Dirk Grunwald, "The Precomputed Branch Architecture: Efficient Branches With Compiler Support," Journal of Systems and Architecture, January 1998

23. Jeanne Ferrante, Dirk Grunwald and Harini Srinivasan, "Compile-time analysis and optimization of explicitly parallel programs", Parallel Algorithms and Architecture, Parallel Algorithms Appl. 12(1-3): 21-56 (1997).

24. Brad Calder, Dirk Grunwald and Ben Zorn, "Quantifying Behavioral Differences Between C and C++ Programs," *Journal of Programming Languages* 2(4):313-351, 1994

25. Dirk Grunwald and Benjamin Zorn, "Evaluating Models of Memory Allocation," *ACM Transactions on Modeling of Computer Systems,* Jan. 1994.

26. Dirk Grunwald and Benjamin Zorn, "CustoMalloc: Efficient Customized Memory Allocators," *Software: Practice and Experience,* August 1993.

27. Daniel Reed and Dirk Grunwald. "The Performance of Multicomputer Interconnection Networks," *IEEE Computer,* 20(6), June 1987.

28. J. Purtilo, D.A. Reed, and D.C. Grunwald, "Environments for Prototyping Parallel Algorithms," J*ournal of Parallel and Distributed Computing,* Vol 5. Pages 421--437 (1988)

Book Chapters

- Jeff Fifield, D. Grunwald, "A Methodology for Fine-Grain Parallelism in JavaScript Applications", Lecture Notes in Computer Science Volume 7146, 2013, pp 16-30
- R. McTasney, D. Grunwald and D. Sicker, "*Low Latency Wireless Mesh Networks,*" Guide to Wireless Mesh Networks. London, England: Springer, (Jan, 2009)
- Dirk Grunwald, "Microarchitecture Design and Control Speculation for Energy Reduction", in *Power Aware Computing*, R. Greybill and R. Melhem, Ed., Kluwer Academic Press, Dec. 2001
- Nam Sung Kim, Todd Austin, Trevor Mudge and Dirk Grunwald, "Challenges for Architectural Power Modeling", ", in *Power Aware Computing*, R. Greybill and R. Melhem, Ed., Kluwer Academic Press, Dec. 2001

Peer-Reviewed Conference Publications

Highly Competitive Or Historically Competitive Conferences Indicated by ⁂

- Prasanth Prahladen, Dirk Grunwald, Sangtar Ha, "Dynamical electrospacetime model as a tool for spectrum management", The Research Conference on Communications, Information & Internet Policy 52, Washington DC, Sept. 19-21, 2024. Paper available at SSRN 4906250.
- Max Hollingsworth, Yaguang Zhang, Todd Schumann, Christopher R Anderson, Michael Cotton, Seyeon Kim, Sangtae Ha, Dirk Grunwald, "Repurposing Cellular Reference Signals:

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Accurate RSRP Measurements with Mobile Phones", 2024 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN), Pages 45-50, Washington DC, May 2024.

- Karyn Doke, Ali Abedi, Max Hollingsworth, Mariya Zheleva, Anant Sahai, Dirk Grunwald, Keith Gremban, "Towards Data-Driven Policies in Spectrum Management", 2024 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN), Pages 163-168, Washington DC, May 2024

- ⁂ Sandesh Dhawaskar Sathyanarayana (University of Colorado Boulder); Kyunghan Lee (Seoul National University); Dirk Grunwald and Sangtae Ha (University of Colorado Boulder), "Converge: QoE-driven Multipath Video Conferencing over WebRTC", ACM Conference on Communications (SIGCOMM) 2023, New York

- ⁂ Zhang Liu, Joseph Izraelevitz, Gaukas Wang, Sangtae Ha, Dirk Grunwald, "MRTOM: Mostly Reliable Totally Ordered Multicast, a Network Primitive to Offload Distributed Systems", Intl. Conference on Distributed Systems (ICDCS) 2024, Hong Kong

- ⁂ Insoo Lee, Seyeon Kim, Sandesh Sathyanarayana, Kyungmin Bin, Song Chong, Kyunghan Lee, Dirk Grunwald, and Sangtae Ha. 2022. R-FEC: RL-based FEC Adjustment for Better QoE in WebRTC. In Proceedings of the 30th ACM International Conference on Multimedia (MM '22). Association for Computing Machinery, New York, NY, USA, 2948–2956. https://doi.org/10.1145/3503161.3548370

- ⁂ Insoo Lee, Jinsung Lee, Kyunghan Lee, Dirk Grunwald, and Sangtae Ha. 2021. Demystifying Commercial Video Conferencing Applications. Proceedings of the 29th ACM International Conference on Multimedia. Association for Computing Machinery, New York, NY, USA, 3583–3591. DOI:https://doi.org/10.1145/3474085.3475523

- ⁂ Zhang Liu, Hee Won Lee, Yu Xiang, Dirk Grunwald and Sangtae Ha, "eMRC: Efficient Miss Rate Approximation for Multi-Tier Caching", 19th USENIX Conference on File and Storage Technologies (FAST), Feb 23-25, 2021

- Max Hollingsworth, Jinsung Lee, Zhang Liu, Jihoon Lee, Sangtae Ha, and Dirk Grunwald, "P4EC: Enabling Terabit Edge Computing in Enterprise 4G LTE", 3rd USENIX workshop on Hot Topics in Edge Computing (HotEdge 2020), June, 2020

- ⁂ Jinsung Lee, Sungyong Lee, Jongyun Lee, Sandesh Dhawaskar Sathyanarayana, Hyoyoung Lim, Jihoon Lee, Xiaoqing Zhu, Sangeeta Ramakrishnan, Dirk Grunwald, Kyunghan Lee, Sangtae Ha, "*PERCEIVE: Deep Learning-based Cellular Uplink Prediction Using Real-time Scheduling Patterns*", 18th Annual International Conference on Mobile Systems, Applications, and Services Mobisys 2020), May 2020

- ⁂ Eric Goodman, Dirk Grunwald, "*A Streaming Analytics Language for Processing Cyber Data",* International Conference on Machine Learning and Data Mining (ICMDL 2019), 2019

- ⁂ Eric Goodman, Dirk Grunwald, "*Streaming Temporal Graphs: Subgraph Matching",* IEEE International Conference on Big Data (Big Data), 2019, 4977-4986

- ⁂ Gyuhong Lee, Jihoon Lee, Jinsung Lee, Youngbin Im, Max Hollingsworth, Eric Wustrow, Dirk Grunwald, Sangtae Ha, "This is your President Speaking: Spoofing Alerts in 4G LTE NEtworks", 17th Annual International Conference on Mobile Systems, Applications, and Services Mobisys 2019), May 2019

- ⁂ Jihoon Lee, Jinsung Lee, Youngbin Im, Sandesh Dhawaskar Sathyanarayana, Parisa Rahimzadeh, Xiaoxi Zhang, Max Hollingsworth, Carlee Joe-Wong, Dirk Grunwald, Sangtae Ha, “CASTLE over the Air: Distributed Scheduling for Cellular Data Transmissions”, 17th Annual International Conference on Mobile Systems, Applications, and Services Mobisys 2019), May 2019
- ⁂ Andrew Sayler, T Andrews, M Monaco, D Grunwald, “Tutamen: A Next-Generation Secret-Storage Platform”, 2016 ACM Symposium on Cloud Computing (SoCC 16), October 2016
- E. Goodman, J. Ingram, S. Martin and D. Grunwald, "Using Bipartite Anomaly Features for Cyber Security Applications," *2015 IEEE 14th International Conference on Machine Learning and Applications (ICMLA)*, Miami, FL, 2015, pp. 301-306.
- Austin Anderson, Xiang Wang, Kenneth R. Baker, and Dirk Grunwald. 2015. Systems For Spectrum Forensics. In *Proceedings of the 2nd International Workshop on Hot Topics in Wireless* (HotWireless '15). ACM, New York, NY, USA, 26-30. DOI=http://dx.doi.org/10.1145/2799650.2799657
- Bhaumik Bhatt, Austin M. Anderson, and Dirk Grunwald. 2015. Architecture-Based Software Designs for SDR's. In *Proceedings of the 2015 Workshop on Software Radio Implementation Forum* (SRIF '15). ACM, New York, NY, USA, 25-30.
- A. Anderson, E. W. Frew and D. Grunwald, "Cognitive radio development for UAS applications," *2015 International Conference on Unmanned Aircraft Systems (ICUAS)*, Denver, CO, 2015, pp. 695-703.
- Dirk Grunwald, Elizabeth Boese, Rhonda Hoenigman, Andy Sayler, and Judith Stafford. 2015. Personalized Attention @ Scale: Talk Isn't Cheap, But It's Effective. In *Proceedings of the 46th ACM Technical Symposium on Computer Science Education* (SIGCSE '15). ACM, New York, NY, USA, 610-615. DOI: http://dx.doi.org/10.1145/2676723.2677283
- Ryan E. Handzo, Austin M. Anderson, Jeffrey S. Parker, Dirk Grunwald, George H. Born, “Obtaining Navigation Observables From High Definition Television Towers,” The 2015 AAS/AIAA Astrodynamics Specialist Conference, Vail, CO, Aug. 9-13, 2015.
- Eric L Goodman, Dirk Grunwald, “Using vertex-centric programming platforms to implement SPARQL queries on large graphs”, Proceedings of the Fourth Workshop on Irregular Applications: Architectures and Algorithms, Nov 2014
- Eric L Goodman, Edward Jimenez, Cliff Joslyn, David Haglin, Sinan Al-Saffar, Dirk Grunwald, “Optimizing graph queries with graph joins and Sprinkle SPARQL”, 2014 IEEE International Conference on Big Data, Oct 2014.
- Andy Sayler, Dirk Grunwald. “Custos: Increasing Security with Secret Storage as a Service”, Proceedings of the 2nd Conference on Timely Results in Operating Systems, 2014. Broomfield, CO.
- Dirk Grunwald, Rob Alderfer, Kenneth R Baker, “Sophisticated Wireless Interference Analysis: A Case Study for Spectrum Sharing Policy”, Technology Policy Research Conference (TPRC), 2014
- Andy Sayler, Dirk Grunwald, John Black, Elizabeth White, Matthew Monaco, “Supporting CS education via virtualization and packages: tools for successfully accommodating bring-your-

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own-device at scale", Proceedings of the 45th ACM technical symposium on Computer science education (SIGCSE 2014)

- ⁂ H Gu, M Gartrell, L Zhang, Q Lv, D Grunwald –"AnchorMF: towards effective event context identification", Proceedings of the 22nd ACM international conference on Conference on information & knowledge management
- Addressing 21st century skills by embedding computer science in K-12 classes
  D Goldberg, D Grunwald, C Lewis, J Feld, K Donley, Proceeding of the 44th ACM technical symposium on Computer science education (SIGCSE)
- ⁂ Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Practical Radio Environment Mapping with Geostatistics. IEEE Dynamic Spectrum Access Networks 2012 (DySPAN 2012).
- ⁂ Dola Saha, Aveek Dutta, Dirk Grunwald and Douglas Sicker, "GRaTIS: Sensing and Intelligence for Performance In the Presence Legacy Networks", IEEE CROWNCOM (Cogintive Radio Networks), June 2012
- ⁂ Dola Saha, Aveek Dutta, Dirk Grunwald and Douglas Sicker, "Secret Agent Radio: Covert Communication Through Dirty Constellations", IEEE Information Hiding Conference, June 2012
- ⁂ C. Phillips, Douglas Sicker and Dirk Grunwald, "Bounding the Error of Path Loss Models", IEEE DYSPAN 2011 (Dynamic Spectrum Access), Aachen, Germany, June 2011
- ⁂ Dola Saha, Aveek Dutta, Dirk Grunwald and Douglas Sicker, "Blind Synchronization for NC-OFDM – When Channels are Convention and not Mandates", IEEE DYSPAN 2011 (Dynamic Spectrum Access), Aachen, Germany, June 2011
- ⁂ Eric Anderson, Caleb Phillips, Douglas Sicker and Dirk Grunwald, "Signal Quality Pricing: Decomposition for Spectrum Scheduling and System Configuration", IEEE DYSPAN 2011 (Dynamic Spectrum Access), Aachen, Germany, June 2011
- ⁂ C. Phillips, S. Raynel, J. Curtis, S. Bartels, Douglas Sicker and Dirk Grunwald, "The Efficacy of path loss models for fixed rural wireless links", IEEE Passive and Active Measurement, 2011
- K. Bauer, M. Sherr, D. McCoy, D. Grunwald, "ExperimenTor: a testbed for safe and realistic Tor experimentation", USENIX Workshop on Cyber Security Experimentation and Test (CSET), 2011
- ⁂ M Al Sabah, K Bauer, I. Goldberg, D. Grunwald, D. McCoy, S. Savage, G. Voelker, "DefenestraTor: Throwing Out Windows in Tor", Privacy Enhancing Technologies, 2011
- ⁂ Dirk Grunwald, Aaron Beach, Kevin Bauer, Qin Lv, and Douglas Sicker, "The Risks and Regulation of Location", 38th Research Conference on Communication, Information and Internet Policy (TPRC 2010) , Arlington, VA (October 2010)
- ⁂ J. Trent Adams, Kevin Bauer, Asa Hardcastle, Dirk Grunwald, and Douglas Sicker, "Automated Tracking of Online Service Policies", 38th Research Conference on Communication, Information and Internet Policy (TPRC 2010), Arlington, VA (October 2010)
- ⁂ "Policy Issues Facing the Use of Social Network Information During Times of Crisis" Douglas C Sicker, Leysia Palen, Dirk Grunwald, Ken Anderson, Lisa Blumensaadt, 38th

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Research Conference on Communication, Information and Internet Policy (TPRC 2010), Arlington, VA (October 2010).

- ⁂ Kevin Bauer, Joshua Juen, Nikita Borisov, Dirk Grunwald, Douglas Sicker, and Damon McCoy, "On the Optimal Path Length for Tor" 3rd Hot Topics in Privacy Enhancing Technologies (HotPETS 2010), Berlin, Germany (July 2010).
- ⁂ "A Vision for Technology-Mediated Support for Public Participation & Assistance in Mass Emergencies & Disasters," Leysia Palen, Kenneth M. Anderson, Gloria Mark, James Martin, Douglas Sicker, Martha Palmer and Dirk Grunwald, ACM-BCS Visions of Computer Science conference, May 2010.
- ⁂ Aveek Dutta, Dola Saha, Dirk Grunwald and Douglas Sicker, "*An Architecture for Software Defined Cognitive Radio"*, ANCS 2010 – Proceedings of the 4th ACM/IEEE Conference on Architectures for Networking and Communications Systems, Oct 2010
- Aveek Dutta, Dola Saha, Dirk Grunwald, and Douglas Sicker, "Practical Implementation of Blind Synchronization in NC-OFDM based Cognitive Radio Networks", ACM CORONET, Chicago, USA, September 2010.
- Dola Saha, Aveek Dutta, Dirk Grunwald, Douglas Sicker, "Channel Assignment in Virtual Cut-Through Switching based Wireless Mesh Networks" ICDCN, Kolkata, India, January 2010.
- Eric Anderson, Gary Yee, Caleb Phillips, Michael Buettner, Douglas Sicker, Dirk Grunwald, "Challenges in Deploying Steerable Wireless Testbeds" TridentCom 2010.
- Gary V. Yee, Dirk Grunwald, and Douglas C. Sicker. "Understanding the Joint Application of Wireless Optimizations." The Fifth ACM International Workshop on Wireless Network Testbeds, Experimental evaluation and Characterization. (WiNTECH 2010).
- Gary V. Yee, Dirk Grunwald, and Douglas C. Sicker. "The Effect of Ordering on Wireless Optimization Algorithms." Fifth IEEE Workshop on Wireless Mesh Networks. (WiMesh 2010).
- Caleb Phillips, Scott Raynel, Jamie Curtis, Sam Bartels, Douglas Sicker, Dirk Grunwald and Tony McGregor. The Efficacy of Path Loss Models for Fixed Rural Wireless Links. Passive and Active Measurement Conference 2011 (PAM 2011). Atlanta, Georgia. March 20-22, 2011.
- Dola Saha, Aveek Dutta, Dirk Grunwald and Douglas Sicker, "*Active Radar – A cooperative approach using Multicarrier Communication",* IEEE Local Networks 2010, LCN 2010
- Aveek Dutta, Dola Saha, Dirk Grunwald and Douglas Sicker, "*Practical Implementation of Blind Synchronization in NC-OFDM based Cognitive Radio Networks"*, CoRoNet 2010, Proceedings of the 2009 ACM Conference on Cognitive Radio Networks, 2010
- Gary Yee, Dirk Grunwald and Douglas Sicker, "*Understanding the Joint Application fo Wireless Optimizations*", The Fifth ACM International Workshop on Wireless Network Testbeds, Experimental evaluation and Characterization (WiNTECH 2010)
- Gary Yee, Dirk Grunwald and Douglas Sicker, "*The Effect of Ordering on Wireless Optimization Algorithms*", The Fifth IEEE Workshop on Wireless Mesh Networks (WiMesh 2010)

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- Eric Anderson, Gary Yee, Caleb Phillips, Douglas Sicker, Dirk Grunwald}, "*Challenges in Deploying Steerable Wireless Testbeds*", Proc. 6th International conference on testbeds and research infrastructures for the development of networks and communities (TridentCom), 2010
- ⁂ Dola Saha, Aveek Dutta, Dirk Grunwald and Douglas Sicker, "*PAMAC: A PHY Aided MAC for Wireless Networks*", 2009 INFOCOM Mini-Conference, 2009 (9% acceptance rate)
- "Predicting Tor Path Compromise by Exit Port", Kevin Bauer, Douglas Sicker and Dirk Grunwald, 2nd IEEE International Workshop on Information and Data Assurance (WIDA'09), 2009.
- ⁂ Dola Saha, Aveek Dutta, Dirk Grunwald, and Douglas Sicker, SMACK- SMACK - A SMart ACKnowledgment Scheme for Broadcast Messages in Wireless Networks, ACM SigComm, 2009.
- ⁂Dola Saha, Aveek Dutta, Dirk Grunwald, and Douglas Sicker, PAMAC: A PHY Aided MAC for Wireless Networks?, InfoCom Mini-symposium, 2009.
- Caleb Phillips, Suresh Singh, Douglas Sicker, Dirk Grunwald, Techniques for Simulation of Realistic Infrastructure Wireless Network Traffic, 7th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2009.
- Eric Anderson, Caleb Phillips, Douglas Sicker and Dirk Grunwald, Modeling Environmental Effects on Directionality in Wireless Networks, 5th International workshop on Wireless Network Measurements (WiNMee), 2009.
- Eric Anderson, Gary Yee, Caleb Phillips, Douglas Sicker, Dirk Grunwald, The Impact of Directional Antenna Models on Simulation Accuracy, 7th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2009.
- BitStalker: Accurately and Efficiently Monitoring BitTorrent Traffic, Kevin Bauer, Damon McCoy, Dirk Grunwald, and Douglas Sicker, In Proceedings of the 1st IEEE International Workshop on Information Forensics and Security London, United Kingdom (December 2009)
- ⁂ Kevin Bauer, Damon McCoy, Ben Greenstein, Dirk Grunwald, and Douglas Sicker, Physical Layer Attacks on Unlinkability in Wireless LANs, Proceedings of the 9th Privacy Enhancing Technologies Symposium Seattle, WA (August 2009). [Our data is available in CRAWDAD]
- Kevin Bauer, Dirk Grunwald, and Douglas Sicker, The Challenges of Stopping Illegal Peer-to-peer File Sharing, In Proceedings of National Cable & Telecommunications Association Technical Papers, Washington, DC (April 2009).
- The Directional Attack on Wireless Localization - or - How to Spoof Your Location with a Tin Can, Kevin Bauer, Damon McCoy, Eric Anderson, Markus Breitenbach, Greg Grudic, Dirk Grunwald, and Douglas Sicker, Proceedings of the IEEE Global Communications Conference, Honolulu, HI (December 2009). [Our data is available in CRAWDAD]
- ⁂ The Arms Race in P2P, Kevin Bauer, Dirk Grunwald, and Douglas Sicker, In TPRC, the Proceedings of the 37th Research Conference on Communication, Information, and Internet Policy Arlington, VA (September 2009).

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- SniffMob: Inferring Human Contact Patterns using Wireless Devices, Eric Anderson, Caleb Phillips, Harold Gonzales, Kevin Bauer, Dirk Grunwald, and Douglas Sicker, In Proceedings of the 1st ACM International Workshop on Hot Topics of Planet-scale Mobility Measurements, Krakow, Poland (June 2009)
- Performing Traffic Analysis on a Wireless Identifier-free Link Layer, Kevin Bauer, Damon McCoy, Ben Greenstein, Dirk Grunwald, and Douglas Sicker, In Proceedings of the 5th Richard Tapia Celebration of Diversity in Computing Conference Portland, OR (April 2009).
- ⁂ Tipp Moseley, Dirk Grunwald, Ramesh V. Peri, "*Chainsaw: Using Binary Matching for Relative Instruction Mix*" Proceedings of the International Conference on Parallel Architectures and Compilation Techniques (PACT). September, 2009.
- ⁂ OptiScope: Performance Accountability for Optimizing Compilers Tipp Moseley, Dirk Grunwald, Ramesh V. Peri. Proceedings of the International Symposium on Code Generation and Optimization (CGO). March, 2009. Voted best student presentation by conference attendees.
- ⁂ D. Fay, L. Shang, and D. Grunwald, "A platform for developing adaptable multicore applications," in Proc. IEEE International Conference on Compilers, Architecture, and Synthesis for Embedded Systems, July 2009.
- Christian Doerr, Dirk Grunwald and Douglas Sicker, "*Dynamic Control Channel Assignment in Cognitive Radio Networks using Swarm Intelligence*", IEEE Global Communications Conference (Globecom) 2008.
- Aveek Dutta, Jeff Fifield, Graham Schelle, Dirk Grunwald and Douglas Sicker, "An Intelligent Physical Layer For Cognitive Radio Networks", Proceedings 4th Wireless Internet Conference (WICON 2008), Nov. 2008
- Robert McTasney, Dirk Grunwald and Douglas Sicker, "*Low-Latency Multichannel Cut-Through vs. CSMA/CA Wireless Mesh Networking",* Proceedings 27th Annual Military Communications Conference (MILCOM 08), Nov. 2008
- Christian Doerr, Dirk Grunwald and Douglas Sicker, "*Dynamic Control Channel Management in Presence of Spectrum Heterogeneity",* Proceedings 27th Annual Military Communications Conference (MILCOM 08), Nov. 2008
- Caleb Phillips, Suresh Singh, Douglas C. Sicker, Dirk Grunwald, "*Applying models of user activity for dynamic power management in wireless devices*" Mobile HCI 2008: 315-318
- Kevin Bauer, Damon McCoy, Dirk Grunwald, and Douglas Sicker, "*BitBlender: Light-Weight Anonymity for BitTorrent*", In Proceedings of the Workshop on Applications of Private and Anonymous Communications (AIPACa 2008), In conjunction with the 4th International Conference on Security and Privacy for Communication Networks (SecureComm 2008), Istanbul, Turkey (September 2008)
- ⁂ Graham Schelle and Dirk Grunwald. "*Exploring FPGA Network on Chip Implementations Across Various Application and Network Loads*", 17th Intl. Conference on Field Programmable Logic (FPL 2008). [29% Acceptance Rate]
- ⁂ Damon McCoy, Kevin Bauer, Dirk Grunwald, Tadayoshi Kohno, and Douglas Sicker, "Shining Light in Dark Places: Understanding the Tor Network", 8th Privacy Enhancing Technologies Symposium (PETS 2008) Leuven, Belgium (July 2008).

- Kevin Bauer, Damon McCoy, Ben Greenstein, Dirk Grunwald, and Douglas Sicker, "Using Wireless Physical Layer Information to Construct Implicit Identifiers", The 8th Privacy Enhancing Technologies Symposium, 2008.
- Graham Schelle, Dan Fay, Li Shang and Dirk Grunwald. Exploring Varying Levels of Hardware Reliability in Processor Architectures. Workshop on Architectural Prototyping (WARP 2008).
- Dan Fay, Graham Schelle, Li Shang and Dirk Grunwald. Modeling FPGA-Based Cyber-Physical Systems. Workshop on Architectural Prototyping (WARP 2008).
- Eric Anderson, Caleb Phillips, Kevin Bauer, Douglas Sicker, and Dirk Grunwald, "Modeling Directionality in Wireless Networks (Extended Abstract)", ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems, Annapolis, MD (June 2008).
- Caleb Phillips, Russell Senior, Douglas Sicker and Dirk Grunwald, "*Robust Coverage and Performance Testing for Large Area Networks*", AccessNets, 2008.
- Christian Doerr, Michael Colagrosso, Dirk Grunwald and Douglas Sicker, "*Scalability of Cognitive Radio Control Algorithms*", IEEE International Symposium on Wireless Pervasive Computing (ISWPC) 2008
- ⁂ R. McTasney, D. Grunwald and D. Sicker, "Interference Mitigation In Wireless Mesh Networks Through STDMA Wormhole Switching," in Proceedings of the Third International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CrownCom 2008). IEEE, 2008. (9 pages, acceptance rate 25%).
- Christian Doerr, Dirk Grunwald, and Douglas C. Sicker, "Enhancing Cognitive Radio Algorithms through Efficient, Automated Adaptation Management", IEEE Vehicular Technology Conference (VTC) 2008.
- ⁂ Christian Doerr, Dirk Grunwald, and Douglas C. Sicker, "Local Independent Control of Cognitive Radio Networks", International Conference on Cognitive Radio Oriented Wireless Networks and Communication (CROWNCOM) 2008 (9 pages, acceptance rate 25%).
- Christian Doerr, Dirk Grunwald, and Douglas C. Sicker, "Algorithms in Cognitive Radio Networks", US/DoD - Finland/TEKES collaborative workshop for Issues in Wireless Communication Networking 2008.
- Christian Doerr, Douglas C. Sicker, and Dirk Grunwald, "Experiences Implementing Cognitive Radio Control Algorithms", IEEE Globecom 2007 Wireless Communications 2007 (Invited Paper, 6 pages).
- Thomas W. Rondeau, Allen B. MacKenzie, Charles W. Bostian, Keith E. Nolan, Linda Doyle, Douglas C. Sicker, Christian Doerr, Dirk Grunwald, Gary J. Minden, Joseph B. Evans, "International Collaboration for a Cognitive Radio Testbed", Software-Defined Radio Technical Forum (SDR Conference) 2007 (6 pages).
- R. McTasney, D. Grunwald, and D. Sicker, "Interference Mitigation In Wireless Mesh Networks Through STDMA Wormhole Switching," IEEE WCNC, December 2007.
- R. McTasney, D. Grunwald, and D. Sicker, "Multichannel Wormhole Switching vs. CSMA/CA for Wireless Mesh Networking," IEEE WCNC, December 2007.

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- Christian Doerr, Douglas Sicker and Dirk Grunwald, “What a Cognitive Radio Network Can Learn from a School of Fish,” Wireless Internet Conference (WICON), 2007. (Acceptance Rate = 39%)
- Christian Doerr, Douglas C. Sicker, and Dirk Grunwald, “Toward a Model for Characterizing Cognitive Radio Networks,” IEEE GlobeCom, Nov 2007, (Acceptance Rate = 40%). (6 pages)
- ⁂ Kevin Bauer, Damon McCoy, Dirk Grunwald, Tadayoshi Kohno, and Douglas Sicker, “Low–Resource Routing Attacks Against Tor,” In Proceedings of the 2007 ACM Workshop on Privacy in the Electronic Society (WPES 2007). October 29, 2007. (Acceptance Rate = 22%) (10 pages)
- Tipp Moseley, Dirk Grunwald and Ramesh Peri, “Seekable Compressed Traces”, Proceedings of the 2007 IEEE International Symposium on Workload Characterization (IISWC). September 2007. (32% acceptance)
- ⁂ Paul Ohm, Douglas C. Sicker and Dirk Grunwald, “Issues Involving Network Monitoring,” Internet Measurement Conference (IMC), Nov, 2007 (invited paper) (Acceptance Rate = 25%) (10 pages)
- ⁂ Graham Schelle, Jeff Fifield and Dirk Grunwald, “A Software Defined Radio Application Utilizing Modern FPGAs and NoC Interconnects”, Proceedings 17th Intl. Conference on Field Programming Logic (FPL 2007), August 2007, [21% Acceptance Rate]
- R. McTasney, D. Grunwald, and D. Sicker, “Low–Latency Multichannel Wireless Mesh Networks,” IEEE International Workshop on Wireless Mesh and Ad Hoc Networks, IEEE Communications Society, August 2007.
- Christian Doerr, Douglas Sicker and Dirk Grunwald, “Optimizing for Sparse Training of Cognitive Radio Networks,” First International Workshop on Cognitive Wireless Networks (CWNets), 2007.
- Michael Buettner, Eric Anderson, Gary Yee, Dola Saha, Douglas C. Sicker and Dirk Grunwald, “A Phased Array Antenna Testbed for Evaluating Directionality in Wireless Networks,” ACM MobiEval ’07, June 2007.
- Troy Weingart, Gary Yee, Douglas C. Sicker, and Dirk Grunwald, “Implementation of a Reconfiguration Algorithm for Cognitive Radio,” IEEE CrownCom, 2007.
- Douglas Sicker, Damon McCoy, and Dirk Grunwald, “A Mechanism for Detecting and Responding to Misbehaving Nodes in Wireless Networks,” SDR Workshop, IEEE SECON, 2007.
- Tipp Moseley, Daniel A. Connors, Dirk Grunwald, Ramesh V. Peri. “Identifying Potential Parallelism via Loop-centric Profiling”, Proceedings of the 2007 Conference on Computing Frontiers (CF). May 2007. (50% acceptance).
- Graham Schelle and Dirk Grunwald, “Abstracting Modern FCCMs To Provide A Single Interface to Architectural Resources”, Proceedings 2007 Intl. Symp. On Field-Programmable Custom Computing Machines (FCCM 2007), April 2007
- Tipp Moseley, Alex Shye, Vijay Janapa Reddi, Dirk Grunwald, Ramesh V. Peri “Shadow Profiling: Hiding Instrumentation Costs with Parallelism”, Proceedings of the International Symposium on Code Generation and Optimization (CGO). March 2007. (31% acceptance).

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- John Giacomoni, Tipp Moseley, Graham Price, Brian Bushnell, Manish Vachharajani, Dirk Grunwald. “Toward a Toolchain for Pipeline Parallel Programming on CMPs”, Proceedings of the Workshop on Software Tools for Multi-Core Systems (STMCS) held in conjunction with CGO'07. March 2007.
- ⁂ Jeff Fifield, Dirk Grunwald, and Douglas C. Sicker, “Experiences With a Platform for Frequency-Agility” IEEE/ACM DySPAN (Dynamic Spectrum Access Networks) 2007. (Acceptance Rate = 25%) (6 pages)
- ⁂ Anmol Sheth, Christian Doerr, Richard Han, Dirk Grunwald and Douglas Sicker, “MoJo, A Distributed Physical Layer Anomaly Detection System For 802.11 Wireless LANs,” the Proceedings of ACM MobiSys 2006, pp. 191 - 204. (Acceptance Rate = 12%) (14 pages)
- Douglas Sicker, Dirk Grunwald, Eric Anderson, Brita Munsinger and Anmol Sheth, “*Examining the Wireless Commons”,* 34th Research Conference on Communication, Information and Internet Policy (TPRC 2006), Sept. 2006 (Acceptance Rate = 28%) (20 pages)
- Troy Weingart, Doug Sicker and Dirk Grunwald, “*A Predictive Model for Cognitive Radio*”, Military Communication Conference (MILCOM 2006), Oct 2006
- Tipp Moseley, Dirk Grunwald, Daniel A. Connors, Ram Ramanujam, Vasanth Tovinkere, Ramesh V. Peri, “LoopProf: Dynamic Techniques for Loop Detection and Profiling”, Proceedings of the Workshop on Binary Instrumentation and Applications (WBIA) held in conjunction with ASPLOS-12. October 2006.
- Troy Weingart, Douglas C. Sicker and Dirk Grunwald, “A Method for Dynamic Configuration of a Cognitive Radio”, IEEE Networking Technologies for Software Defined Radio Networks. September 2006.
- Troy Weingart, Douglas Sicker and Dirk Grunwald “Cross Layer Cognitive Radio Systems”, IEEE Workshop on Networking Technologies for Software Defined Radios help in conjunction with 3rd Annual IEEE Sensor, Mesh and Ad-hoc Communications and Networks (IEEE SECON 2006), Sept. 2006
- Troy Weingart, Douglas C. Sicker and Dirk Grunwald, “Evaluation of Cross–Layer Interactions for Reconfigurable Radio Platforms,” IEEE Technology and Policy for Accessing Spectrum (TAPAS), August 2006.
- Charles B. Morrey III and Dirk Grunwald, “*Content Based Block Caching*”, 23rd IEEE, 14th NASA Goddard Conference on Mass Storage Systems and Technologies, MSST2006, College Park, Maryland, USA May 15-18, 2006
- Tom Lookabaugh, Douglas C. Sicker, and Dirk Grunwald, “*Multimedia Quality of Service and Net Neutrality on Wireless Networks*”, 9th Annual International Symposium on Advanced Radio Technologies, March 2006
- Graham Schelle, Dirk Grunwald “*Onchip Interconnect Exploration for Multicore Processors Utilizing FPGAs*”, 2nd Workshop on Architecture Research using FPGA Platforms, held in conjunction with the 2006 High Performance Computer Architecture Conference (HPCA 2006), Feb 2006

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- ⁂ C. Doerr, M. Neufeld, J. Fifield, T. Weingart, D.C. Sicker, D.Grunwald, "*MultiMAC - An Adaptive MAC Framework for Dynamic Radio Networking*", First IEEE Int. Conference on Dynamic Spectrum Access (DYSPAN 2005), Nov 2005
- Tipp Moseley, Dirk Grunwald, Joshua L. Kihm, Daniel A. Connors: "Methods for Modeling Resource Contention on Simultaneous Multithreading Processors", International Conference on Computer Design, ICCD 2005: 373-380
- Graham Schelle, Dirk Grunwald: "CUSP: a modular framework for high-speed network applications on FPGAs". Intl. Symposium on Field Programmable Gate Arrays, (FPGA 2005) 246-257
- Nels Anderson, Adam Bender, Carl Hartung, Gaurav Kulkarni, Anuradha Kumar, Isaac Sanders, Dirk Grunwald and Bruce Sanders, "*The Design of the Mirage Spatial Wiki*", Intl. Conference on Web Information Systems and Technologies, May 2005
- Troy Weingart, Doug Sicker, Michael Neufeld and Dirk Grunwald, "*Adverbs and Adjectives: An Abstraction for Software Defined Radios*", International Symposium on Advanced Radio Technologies, March 2005
- Tipp Moseley, Dirk Grunwald, Alex Shye, Vijay Janapa Reddi, Matthew Iyer, Dan Fay, David Hodgdon, Joshua L. Kihm, Alex Settle, Daniel A. Connors, "*Dynamic Run-time Architecture Techniques for Enabling Continuous Optimization*", Computing Frontiers Conference, Jan. 2005 (40% Acceptance)
- Graham Schelle and Dirk Grunwald, "*Automated Speculation and Parallelism in High Performance Network Applications*", Field Programmable Logic and Application: 14th International Conference, FPL 2004
- S. Ghiasi and D. Grunwald, "Design *Choices for Thermal Control in Dual-Core Processors*", 2004 Workshop on Complexity Effective Design
- Joe Carey and Dirk Grunwald, "*Enhancing WLAN Security with Adaptive Antennas*", IEEE Vehicular Technology Conference 2004, Antenna and Propagation track
- Joseph Dunn, Michael Neufeld, Anmol Sheth, Dirk Grunwald and John Bennett, "*A Practical Cross-Layer Mechanism For Fairness in 802.11 Networks*", 1st International Conference on Broadband Networks (BROADNETS 2004)
- Michael Neufeld, Dirk Grunwald "*Using Phase Array Antennas with the 802.11 MAC Protocol"*, 1st International Conference on Broadband Networks (BROADNETS 2004)
- ⁂ Marco Gruteser, Graham Schelle, Ashish Jain, Richard Han, Dirk Grunwald, "*Privacy-Aware Location Sensor Networks*", 9th USENIX Workshop on Hot Topics in Operating Systems (HotOS IX) -- 2003 Area(s): Privacy and Security, Sensor Networks
- Marco Gruteser, Dirk Grunwald, "*Enhancing Location Privacy in Wireless LAN through Disposable Interface Identifiers: A Quantitative Analysis",* First ACM International Workshop on Wireless Mobile Applications and Services on WLAN Hotspots (held with MobiCOM) -- 2003

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- Charles B. Morrey III , Dirk Grunwald , "*Peabody - The Time Traveling Disk* " IEEE Mass Storage Conference, San Diego, CA, April, 2003
- ⁂ Marco Gruteser, Dirk Grunwald, "*Anonymous Usage of Location-based Services through Spatial and Temporal Cloaking",* International Conference on Mobile Systems, Applications, and Services (MobiSys) – 2003
- Marco Gruteser, Dirk Grunwald, "*A Methodological Assessment of Location Privacy Risks in Wireless Hotspot Networks",* First International Conference on Security in Pervasive Computing -- 2003
- ⁂ Dirk Grunwald, Soraya Ghiasi, "*Microarchitectural Denial of Service: Insuring Microarchitectural Fairness"*, 35th Intl. Symposium on Computer Microarchitecture -- 2002
- Dennis Coleralli and Dirk Grunwald, "*The Case for MAID: Massive Arrays of Idle Disks*", Proceedings of 2002 Supercomputing & Communications, Nov. 2002
- ⁂ Robert Cooksey, Stephen Jordan, Dirk Grunwald, *A Stateless, Content-Directed Data Prefetching Mechanism,* Architectural Support for Programming Languages and Systems (ASPLOS 2002) – 2002
- Michael Neufeld, Ashish Jain, Dirk Grunwald "*Nsclick:: bridging network simulation and deployment*". MSWiM 2002: 74-81
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- Soraya Ghiasi, Jason Casmira and Dirk Grunwald, "*A Comparison of two architectural power models*", Power Aware Computing Systems, Nov. 2000
- Jason Casmira and Dirk Grunwald, "*Dynamic Instruction Scheduling Slack*", Proceedings 2000 KoolChips
- ⁂ Dirk Grunwald, Philip Levis, Keith I. Farkas, Charles B. Morrey III, Michael Neufeld, "*Policies for Dynamic Clock Scheduling*". Proceedings of 4th Symp. On Operating System Design and Implementation (OSDI 2000): 73-86
- ⁂ Keith I. Farkas, Jason Flinn, Godmar Back, Dirk Grunwald, Jennifer M. Anderson, "*Quantifying the energy consumption of a pocket computer and a Java virtual machine*", In Proc. International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS 2000)
- Soraya Ghiasi and Dirk Grunwald, "IPC Matching Mechanisms: Using IPC Variation in Workloads with Externally Specified Rates To Reduce Power Consumption", 2000 Workshop on Complexity Effective Design
- ⁂ Artur Klauser and Dirk Grunwald, "*Instruction Fetch Mechanisms For Multipath Execution Processors",* Proceedings of Intl. Symposium on Microarchitecture, Nov. 1999
- Artur Klauser, Todd Austin, Brad Calder and Dirk Grunwald, "Dynamic Hammock Predication for Non-predicated Instruction Set Architectures" , Intl. Conf. on Parallel Architectures and Compilation Techniques (PACT), Paris, France, October 1998.

- Donald Lindsay, Dirk Grunwald and Ben Zorn, "*Static Methods in Hybrid Branch Prediction*" in Proceedings of the Intl. Conf. on Parallel Architectures and Compilation Techniques (PACT), Paris, France, October 1998.
- Suvas Vajracharya and Dirk Grunwald, "*Dependence Driven Execution for Multiprogrammed Multiprocessors*", 1998 Intl. Conference on Supercomputing (ICS'98)
- ⁂ Dirk Grunwald, Artur Klauser, Srilatha Manne, and A. Pleszkun, "*Confidence Estimation for Speculation Control*", Intl. Symp. On Computer Architecture (ISCA'98)
- ⁂ Srilatha Manne, Dirk Grunwald and Artur Klauser "*Pipeline gating: Speculation Control for Low Power*", Intl. Symp. On Computer Architecture (ISCA'98)
- ⁂ Artur Klauser, Abjit Paithankar and Dirk Grunwald, "*Selective Eager Execution Architecture for Multipath Execution*", Intl. Symposium On Computer Architecture (ISCA'98)
- Anshu Aggarwal and Dirk Grunwald, "*Effects of network bandwidth on write-through DSM protocols*", 1998 Conference on High Performance Computer Networking (HPCN'98)
- Srilatha Manne, Dirk Grunwald and Fabio Somenzi, "*Remembrance of Things Past: Locality and Memory in BDDs*", Design Automation Conference (DAC'97), 1997.
- Suvas Vajracharya and Dirk Grunwald, "*Exploiting Temporal Locality Using a Dependence Driven Execution*", in International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'97)
- Suvas Vajracharya and Dirk Grunwald*, "Loop Re-ordering and Pre-fetching at Run-time",* in Proceedings of SuperComputing '97
- ⁂ Carlos Maltzahn, Kathy Richardson and Dirk Grunwald, "*Performance Issues of Enterprise Level Web Proxies*", in 1997 Intl. Conf. On Measurement and Modeling of Computer Systems (SIGMETRICS'97)
- ⁂ Douglas Joseph and Dirk Grunwald, *"Prefetching using Markov Predictors",* in 1997 Intl. Symposium on Computer Architecture (ISCA'97)
- ⁂ Dirk Grunwald and Richard Neves, "*Whole-Program Optimization for Time and Space Efficient Threads*", in Seventh Intl. Conference on Architectural Support for Programming Languages and Operations Systems (ASPLOS-VII), Oct. 1996.
- Suvas Vajracharya and Dirk Grunwald, "*Dependence Driven Execution for Data Parallelism*", Workshop on Languages and Compilers for Parallel Computers (LCPC), also republished in Springer-Verlag Lecture Notes in Computer Science.
- Clive Baillie, Dirk Grunwald and Suvas Vajracharya "*The Design of an Object-Oriented Runtime System For Integrated Task and Object Parallelism*", Hawaii Systems Science Conference, Jan. 1996.
- Brad Calder, Dirk Grunwald and Joel Emer, "*Predictive Sequential Associative Caches*", 3rd Annual symposium on High Performance Computer Architecture, 1995
- Jeanne Ferranti, Dirk Grunwald and Harini Srinivasan, "Computing Communication Sets for Control Parallel Programs," Cornell Workshop on High Performance Compilers, August 1994.

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- ⁂ Brad Calder and Dirk Grunwald, “Fast and Accurate Instruction Fetch and Branch Prediction”, International Symposium on Computer Architecture (ISCA), April 1994.
- ⁂ Brad Calder and Dirk Grunwald, “Reducing Indirect Function Call Overhead In C++ Programs”, Proc. ACM Principles of Programming Languages (POPL), Jan. 1994.
- Dirk Grunwald and Suvas Vajracharya, “Efficient Barriers for Distributed Shared Memory Computers,” Intl. Parallel Processing Symp (IPPS), Mar. 1994.
- ⁂ Dirk Grunwald and Harini Srinivasan, “Data Flow Equations for Explicitly Parallel Programs,” Proc. ACM Principals and Practice of Parallel Programs (PPoPP), May 1993.
- Dirk Grunwald, Gary J. Nutt, David Wagner, Anthony M. Sloane, and Benjamin Zorn, “A Testbed for Studying Parallel Programs and Systems,” 1993 International Workshop on Modeling, Analysis and Simulation of Computer and Telecommunication Systems.
- Dirk Grunwald, Gary Nutt, Tony Sloane, David Wagner, William Waite, and Benjamin Zorn, “*Execution Architecture Independent Program Tracing*,” in *Supercomputing '91*.
- Dirk Grunwald, “Data Dependence Analysis: The lambda-Test Revisited,” Proc. of the 1990 Intl. Conf. on Parallel Processing, 1990.
- ⁂ E. Chow, H. Maden, J. Peterson, D. Grunwald, and D. Reed. “Hyperswitch Network for the Hypercube Computer.” ACM 15th International Symposium on Computer Architecture, pages 90—99

Other Publications:

- Ning Gao, Zhang Liu, Dirk Grunwald, “DTranx: a SEDA-based Distributed and Transactional Key Value Store with Persistent Memory Log”, arXiv preprint arXiv:1711.09543, Sept. 2017
- Austin Anderson, Dirk Grunwald & Kenneth Baker, “Spectrum Monitoring with UAS”, Intl. Symposium on Advanced Radio Technology (ISART), Boulder, Colorado, 2017
- Michael Buettner and Dirk Grunwald, “A Wireless Flit-Based OpNET Model”, Univ. of Colorado Technical Report #1011-06, May 2006
- Charles B. Morrey III and Dirk Grunwald, “CIMStore: Content-Aware Integrity Maintaining Storage”, Work in Progress: 23rd IEEE, 14th NASA Goddard Conference on Mass Storage Systems and Technologies, MSST2006, College Park, Maryland, USA May 15-18, 2006
- Jeff Fifield, Bob McTasney, Graham Schelle, Paul Kasemir and Dirk Grunwald, “Using Gnu Software Radio Package with the Xilinx ExtremeDSP/II”, Univ. of Colorado Technical Report, June, 2006

Grants & Funding

- Dirk Grunwald, Sangtae Ha and Eric Wustrow, “SDR LTE Network Testbed and RESPONS”, Dept. of Commerce Public Safety Communication Research Lab, 6/1/2017-5/31/2020, $1,500,000

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- Dirk Grunwald (PI) and Carlos Maltzahn (Co-PI, UCSC), “CSR: Medium” Collaborative Research: Data Center Scale Programmable Storage”, 9/1/2017-8/31/2020, $500,000 to Univ. of Colorado,
- Dirk Grunwald, Sangtae Ha, Eugene Liu, Lijun Chen, “EAGER: SC2 : SpeCOlab Spectrum Collaboration”, National Science Foundation EAGER program, 4/1/2017-3/31/2019, $99,500
- Christoffer R. Heckman, Lijun Chen, John Hauser, Dirk C. Grunwald, Sriram Sankaranarayanan, "CPS: Synergy: Verified Control of Cooperative Autonomous Vehicles," National Science Foundation, $776,000, 10/1/2016-9/30/2019
- Debra Goldberg (PI), Dirk Grunwald and Clayton Lewis, “GK-12: Integrating Computer Science into Traditional Studies”, NSF DGE GK-12 Program, $2.9M, 5/09-5/14 (in process of being awarded), PI:
- Jeremy Siek (PI) and Dirk Grunwald, “Metrics and Evaluation Team: Architecture Aware Compiler Environments”, DARPA, $1,267,395 2/09—5/13 (in process of being awarded)
- Dirk Grunwald (PI), “Travel Support for MobiSys 2008 Conference”, National Science Foundation travel funding for student travel, 2008, $20,000
- Dirk Grunwald (PI), Mining Parallelism from Software Pipelining, $90,000, Intel Corporation Research Gift, 9/1/2006-9/1/2009 (continuation)
- Dirk Grunwald (PI), Douglas Sicker, Subcontract to DARPA WANN (Wireless Network After Next) program for Tyco Electronics, $25,000 12/1/2006-5/31/2007
- Dirk Grunwald (PI), Douglas Sicker, Tim Brown and Peter Mathias, “NeTS-FIND: Wireless Wormholes for Wireless Relay Networks”, $600,000, National Science Foundation, 9/1/2006-8/31/2008.
- Dirk Grunwald (PI), “NeTS-ProWiN: Research Experience For Undergraduates supplement to A Programmable Wireless Platform For Spectral, Temporal and Spatial Spectrum Management”, National Science Foundation, $15,000, 6/1/2005-5/31/2006. Grant for undergraduate research.
- Dirk Grunwald (PI), Douglas Sicker, Tim Brown, Olgicia Milenkovic and Tom Lookabaugh, “CRI: Wireless Internet Building Blocks for Research, Policy and Education”, National Science Foundation, $600,000 (equipment grant with an additional $120,000 matching funds), 9/1/2005-8/31/2009
- Dirk Grunwald (PI), Douglas Sicker and John Black, “NeTS-ProWiN: Topology Control With Steerable Antennas”, National Science Foundation, $500,000, 9/1/2005-8/31/2008
- Dirk Grunwald (PI), John Chapin and Joseph Carey, “NeTS - ProWiN: A Programmable Wireless Platform For Spectral, Temporal and Spatial Spectrum Management”, National Science Foundation, $1,005,000, 9/1/04-8/31/08
- Dirk Grunwald (Subcontractor), “NeTS: ProWiN: Programmable Radio Platforms for Highly Dynamic Networks”, National Science Foundation, $1,006,000, 9/1/04-8/31/08
- Dirk Grunwald (PI) “REU Supplement:ITR: Energy and Quality of Service Aware Ad-Hoc Networking”, National Science Foundation, $15,000, 9/1/04-8/31/05

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- Dirk Grunwald (PI) and Greg Grudic, “ITR:Privacy and Surveillance In Wireless Networks”, National Science Foundation, $500,000, 9/1/04-8/31/08
- Tim Brown (PI), Doug Sicker, Dale Hatfield, Phi Weiser, Dirk Grunwald, “ITR-[ECS]-[soc]: Spectrum Management toward Spectrum Plenty”, National Science Foundation, $375,000, 9/1/04-8/31/06
- Dirk Grunwald (PI), Intel Research Grant, “Controlling Hyperthreading Using Program Feedback”, $70,000
- Dirk Grunwald (Subcontractor), “Power Aware Technologies for Land Warrior”, DARPA PAC/C Program, $875,000 subcontract on $10M award
- Todd Austin (PI), Dirk Grunwald and Trevor Mudge, “Power Analyzer”, DARPA PAC/C Program, 8/00-7/02, $1,200,000
- Dirk Grunwald (PI) and Tim Brown, “Adaptive Low Power Routing”, NSF ITR Award, 7/00-8/03, $500,000
- Dirk Grunwald (PI) “Energy Efficient Microarchitecture”, National Science Foundation, 7/00-6/03, $285,000
- Dirk Grunwald (PI) “Energy Efficient Operating Systems”, National Science Foundation, 7/00-6/03, $275,000
- Dirk Grunwald (PI) and Andy Pleszkun, principal investigators, NSF Award Number MIP-9706286, "Memory Prefetching", 7/97-6/30/00, $450,000
- Dirk Grunwald (PI) and Kirk Johnson, principal investigators. Digital Equipment Corporation External Research Grant" A comparison of distributed object and distributed shared memory systems," 2/1997-9/1998, $320,000. (approx: equipment donation & discount)
- Dirk Grunwald (PI), principle investigator, ARPA ASSERT award (amendment to ARMY DABT63-94-C-0029), 6/96-6/98, $275,000.
- Dirk Grunwald (PI), James Martin, William Waite, and Benjamin Zorn, principal investigators, Hewlett Packard University Grants Program, "Predicting Program Behavior to Support Instruction Level Parallelism," HP Gift No. 31041.1, 6/1/1996-5/31/1997, $179,779.70.
- Dirk Grunwald, James Martin, William Waite, and Benjamin Zorn (PI), principal investigators, Tom Christian (Hewlett-Packard Laboratories), collaborating scientist. Colorado Advanced Software Institute award "Predicting Program Behavior to Support Instruction Level Parallelism," 7/1/96- 8/31/98, $120,000.
- Robert Schnabel (PI), Dirk Grunwald, Oliver McBryan, and Michael Schwartz, principle investigators; Richard Byrd, Roger King, Xiao-Chuan Cai, and Benjamin Zorn, contributing investigators. NSF Award number CDA-9502956, "High Performance Infrastructure for Computational Science," 8/1/95-7/31/2000, $1,500,000.
- Dirk Grunwald (PI) and Benjamin Zorn, principal investigators. Hewlett Packard Research Grants Program ILP Research Project, "Improving the Performance of Branch Prediction using Real and Estimated Profiles" 3/1/1995-2/29/1996, $71,265.

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- Dirk Grunwald (PI) and William Waite, principal investigators, Hewlett Packard Research Grants Program, ``Instrumenting and Understanding C++ Programs" 6/1/1995--5/29/1996, $71,835.
- Dirk Grunwald (PI), William Waite, principle investigators, DARPA contract ARMY DABT63-94-C-0029, "Programming Environments, Compiler Technology, and Runtime Systems for Object-Oriented Parallel Processing", 6/95-12/98,$2,200,000.
- Dirk Grunwald and Brad Calder, ``Innovative Research In Branch Prediction", Proposal to the University of Maryland Inst. for Advanced Computer Studies, ARPA HPC Fellowship funding for Brad Calder, 6/1/95--5/31/96, $22,388.
- Dirk Grunwald (PI) and Benjamin Zorn, principal investigators. Digital Equipment Corporation External Research Grant No. 2051, "Improving the Performance of Commercial C++ Programs," 12/1/1994-11/30/1996,$283,466
- Dirk Grunwald (PI) and Brad Calder, ``Optimizations for C++", Proposal to the University of Maryland Inst. for Advanced Computer Studies, ARPA HPC Fellowship funding for Brad Calder, 6/1/94--5/31/95, $22,200.
- Juri Toomre (PI), Carlos Fellipie, Oliver McBryan, principal investigators, Dirk Grunwald, contributing investigator, NSF “Grand Challenge” grant (NSF GCAG Grant ASC-9217394 10/1/92-9/30/97. $4,500,000.
- Dirk Grunwald with Juri Toomre (PI), Oliver McBryan and others, (Co-Investigator), NASA ``Grand Challenge" grant (NASA NAG-52218, ``Convective Turbulence and Stellar Mixing'', '93-'96, $1.5M.
- Dirk Grunwald, principal investigator, NSF Research Initiation Award (RIA), ``Empirical Studies of Process Distribution and Redistribution in Multicomputers,'' 6/15/91-8/31/92, $60,000.

Educational And Teaching

- Participant in Department of Computer Science curriculum redesign, 2006-2008
- Participant in LEAP “Teaching Science That Matters” program, University of Colorado, 2006
- Recipient, Sullivan-Carlson Innovation In Teaching Award, College of Engineering, University of Colorado, December, 2006
- Classes with substantially revised curriculum or introduced:
    - CSCI 4753/5753 – Computer Performance Modeling
    - CSCI 2400 – Computer Systems
    - CSCI 1300 – Revised curriculum & teaching methods

Teaching history & Classes Taught

- Computer Systems (CSCI 2400)
- Advanced Operating Systems

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- Network Systems
- Intro to Computer Science & Programming, Majors & Non-Majors version
- Computer Performance Modeling, Simulation & Analysis
- Special Topics in Networking: Designing the Future Internet
- Special Topics in Networking: Software and Cognitive Radio
- Topics in Computer Science: Computer Privacy
- Topics in Computer Science: Quantum and Molecular Computing
- Topics In Computer Science: Information Storage Software
- Topics In Computer Systems: High Performance Circuits for Microprocessor Design
- Topics in Computer Systems: Mobile Computing
- Topics in Parallel Processing
- Principles of Programming Languages
- Topics In Computer Systems: Compilers for High Performance Computers

Program Committees & Professional Service

- General Chair, 19th IEEE International Conference on Mobile Ad-Hoc and Smart Systems, 2022
- Program Committee, IEEE Mass Storage Technical Conference (MSST), 2019
- Program Committee, IEEE Mass Storage Technical Conference (MSST), 2018
- Participant, DARPA Technical Exchange, 2017
- Participant, Wireless Spectrum Research and Development (WSRD) Senior Steering Group of the Federal Government's Networking and Information Technology Research and Development Program (NITRD), 2012, 2013, 2014, 2015, 2016,
- Participant & panel speaker DHS panel DHS S&T Workshop on Ethical Issues in Network Research, Arlington, VA, May 2009
- Program Committee, 2009 GLOBECOM technical program, May 2009
- Program Committee, HotSEC workshop on Hot Topics in Computer Security, July 2009
- Participant, US / Japan Future Network Workshop: Collaboration in Network Science and Engineering, funded by National Science Foundation
- Program Committee, USENIX Technical Conference, February 2009
- Program Committee, Fourth Annual ACM/IEEE Symposium on Architectures for Networking and Communication Systems (ANCS 2008), November, 2008

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- Program Committee, IEEE Intl Conference on Dynamic Spectrum Access (DYSPAN 2008), October, 2008
- Program Committee, Wireless Networking and Cognitive Radio Track, IEEE 68th Vehicular Technology Conference, VTC2008, Sept. 2008
- Program Committee, 14th Annual ACM Intl. Conference on Mobile Communications, (MobiCOM 2008)
- Program Committee, third Annual IEEE Intl. Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM 2008), May 2008
- General Co-Chair, Sixth Annual ACM/Usenix Int. Conference on Mobile Systems, Applications and Services (MOBISYS 2008), June 2008
- Travel Grants Chair, Sixth Annual ACM/Usenix Int. Conference on Mobile Systems, Applications and Services (MOBISYS 2008), June 2008
- Technical Program co-chair, Third annual ACM/IEEE Symposium on Architectures for Networking and Communication Systems (ANCS 2007), December, 2007
- Program Committee, Second Annual IEEE Intl. Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM 2007), July 2007
- Program Committee, Third Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations, and Technologies (RAIT 2007)
- Program Committee, The 8th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC 2007), September 2007
- Program Committee, IEEE Intl Conference on Dynamic Spectrum Access (DYSPAN 2007), April, 2007
- Participant in National Science Foundation alliances with Finnish and Swedish Research Universities, May 2007
- Program Committee, IEEE MICRO Special Issue on Best Papers of 2006, published as IEEE MICRO January/February Issue, 2007.
- Program Committee, First International Workshop on Technology and Policy for Accessing Spectrum (TAPAS 2006), August 2006
- Program Committee, Intl. Symposium on Computer Architecture (ISCA 2006), June 2006
- Program Committee, Third Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations, and Technologies (RAIT 2006)
- Program Committee, IEEE Intl Conference on Dynamic Spectrum Access (DYSPAN 2005), November, 2005
- Invited participant, First Computer Research Association (CRA) Workshop on Grand Challenges in Computer Architecture, Nov. 2005
- Program Committee, International Conference on Computer Design (ICCD), 2004

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- Tutorials Chair, Architectural Support for Programming Languages and Operating Systems (ASPLOS 2004)
- Program Committee, 3rd Usenix Conference on File and Storage Technologies (FAST 2004)
- Program Committee, Second Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations, and Technologies (RAIT 2005)
- Program Track Chair, International Conference on Computer Design (ICCD), 2004
- Technical Program Committee, The 37th Annual IEEE/ACM International Symposium on Microarchitecture, 2004
- Program Committee, First Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations, and Technologies (RAIT 2004)
- Program Committee, Intl. Symposium on Computer Architecture (ISCA 2003)
- Program Committee, Intl. Conference on Computer Design (ICCD 2002)
- Program Chair, Intl. Symposium on Computer Architecture (ISCA 2002)
- Program Committee, Intl. Symposium on Computer Architecture (ISCA 2001)
- Program Committee, Design Automation Conference (DAC 2001)
- Co-organizer, Workshop on Power Driven Microarchitecture, held in conjunction with 1998 Intl. Symp. On Computer Architecture (ISCA'98)
- Program committee, 1998 Intl. Symposium on Microarchitecture (MICRO'98)
- Program committee, 1998 Intl. Conference on Computer Design (ICCD'98)
- Program committee, 4th Intl. Conference on High Performance Computer Architecture (HPCA-4, 1998)
- Program committee, 1997 Intl. Symposium on Computer Architecture (ISCA'97)
- Local arrangements chair, 1997 Intl. Symposium on Computer Architecture (ISCA'97)
- Program committee, 1997 Intl. Symposium on Microarchitecture (MICRO'97)
- Program Committee, 1997 Intl. Conference. On Measurement and Modeling of Computer Systems (SIGMETRICS'97)
- Program Committee, 1996 Intl. Conference On Programming Language Design and Implementation (PLDI'96)
- Program Committee, SuperComputing ‘95
- Reviewer, IEEE Transactions on Computers, IEEE Transactions on Parallel and Distributed System, Journal of Parallel and Distributed Comp., ASPLOS, ISCA, ICCP, ICCD, MICRO, HPCA,PLDI,POPL, OOPSLA,USENIX.
- Member, IEEE and ACM
- Review panel member for NSF New Technologies program

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- Program review member, DOE Software 2000 program.
- Consultant, Digital Equipment Corporation.
- Consultant, Inktomi Inc.

Department, College & Institutional Service

- Faculty Directory, Computer Science Post-Baccalaureate program, 2018-2019
- Organizer and program lead, Computer Science Post-Baccalaureate program, 2016-2019
- University Seed Grants Reviewer, 2017
- University MRI pre-competition reviewer, 2015, 2016
- University Campus Cloud Working Group, 2016-2017
- University Research Innovation Office Advisory Board, 2017, 2018
- University Conflict of Interest Committee (COIC), 2010-2019
- College representative for to Digital Manufacturing Design Initiative Institute (DMDII), 2013-2015
- Acting Departmental Chair, 2014
- Department of Computer Science, Associate Chair, 2012-2016
- Member, Computer Science Bachelor of Arts proposal committee, 2010
- Member, School of Information Task Force, 2009-2010
- Member, Departmental Accreditation Task Force, 2006-2007
- Internal Technical Review, National Snow & Ice Data Center (NSIDC), August 2007
- Internal Review Panel for the Interdisciplinary Telecommunications Program (ITP), Univ. of Colorado, Boulder, 2006
- Campus level facilities planning committee, 2000
- Various departmental level committees, including executive committee, graduate committee, undergraduate committee, space allocation czar, computing committee,

Supervision Of Ph.D. Thesis In Progress

- Eric Goodman, PhD. In progress, expected in 2019
- Max Hollingsworth, PhD. in progress, expcted 2020

Supervision of Completed Ph.D. Thesis

- Ning Gao, Ph.D. 2018, Member Technical Staff, Google

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- Andrew Sayler, Ph.D. 2016 Member Technical Staff, Twitter
- Dola Saha, PhD 2013, Asst. professor, State University of Albany, NY
- Hansu Gu, PhD 2013, Member Techincal State, Seagate
- Aveek Dutta, PhD 2013, Asst. professor, State University of Albany, NY
- Francis Jones, Ph.D. 2012, Asst. professor, Brigham Young University, UT
- Caleb Phillips, PhD 2012, Member Staff, National Renewable Energy Labs (NREL)
- Jeff Fifield, PhD 2011, Member Technical Staff, Xilinx Research Labs
- Daniel Fey, PhD 2011, Member Technical Staff, Sandia National Labs
- Kevin Bauer, PhD 2011, Lincoln Labs
- Gary Yee, PhD 2010, Member of Technical Staff, Penguin Computers
- Eric Anderson, PhD. 2010, PostDoc at CMU
- Damon McCoy, Ph.D. 2010, Asst. Professor, George Mason University
- Tipp Moseley, Ph.D. 2009, Google
- Christian Doerr, Ph.D. 2008, Faculty, Delft University (jointly advised)
- Robert McTasney, Ph.D. 2008, Faculty West Point College (jointly advised)
- Graham Schelle, Ph.D. 2007, Intel
- Brad Morrey, Ph.D, 2006, Currently at HP Labs
- Michael Neufeld, Ph.D. 2004, Currently BBN, Cambridge, MA
- Soraya Ghiasi, Ph.D, 2004, Currently at IBM Austin Research Lab
- Marco Gruteser (Ph.D., Currently Asst. Professor, Rutgers University)
- Robert Cooksey, PhD 2001, (Currently at Intel, Portland OR)
- Donald Lindsay, PhD 2000, (Currently at Cisco)
- Artur Klauser, PhD 1999, (Currently at Intel, Shrewsbury, MA)
- Carlos Maltzahn. PhD 1999, Research Faculty at UCSD
- Bobbie Manne, Ph.D., 1998, Currently with Advanced Micro Devices (AMD)
- Anshu Aggarwal, Ph.D., 1998, Originally at Inktomi, now at startup
- Suvas Vajracharya, Ph.D. 1997, Originally at Los Alamos, now CEO of self-started company
- Douglas Joseph, Ph.D. 1996 (Currently Member of Technical Staff, IBM T. J. Watson Research Lab)
- Bradley Calder, PhD. 1995, Originally Professor, UCSD; now at Microsoft
- Harini Srinivasan, PhD 1994 (Currently Member of Technical Staff, IBM T. J. Watson Research Lab

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Supervision of Completed Written M.S. Thesis

- Charles Gruenwald, M.Sci. 2007
- Michael Buettner, M.Sci. 2007, currently pursing Ph.D. at U. Washington
- Graham Schelle, M.Sci. 2004, Ph.D. 2007, Intel
- Jeff Fifield, M.Sci.2007, Ph.D. in progress
- Tipp Moseley, M.Sci. 2007, Ph.D., in progress
- Hashish Jain, M.Sci. 2004, Engineer at Webfoot
- Jeff Shoup, M.Sci.2002
- Audun Tornquist, M.Sci. 2001
- Eric Borch, M.Sci 1997, Engineer at Intel
- Philipp Farber, M.Sci.1992
- Mark Streich, M.Sci. 1991

Supervision of Completed B.S. Thesis

- Nathan Wilcox, B. Sci. 2006
- Brian Mihok, B. Sci. 2004, Currently at Lincoln Labs
- Jeffrey D Poznanovic, B. Sci. 2004

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