ANGELOS STAVROU - *Curriculum Vitae*

POSITIONS HELD

- **August 2020 – Present**
  Professor, Innovation Campus & Bradley Department of Electrical and Computer Engineering, Virginia Tech, Arlington, VA
- **August 2017 – August 2020**
  Professor, Computer Science Department, George Mason University, Fairfax, VA
- **April 2014 – August 2020**
  Director, Center for Assurance Research and Engineering (CARE), George Mason University, Fairfax, VA
- **May 2012 – August 2017**
  Associate Professor, Computer Science Department, George Mason University, Fairfax, VA
- **March 2014 – May 2017**
  Academic Director, M.S. in Management of Secure Information Systems Program, School of Management, George Mason University, Fairfax, VA
- **May 2013 – August 2015**
  Academic Director, M.S. in Information Security and Assurance, Computer Science Department, George Mason University, Fairfax, VA
- **September 2011 – August 2020**
  Associate Researcher, National Institute of Standards and Technology (NIST), Computer Security Division, Gaithersburg, MD
- **January 2012 – August 2013**
  Associate Director, Center for Secure Information Systems, George Mason University, Fairfax, VA
- **August 2007 – May 2012**
  Assistant Professor, Computer Science Department, George Mason University, Fairfax, VA
- **May 2006 – August 2006**
  Research Intern, Microsoft Research, Cambridge, UK
- **August 2004 – December 2004**
  Software Engineer Intern, Google Inc., Mountain view, CA
- **September 2001 – August 2007**
  Research Assistant, Computer Science Department, Columbia University, New York, NY

EDUCATION

- **Columbia University, Fu Foundation School of Engineering & Applied Science, New York, NY.**
  Ph.D. in Computer Science **(with Distinction)** (**August 2007**)
  Thesis: "An Overlay Architecture for End-to-End Service Availability".
  Advisor: Angelos D. Keromytis.

- **Columbia University, Fu Foundation School of Engineering & Applied Science, New York, NY.**
  M.Phil. Degree in Computer Science (**January 2007**)
  M.Sc. Degree in Electrical Engineering with concentration in Multimedia Networking (Peer to Peer Networks). (December 2002).

- **National University of Athens, Athens Greece /Carleton University ON, Canada.**
  M.Sc. Degree in Algorithms, Computability and Logic. (**June 2001**)

Master's Thesis: "A new distributed algorithm for routing in satellite constellation networks"
Advisor: Prof. E. Kranakis.

- **University of Patras, Electrical Engineering Department, Patras Greece.**
  Certificate of Engineering for the completion of the last two years of coursework in Electrical Engineering (**February 1999**).

- **University of Patras, Physics Department, Patras, Greece.**
  B.Sc (Honors) in Physics, (**July 1997**) Thesis: "Stream Ciphers theory and practical application".

Publications

Issued Patents

1. **Systems and methods for analyzing software**
   Ryan Johnson, Nikolaos Kiourtis, Angelos Stavrou
   U.S. Patent Number 10,387,627. Issued on August 20th, 2019.

2. **Active Authentication of Users**
   Angelos Stavrou, Rahul Murmuria, Ryan Johnson, Daniel Barbara
   U.S. Patent Number 10,289,819. Issued on May 14th, 2019.

3. **Methods and systems for increased debugging transparency**
   Fengwei Zhang, Kevin Leach, Angelos Stavrou, Haining Wang
   U.S. Patent Number 10,127,137. Issued on November 13th, 2018.

4. **Methods and Apparatus for Application Isolation**
   Anup Ghosh, Yih Huang, Jiang Wang, Angelos Stavrou
   U.S. Patent Number 9,602,524. Issued on March 21st, 2017.

5. **Malware Detector**
   Angelos Stavrou, Sushil Jajodia, Anup Ghosh, Rhandi Martin, Charalampos Andrianakis
   U.S. Patent Number 9,531,747. Issued on December 27th, 2016.

6. **Hardware-assisted Integrity Monitor**
   Jiang Wang, Anup Ghosh, Kun Sun, Angelos Stavrou
   U.S. Patent Number 9,270,697. Issued on February 23rd, 2016.

7. **Systems and Methods for Inhibiting Attacks with a Network**
   Angelos Stavrou, Angelos D. Keromytis
   U.S. Patent Number 9,344,418. Issued on May 17th, 2016.

8. **Methods and Apparatus for Application Isolation**
   Anup Ghosh, Yih Huang, Jiang Wang, Angelos Stavrou
   U.S. Patent Number 9,098,698. Issued on August 4th, 2015.

9. **Adaptive feedback loop based on a sensor for streaming static and interactive media content to animals**
   Angelos Stavrou, Margaret Lee Perry-Flippin
   U.S. Patent Number 9,043,818. Issued on May 26th, 2015.

10. **Malware Detector**
Angelos Stavrou, Sushil Jajodia, Anup Ghosh, Rhandi Martin, Charalampos Andrianakis
U.S. Patent Number 8,935,773. Issued on January 13th, 2015.

11. **Systems, Methods, and Media for Recovering an Application from a Fault or Attack**
Michael E. Locasto, Angelos D. Keromytis, Angelos Stavrou, Gabriela F. Ciocarlie
U.S. Patent Number 8,924,782. Issued on December 30th, 2014.

12. **Hardware-assisted Integrity Monitor**
Jiang Wang, Angelos Stavrou, Anup Ghosh, Kun Sun
U.S. Patent Number 8,819,225. Issued on August 26th, 2014.

13. **Website Matching based on Network Traffic**
Angelos Stavrou, Mohammed A. Alhussein, Brian Sanders
U.S. Patent Number 8,726,005. Issued on May 13th, 2014.

14. **Systems and Methods for Inhibiting Attacks with a Network**
Angelos Stavrou, Angelos D. Keromytis.
U.S. Patent Number 8,631,484. Issued on January 14th, 2014.

15. **Methods, Media and Systems for Responding to a Denial of Service Attack**
Angelos Stavrou, Angelos D. Keromytis, Jason Nieh, Vishal Misra, and Daniel Rubenstein.
U.S. Patent Number 8,549,646. Issued on October 1st, 2013.

16. **Systems, Methods, and Media for Generating Sanitized Data, Sanitizing Anomaly Detection Models, and/or Generating Sanitized Anomaly Detection Models**
Gabriela Cretu, Angelos Stavrou, Salvatore J. Stolfo, Angelos D. Keromytis, Michael E. Locasto.
U.S. Patent Number 8,407,160. Issued on March 26th, 2013.

17. **Systems and Methods for Computing Data Transmission Characteristics of a Network Path Based on Single-ended Measurements**
Angelos D. Keromytis, Sambuddho Chakravarty, and Angelos Stavrou.
U.S. Patent Number 8,228,815. Issued on July 24th, 2012.

18. **Methods, Systems and Media for Software Self-Healing**
Michael E. Locasto, Angelos D. Keromytis, Salvatore J. Stolfo, Angelos Stavrou, Gabriela Cretu, Stylianos Sidiroglou, Jason Nieh, and Oren Laadan.
U.S. Patent Number 7,962,798. Issued on June 14th, 2011.

19. **Systems and Methods for Computing Data Transmission Characteristics of a Network Path Based on Single-ended Measurements**
Angelos D. Keromytis, Sambuddho Chakravarty, and Angelos Stavrou. U.S. Patent Number 7,660,261. Issued on February 9th, 2010.

Journal Publications

1. **Revisiting the Spaceborne Illuminators of Opportunity for Airborne Object Tracking.** [**PDF**]
John Robie, Alireza Famili, Angelos Stavrou. In IEEE Computer 56(1): 82-92 (2023)

2. **Understanding the Security Implication of Aborting Live Migration**
X. Gao, J. Xiao, H. Wang and Angelos Stavrou. **IEEE Trans. Cloud Comput. 10(2)***:* 1275-1286 (Online: 2020, Published: 2022)

3. **21 Years of Distributed Denial-of-Service: A Call to Action – Part 2** [**PDF**]

Eric Osterweil, Angelos Stavrou, and Lixia Zhang. In *Computer*, vol. 53, no. 8, pp. 94-99, Aug. 2020, doi: 10.1109/MC.2020.2993330.

4. **21 Years of Distributed Denial-of Service: Current State of Affairs - Part 1** **[PDF]**
   Eric Osterweil, Angelos Stavrou, and Lixia Zhang. In Computer, vol. 53, no. 7, pp. 88-92, July 2020, doi: 10.1109/MC.2020.2983711.

5. **Towards Transparent Debugging**
   Fengwei Zhang, Kevin Leach, Angelos Stavrou, Haining Wang
   IEEE Trans. Dependable Sec. Comput. 15(2): 321-335 (IEEE TDSC 2018)

6. **On Early Detection of Application-level Resource Exhaustion and Starvation**
   Mohamed Elsabagh, Daniel Barbará, Dan Fleck, Angelos Stavrou.
   In the Elsevier Journal of Systems and Software 137: 430-447 (2018)

7. **An Empirical Investigation of Ecommerce-Reputation-Escalation-as-a-Service**
   Haitao Xu, Daiping Liu, Haining Wang, Angelos Stavrou.
   ACM Transactions on the Web, Volume 11, Number 2, May 2017 (pages 13:1-13:35)

8. **DDoS in the IoT: Mirai and Other Botnets**
   Constantinos Kolias, Georgios Kambourakis, Angelos Stavrou, Jeffrey M. Voas.
   IEEE Computer 50(7): 80-84 (2017)

9. **Cybersecurity Leadership: Competencies, Governance, and Technologies for Industrial Control**
   Jean-Pierre Auffret, Jane L. Snowdon, Angelos Stavrou, Jeffrey S. Katz, Diana Kelley, Rasheq S. Rahman, Frank Stein, Lisa Sokol, Peter Allor, Peng Warweg. Systems. Journal of Interconnection Networks 17(1): 1-20 (2017)

10. **Verified Time**
    Angelos Stavrou, Jeff Voas.
    IEEE Computer, Volume: 50, Issue: 3, March 2017

11. **On the Move: Evading Distributed Denial-of-Service Attacks**
    Angelos Stavrou, Daniel Fleck, Constantinos Kolias.
    IEEE Computer 49(3): 104-107 (2016)

12. **Intrusion Detection in 802.11 Networks: Empirical Evaluation of Threats and a Public Dataset**
    Constantinos Kolias, Georgios Kambourakis, Angelos Stavrou, Stefanos Gritzalis.
    IEEE Communications Surveys and Tutorials 18(1): 184-208 (2016)

13. **Learning Internet-of-Things Security "Hands-On"**
    Constantinos Kolias, Angelos Stavrou, Jeffrey M. Voas, Irena Bojanova, D. Richard Kuhn.
    IEEE Security & Privacy 14(1): 37-46 (2016)

14. **Securely Making "Things" Right**
    Constantinos Kolias, Angelos Stavrou, Jeffrey M. Voas.
    IEEE Computer 48(9): 84-88 IEEE Magazine (2015)

15. **A Moving Target DDoS Defense Mechanism**
    Huangxin Wang, Quan Jia, Dan Fleck, Walter Powell, Fei Li, Angelos Stavrou.
    In the Elsevier Journal of Computer Communications, 46: 10-21 (2014)

16. **HyperCheck: A Hardware-Assisted Integrity Monitor**
    Fengwei Zhang, Jiang Wang, Kun Sun, and Angelos Stavrou.
    In the proceedings of IEEE Transactions on Dependable and Secure Computing (TDSC), 11(4): 332-344 (2014)

17. **Improving network response times using social information**
Sharath Hiremagalore, Chen Liang, Angelos Stavrou and Huzefa Rangwala.
Proceedings of Social Network Analysis and Mining, Springer
Social Network Analysis and Mining, Volume 3, pages 209-220 (2013)

18. **Providing Users' Anonymity in Mobile Hybrid Networks**
Claudio Agostino Ardagna, Sushil Jajodia, Pierangela Samarati, Angelos Stavrou.
ACM Transactions on Internet Technology, Volume 12, 3, Article 7, pages 1 - 33 (May 2013)

19. **Building Security into Off-the-Shelf Smartphones**
Angelos Stavrou, Jeffrey Voas, Tom Karygiannis, Steve Quirolgico.
IEEE Computer, vol. 45, no. 2, pp. 82-84, Feb. 2012, doi:10.1109/MC.2012.44

20. **DoubleGuard: Detecting Intrusions In Multi-tier Web Applications**
Meixing Le, Angelos Stavrou, Brent ByungHoon Kang.
In IEEE Journal on Transactions on Dependable and Secure Computing (TDSC) 2011,
ISSN: 1545-5971 10 Nov. 2011. IEEE computer Society Digital Library. IEEE Computer Society.
Acceptance Rate: 10-12% as reported by 2009 TDSC editorial, ISI Impact Factor: 2.093 (2010).

21. **The Ephemeral Legion: Producing an Expert Cyber-security Workforce from Thin Air**
Michael E. Locasto, Anup Ghosh, Sushil Jajodia, and Angelos Stavrou.
In the Communications of the ACM, Vol. 54, Issue 1, pp 129 - 131.
Impact Factor: 2.362 (2010). [bib]

22. **The Dynamic Community of Interest and its Realization in ZODIAC**
Scott Alexander, Steve Bellovin, Yuu-Heng Cheng, Brian Coan, Andrei Ghetie,
Vikram Kaul, Nicholas F. Maxemchuk, Henning Schulzrinne, Stephen Schwab, Bruce Siegell,
Angelos Stavrou, and Jonathan M. Smith.
In IEEE Communications Magazine, October 2009, pp. 40-47. Impact Factor: 2.837

23. **On the Infeasibility of Modeling Polymorphic Shellcode: Re-thinking the Role of Learning in Intrusion Detection Systems**
Yingbo Song, Michael E. Locasto, Angelos Stavrou, Angelos D. Keromytis, and Salvatore J. Stolfo.
In the Proceedings of Machine Learning Journal (MLJ) p. 179-205. Accepted: 7 August 2009.
Published online: 29 October 2009. Editors: Pavel Laskov and Richard Lippmann. ISI Impact Factor:
1.956 (2010). [bib]

24. **WebSOS: An Overlay-based System For Protecting Web Servers From Denial of Service Attacks**
Angelos Stavrou, Debra L. Cook, William G. Morein, Angelos D. Keromytis, Vishal Misra, and Dan Rubenstein.
In Elsevier Journal of Computer Networks, special issue on Web and Network Security, vol. 48, no. 5,
p. 781 - 807. August 2005 5-Year Impact Factor: 1.690. [bib]

25. **A Lightweight, Robust, P2P System to Handle Flash Crowds**
Angelos Stavrou, Dan Rubenstein, Sambit Sahu.
In the Proceedings of IEEE Journal on Selected Areas in Communications (JSAC),
special issue on Service Overlay Networks, Volume 22, Number 1, p. 6-17, January 2004. Impact
Factor: 4.232 (2010). [bib]

Conference Publications

1. **Securing 5G OpenRAN with a Scalable Authorization Framework for xApps**
   Tolga O Atalay, Sudip Maitra, Dragoslav Stojadinovic, Angelos Stavrou, Haining Wang
   To appear in the Proceedings of IEEE Infocom 2023.

2. **Isochrons in tunable photonic oscillators and applications in precise positioning**
   G Himona, A Famili, A Stavrou, V Kovanis, Y Kominis
   Physics and Simulation of Optoelectronic Devices XXXI 12415, 82-86

3. **Detecting and Measuring Misconfigured Manifests in Android Apps**
   Allen Yuqing Yang, Mohamed Elsabagh, Chaoshun Zuo, Ryan Johnson, Angelos Stavrou, Zhiqiang Lin ACM CCS '22: Proceedings of the 2022 ACM SIGSAC Conference on Computer and Communications SecurityNovember 2022 Pages 3063–3077
   https://doi.org/10.1145/3548606.3560607

4. **Network-Slice-as-a-Service Deployment Cost Assessment in an End-to-End 5G Testbed**
   Tolga O. Atalay, Dragoslav Stojadinovic, Alireza Famili, Angelos Stavrou, Haining Wang.
   In the Proceedings of IEEE Global Communications Conference, Rio de Janeiro, Brazil, 2022, pp. 2056-2061, doi: 10.1109/GLOBECOM48099.2022.10001579.

5. **GPS Spoofing Detection by Leveraging 5G Positioning Capabilities**
   Alireza Famili, Mahsa Foruhandeh, Tolga Atalay, Angelos Stavrou, Haining Wang
   IEEE Latin-American Conference on Communications (LATINCOM), Rio de Janeiro, Brazil, 2022, pp. 1-6, doi: 10.1109/LATINCOM56090.2022.10000569.

6. **SPIN: Sensor Placement for Indoor Navigation of Drones**
   Alireza Famili, Angelos Stavrou, Haining Wang, Jung-Min Jerry Park
   In the Proceedings of IEEE Latin-American Conference on Communications (LATINCOM), Rio de Janeiro, Brazil, 2022, pp. 1-6, doi: 10.1109/LATINCOM56090.2022.10000583.

7. **Streaming and Unbalanced PSI from Function Secret Sharing**
   Samuel Dittmer, Yuval Ishai, Steve Lu, Rafail Ostrovsky, Mohamed Elsabagh, Nikolaos Kiourtis, Brian Schulte, Angelos Stavrou. Security and Cryptography for Networks. SCN 2022. Lecture Notes in Computer Science, vol 13409. Springer, Cham. https://doi.org/10.1007/978-3-031-14791-3_25

8. **Eternal flying: Optimal placement of wireless chargers for nonstop drone flights**
   Alireza Famili, Angelos Stavrou
   International Conference on Electrical, Computer and Energy Technologies (ICECET), Prague, Czech Republic, 2022, doi: 10.1109/ICECET55527.2022.9873507.

9. **Receiver Density Analysis for High Probability Detection of Forward Scattered Airborne Signals**
   John Robie, Alireza Famili, Angelos Stavrou
   International Conference on Electrical, Computer and Energy Technologies (ICECET), Prague, Czech Republic, 2022, doi: 10.1109/ICECET55527.2022.9872553

10. **RAIL: Robust Acoustic Indoor Localization for Drones**
    A. Famili, A. Stavrou, H. Wang and J. -M. J. Park
    In the Proceedings of IEEE 95th Vehicular Technology Conference: (VTC2022-Spring), Helsinki, Finland, 2022, pp. 1-6, doi: 10.1109/VTC2022-Spring54318.2022.9860933.

11. **Characterization of AES Implementations on Microprocessor-based IoT Devices**
    S. Roy, A. Stavrou, B. L. Mark, K. Zeng, S. M. P D and K. N. Khasawneh.
    In the proceedings of IEEE Wireless Communications and Networking Conference (WCNC), Austin, TX, USA, 2022, pp. 55-60, doi: 10.1109/WCNC51071.2022.9771975.

12. **Scaling Network Slices with a 5G Testbed: A Resource Consumption Study**
Tolga O. Atalay, Dragoslav Stojadinovic, Angelos Stavrou, Haining Wang
In the proceedings of IEEE Wireless Communications and Networking Conference (WCNC), Austin, TX, USA, 2022, pp. 2649-2654, doi: 10.1109/WCNC51071.2022.9771860.

13. **DEFInit: An Analysis of Exposed Android Init Routines**
Yuede Ji, Mohamed Elsabagh, Ryan Johnson, and Angelos Stavrou
In the proceedings of the 30th USENIX Security Symposium (USENIX Security 2021)

14. **(Un)protected Broadcasts in Android 9 and 10**
Ryan Johnson, Mohamed Elsabagh, and Angelos Stavrou
BlackHat Asia 2021

15. **Black-Box IoT: Authentication and Distributed Storage of IoT Data from Constrained Sensors**
Panagiotis Chatzigiannis, Foteini Baldimtsi, Constantinos Kolias, and Angelos Stavrou. In *Proceedings of the International Conference on Internet-of-Things Design and Implementation* (*IoTDI 2021*), *2021*

16. **CloudSkulk: A Nested Virtual Machine Based Rootkit and Its Detection.**
J. Connelly, T. Roberts, X. Gao, J. Xiao, H. Wang, and A. Stavrou. *In 51st Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN 2021), 2021*

17. **FIRMSCOPE: Automatic Uncovering of Privilege-Escalation Vulnerabilities in Pre-Installed Apps in Android Firmware. [PDF]**
Mohamed Elsabagh, Ryan Johnson, and Angelos Stavrou, Kryptowire; Chaoshun Zuo, Qingchuan Zhao, and Zhiqiang Lin, The Ohio State University. In the 29th USENIX Security Symposium (USENIX Security 20).

18. **Resilient and Scalable Cloned App Detection Using Forced Execution and Compression Trees**
Mohamed Elsabagh, Ryan Johnson, Angelos Stavrou
In proceedings of the IEEE Conference on Dependable and Secure Computing (DSC 2018)

19. **An adversarial coupon-collector model of asynchronous moving-target defense against botnet reconnaissance**
G Kesidis, Y Shan, D Fleck, A Stavrou, T Konstantopoulos
In proceedings of the 2018 13th IEEE International Conference on Malicious and Unwanted Software (IEEE MALCON)

20. **Moving-target Defense against Botnet Reconnaissance and an Adversarial Coupon-Collection Model**
Dan Fleck, Angelos Stavrou, George Kesidis, N Nasiriani, Y Shan, T Konstantopoulos
In proceedings of the IEEE Conference on Dependable and Secure Computing (DSC 2018)

21. **End Users Get Maneuvered: Empirical Analysis of Redirection Hijacking in Content Delivery Networks**
Shuai Hao, Yubao Zhang and Haining Wang, Angelos Stavrou
In the proceeding of the 27th Usenix Security Symposium, (Usenix Security 2018)
August 15-17, 2018, Baltimore, MD, USA

22. **Dazed Droids: A Longitudinal Study of Android Inter-App Vulnerabilities**
Ryan Johnson, Mohamed Elsabagh, Angelos Stavrou, and Jeff Offutt
In the Proceedings of ACM ASIA Conference on Computer & Communications Security 2018,

(ASIACCS 2018), 777-791, June 4 - 8, 2018, Sogdo, Incheon, Korea

23. **Detecting and Characterizing Web Bot Traffic in a Large E-commerce Marketplace**
Haitao Xu, Zhao Li, Chen Chu, Yuanmi Chen, Yifan Yang, Haifeng Lu, Haining Wang, and Angelos Stavrou, In the Proceedings of the 23rd European Symposium on Research in Computer Security (*ESORICS'18*), Barcelona, Spain, Sep. 2018. (Acceptance Rate: 19.8%, 56/283).

24. **The Mirai Botnet and the IoT Zombie Armies**
Georgios Kambourakis, Constantinos Kolias, and Angelos Stavrou
In the Proceedings of the IEEE Military Communications Conference (MILCOM 2017)
October 23 -25, 2017, Baltimore, MD, USA.

25. **Practical and Accurate Runtime Application Protection against DoS Attacks**
Mohamed Elsabagh, Dan Fleck, Angelos Stavrou, Michael Kaplan, Thomas Bowen
In the Proceedings of 20th International Symposium on Research on Attacks, Intrusions and Defenses (RAID 2017). September 18-20, 2017, Atlanta, Georgia, USA.

26. **E-Android: A New Energy Profiling Tool for Smartphones**
Xing Gao, Dachuan Liu, Daiping Liu, Haining Wang, Angelos Stavrou
In the proceedings of the the 37th IEEE International Conference on Distributed Computing Systems (ICDCS 2017), June 5-8, 2017, Atlanta, Georgia, USA.
(Acceptance Rate: 16.9%, 90/531)

27. **Detecting Passive Cheats in Online Games via Performance-Skillfulness Inconsistency**
Daiping Liu, Xing Gao, Mingwei Zhang, Haining Wang, Angelos Stavrou
In the proceedings of the 47th IEEE/IFIP International Conference on Dependable Systems and Networks (DSN 2017), June 26-29, 2017, Denver, Colorado, USA.
(Acceptance Rate: 22.3%, 49/220)

28. **Strict Virtual Call Integrity Checking for C++ Binaries** (**Distinguished paper award**)
Mohamed Elsabagh, Dan Fleck, Angelos Stavrou
In the Proceedings of the ACM Asia Conference on Computer and Communications Security (ASIACCS) 2017, April 2-6, 2017 Abu Dhabi, UAE (Acceptance Rate: 18.7%, 67/359)

29. **Why Software DoS is Hard to Fix: Denying Access in Embedded Android Platforms**
Ryan Johnson, Mohamed Elsabagh, and Angelos Stavrou
In the proceedings of the 14th International Conference on Applied Cryptography and Network Security (ACNS) 2016, June 19-22, 2016, London, UK (Acceptance Rate: 19.13%, 35/183).

30. **When a Tree Falls: Using Diversity in Ensemble Classifiers to Identify Evasion in Malware Detectors**
Charles Smutz and Angelos Stavrou
In the proceedings of the Network and Distributed System Security Symposium (NDSS) 2016, February 21-24, San Diego, California, USA (Acceptance Rate: 15.4%, 60/389).

31. **Targeted DoS on Android: How to Disable Android in 10 Seconds or Less**
Ryan Johnson, Mohamed Elsabagh, Angelos Stavrou, and Vincent Sritapan
In the proceedings of the 10th Malware Conference (MALCON) Oct. 2015, IEEE Computer Society ISBN: 978-1-5090-0317-4 pp: 136-143 Puerto Rico, USA.

32. **Preventing Exploits in Microsoft Office Documents through Content Randomization**
Charles Smutz and Angelos Stavrou
In the proceedings of the 18th International Symposium on Research in Attacks, Intrusions and Defenses (RAID), November 2015, Kyoto, Japan (Acceptance Rate: 23.5%, 28/119).

33. **Continuous Authentication on Mobile Devices Using Power Consumption, Touch Gestures and Physical Movement of Users**
Rahul Murmuria, Angelos Stavrou, Daniel Barbara, Dan Fleck
In the proceedings of the 18th International Symposium on Research in Attacks, Intrusions and Defenses (RAID), November 2015, Kyoto, Japan (Acceptance Rate: 23.5%, 28/119).

34. **Privacy Risk Assessment on Online Photos**
Haitao Xu, Haining Wang, Angelos Stavrou
In the proceedings of the 18th International Symposium on Research in Attacks, Intrusions and Defenses (RAID), November 2015, Kyoto, Japan (Acceptance Rate: 23.5%, 28/119).

35. **Radmin: Early Detection of Application-Level Resource Exhaustion and Starvation Attacks**
Mohamed Elsabagh, Daniel Barbara, Daniel Fleck, Angelos Stavrou
In the proceedings of the 18th International Symposium on Research in Attacks, Intrusions and Defenses (RAID), November 2015, Kyoto, Japan (Acceptance Rate: 23.5%, 28/119).

36. **On the DNS Deployment of Modern Web Services (Best paper nominee)**
Shuai Hao, Haining Wang, Angelos Stavrou, and Evgenia Smirni
In the proceeding of the 23rd IEEE International Conference on Network Protocols (ICNP) November 10-13 2015, San Francisco, CA, USA (Acceptance rate: 20%).

37. **Analysis of Content Copyright Infringement in Mobile Application Markets (Best paper award)**
Ryan Johnson, Nikolaos Kiourtis, Angelos Stavrou, and Vincent Sritapan
In the proceedings of APWG/IEEE eCrime Research Summit 2015, May 2015, Barcelona, Spain.

38. **Using Hardware Features for Increased Debugging Transparency**
Fengwei Zhang, Kevin Leach, Angelos Stavrou, Haining Wang, and Kun Sun
In the Proceedings of the 36th IEEE Symposium on Security and Privacy (Oakland 2015), May 2015, San Jose, CA (Acceptance Rate: 13.5%, 55/407).

39. **Resurrecting the READ_LOGS Permission on Samsung Devices**
Ryan Johnson and Angelos Stavrou
In the briefings of Blackhat Asia 2015.

40. **E-commerce Reputation Manipulation: The Emergence of Reputation-Escalation-as-a-Service (Best paper nominee)**
Haitao Xu, Daiping Liu, Haining Wang and Angelos Stavrou
In the Proceedings of 24th World Wide Web Conference (WWW 2015) (Acceptance Rate: 14.1%, 131/929).

41. **TrustLogin: Securing Password-Login on Commodity Operating Systems**
Fengwei Zhang, Kevin Leach, Haining Wang, and Angelos Stavrou
In the Proceedings of The 10th ACM Symposium on Information, Computer and Communications Security (AsiaCCS'15), Singapore, April 2015 (Acceptance Rate: 17.8%, 48/269).

42. **transAD: An Anomaly Detection Network Intrusion Sensor for the Web (short paper)**
Sharath Hiremagalore, Daniel Barbara, Dan Fleck, Walter Powell, and Angelos Stavrou
In the Proceedings of Information Security Conference (ISC 2014), Lecture Notes in Computer Science p 477-489, Hong Kong, Oct 2014. (Acceptance Rate: 17.8%, 48/269)

43. **A Framework to Secure Peripherals at Runtime**
Fengwei Zhang, Haining Wang, Kevin Leach, Angelos Stavrou
European Symposium on Research in Computer Security (ESORICS) p. 219-238 (2014) (Acceptance Rate: 24.8%, 58/234)

44. **Click Fraud Detection on the Advertiser Side**
Haitao Xu, Daiping Liu, Aaron Koehl, Haining Wang, Angelos Stavrou
European Symposium on Research in Computer Security (ESORICS) p. 419-438 (2014)
(Acceptance Rate: 24.8%, 58/234)

45. **Activity Spoofing and Its Defense in Android Smartphones**
Brett Cooley, Haining Wang, and Angelos Stavrou
In the proceedings of the 12th International Conference on Applied Cryptography and Network Security (*ACNS 2014*) Lausanne, Switzerland. (Acceptance Rate: 22.5%, 33/147)

46. **Catch Me if You Can: A Cloud-Enabled DDoS Defense**
Quan Jia, Huangxin Wang, Dan Fleck, Fei Li, Angelos Stavrou, Walter A. Powell.
In the Proceedings of the 44th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (IEEE DSN 2014), Atlanta, Georgia USA, June 23 - 26, 2014.

47. **Detecting Malicious Javascript in PDF through Document Instrumentation**
Daiping Liu, Haining Wang, and Angelos Stavrou.
In the Proceedings of the 44th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (IEEE DSN 2014), Atlanta, Georgia USA, June 23 - 26, 2014.

48. **PyTrigger: A System to Trigger & Extract User-Activated Malware Behavior**
Dan Fleck, Arnur Tokhtabayev, Alex Alarif, Angelos Stavrou, and Tomas Nykodym.
In the proceedings of the 8th ARES Conference (ARES 2013),
University of Regensburg, Germany September 2nd - 6th, 2013.

49. **MOTAG: Moving Target Defense Against Internet Denial of Service Attacks**
Quan Jia, Kun Sun, Angelos Stavrou.
In the proceedings of the International Conference on Computer Communications and Networks ICCCN 2013 Nassau, Bahamas July 30 - August 2, 2013.

50. **Behavioral Analysis of Android Applications Using Automated Instrumentation**
Mohammad Karami, Mohamed Elsabagh, Parnian Najafiborazjani, and Angelos Stavrou.
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21. Return Value Predictability for Self-Healing
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2. SecureSwitch: BIOS-Assisted Isolation and Switch between Trusted and Untrusted Commodity OSes
   Kun Sun, Jiang Wang, Fengwei Zhang and Angelos Stavrou, GMU-CS-TR-2011-7

3. An Analysis of System Management Mode (SMM)-based Integrity Checking Systems and Evasion Attacks
   Jiang Wang, Kun Sun and Angelos Stavrou, GMU-CS-TR-2011-8

4. Ruminate: A Scalable Architecture for Deep Network Analysis
   Charles Smutz and Angelos Stavrou, GMU-CS-TR-2010-20.

Professional Activities & Service

Founder & CEO

- Kryptowire LLC (https://www.kryptowire.com/)

Founder & Chief Scientist

- Quokka INC (https://www.quokka.io)

Editorial Positions, Panels, and Boards

- IEEE Security and Privacy Magazine (01-01-2017 - Present)
  Type: Internet publication
  Role: Associate or guest editor/curator
- International Journal of Information Security (01-01-2019 - Present)
  Type: Journal
  Role: Editorial/curatorial board member
- IEEE Transactions on Computers (01-01-2020 - Present)
  Type: Journal
  Role: Associate or guest editor/curator
  Description: Associate Editor of IEEE Transactions on Computers
- IEEE Internet Computing (01-01-2020 - Present)
  Type: Journal
  Role: Associate or guest editor/curator

Past:

Associate Editor, IEEE Transactions on Reliability, September 2015 - 2020
IET Journal on Information Security, May 2010 – May 2018
Encyclopedia of Cryptography and Security, Editorial Board Member, March 2010 – 2020

Program Organization:

Program General co-Chair, ACM Conference on Computer and Communications Security (CCS) 2022
Program co-Chair, 10th European Workshop on Systems Security (EuroSec): 2017, 2018
Program co-Chair, Research in Attacks, Intrusions and Defenses (RAID) Symposium, RAID 2013, 2014
Student Travel Grant Chair, ACM Conference on Computer and Communications Security (CCS), 2009, 2010
Program co-Chair, Workshop on Cyber Security Experimentation and Test (CSET): 2009, 2010
Program co-Chair, 1st Workshop on Virtual Machine Security (VMSec): 2008, 2009

Program Committee Member (Selected):

USENIX Security Symposium: 2007, 2008, 2009, 2020, 2021
ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec) 2020
IEEE MILCOM (Track 3): 2016, 2017, 2018
IEEE Conference on Dependable and Secure Computing: 2017
IEEE International Conference on Software Quality, Reliability and Security: 2016
Recent Advances in Intrusion Detection (RAID): 2011, 2012, 2017
IEEE Symposium on Security and Privacy (IEEE S&P): 2010, 2011, 2012
ACM Conference on Computer and Communications Security (CCS): 2009, 2010
Annual Computer Security Applications Conference (ACSAC): 2009, 2010, 2011, 2012, 2013
Network and Distributed System Security Symposium (NDSS): 2009, 2010
International Conference on Distributed Computing Systems (ICDCS): 2009, 2010, 2011, 2012, 2013
25th ACM Symposium On Applied Computing (SAC): 2010
Financial Cryptography and Data Security: 2010, 2011, 2012
5th ACM Int'l Conference on emerging Networking EXperiments and Technologies: 2009
USENIX Security Symposium: 2007, 2008, 2009
International ICST Conference on Security and Privacy in Communication Networks (SecureComm), 2009, 2010, 2011
European Workshop on System Security (EUROSEC): 2008, 2009, 2010, 2011
IEEE International Symposium on Policies for Distributed Systems and Networks, POLICY 2010, 2011, 2012
ECML/PKDD Workshop on Privacy and Security issues in Data Mining and Machine Learning PSDML 2010
2nd USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET): 2009
European Conference on Computer Network Defense (EC2ND): 2008
Workshop on Cyber Security Experimentation and Test : 2008, 2013
Information Security Conference (ISC): 2008, 2009
European Symposium on Research in Computer Security (ESORICS): 2008
International Workshop on Security and Privacy in Wireless and Mobile Computing, Networking and Communications: 2008

Patent Litigation Experience

Expert witness for patent invalidity reports, depositions, patent office actions, Inter Partes Disputes preparation, product infringement reports, code and system examination.

Law firm: Quinn Emanuel Urquhart & Sullivan, LLP
Fortinet, Inc V. Sophos, Inc
Case No 13-cv-05831-EMC (representing Fortinet)
Deposed for the case.
Project status: Ended

Law firm: Feinberg Day Alberti & Thompson LLP ("Feinberg Day")
Representing: Intellectual Ventures II L.L.C.
Case: Intellectual Ventures II L.L.C. v. JP Morgan Chase & Co. et al (representing IV)

Case: 1:13-cv-03777 | New York Southern District Court
Case: 1:13-cv-03777-AKH
Civil Action No. 2:13-cv-1106-AKK
Case: l:13-CV-02454-WSD
Case: 2:13-CV-04160-NKL
Case: 2:13-CV-785
Case: 8:13-cv-00167
Case: IPR2014-00786, Patent No. 6,826,694
Project status: Ended

IP Patent Consulting
Law firm: Brian Owens, Esq
Case: Multiple pertaining to analysis of patent validity.
Project: On-going consulting on patent infringement, validity, and claim construction

Patent Filling/Examination Experience

Consulted GMU legal team on patent filling, claim structure, and responses to USPTO examination and re-examination of relevant patents.

1. U.S. Patent Application 12/558,841 filed on September 14, 2009, entitled "Distributed Sensor for Detecting Malicious Software."
2. U.S. Patent Application 12/548,175 filed on August 26, 2009, entitled "Event Driven Email Revocation."
3. U.S. Patent Application 12/688,037 filed on January 15, 2010, entitled "Authentication Using Graphical Passwords."
4. U.S. Patent Application 12/757,675 filed on April 9, 2010, entitled "Malware Detector."
5. U.S. Patent Application 12/965,413 filed on December 10, 2010, entitled "Website Detection."
6. U.S. Patent Application 12/835,228 filed on July 13, 2010, entitled "Inferring Packet Management Utility Rules."
7. U.S. Patent Application 611413,673 filed on November 15, 2010, entitled "HyperCheck: A Hardware Assisted Integrity Monitor."
8. U.S. Patent Application 611413,677 filed on November 15, 2010, entitled "Network Traffic Analysis."

Consulted on more patents filled prior to 2007 while I was at Columbia University (worked with Columbia retained law firms).

Advisory Boards, Workshops & Other Professional Activities

Academic Program Director, Masters in Management of Secure Information Systems, George Mason University, 2014 – May 2017
Academic Program Director, Masters in Information Security and Assurance, George Mason University, 2013 - 2015
IEEE Rebooting Computing Committee, 2013 - onwards
Senior Member of the IEEE, 2012 - onwards
Subject Matter Expert, DARPA Transformative Applications, September 2010 - September 2012
USDA Federal Mobile Computing Summit, 2011
NIST Mobile & Smart Phone Technologies Technical Exchange Meeting, 2011
Google Faculty Summit, July 2010
ARO/NSF Workshop on Moving Target Defense, October 2010
National Science Foundation Panels: 2008, 2009

DARPA Cyber Genome Project, Dec 2009
DARPA Digital Object Storage and Retrieval (DOSR), July 2008
DARPA Intrinsically Assurable Mobile Ad-hoc Networks (IAMANETs), January 2008

Ph.D. Thesis Committee Service

1. **Mahmood Riyadh**, Electrical Engineering Department, George Mason University, Summer 2015.
2. **Velegalati Rajesh**, Electrical Engineering Department, George Mason University, Summer 2015.
3. **Yu Bo**, Computer Science Department, George Mason University, Fall 2014.
4. **Jin Jing,** Computer Science Department, George Mason University, Fall 2013.
5. **Xu Min,** Computer Science Department, George Mason University, Fall 2013.
6. **Caixia Wang**, Thesis title: "*Spatial content-based scene matching using a relaxation method*", Department of Geography and GeoInformation Science, George Mason University, November 2010.
7. **Mansoor Alicherry**, Thesis title: "*A Distributed Policy Enforcement Architecture for Mobile Ad Hoc Networks*",
   Computer Science Department, Columbia University, October 2010.
8. **Min Xu**, Thesis title: "*Session-aware RBAC Administration, Delegation, and Enforcement with XACML*",
   Computer Science Department, George Mason University, April 2010.

Post-Doctoral Researchers

Konstantinos Kolias (August 2014 - 2019)
Daniel Fleck (August 2012 - 2019)
Nelson Nazzicari (August 2010 - September 2011)
Arnur Tokhtabayev (May 2011 - November 2012)

Current Ph.D. Students

Full Time Ph.D. Students

1. Kene Nwondo (Auguest 2020 - present)

Graduated Ph.D. Students

Ryan E. Johnson (January 2011 – December 2019)
- Thesis title: "*Automatic Program State Exploration Techniques for Security Analysis of Android Apps*"
- Post-graduation: Director of Research, Kryptowire LLC
- Currently: Director of Research, Kryptowire LLC

Rahul Murmuria (January 2011 – September 2017)
- Thesis title: "*Modeling User Behavior on Smartphones*"
- Post-graduation: Data Scientist, AppZen
- Currently: Senior Data Scientist at Sensor Tower

Mohamed Elsabagh (September 2012 – June 2017)
- Thesis title: " *Protection from Within: Runtime Hardening Techniques for COTS Binaries*"
- Post-graduation: Kryptowire LLC

- Currently: Kryptowire LLC

Charles Smutz (January 2009 - August 2016) (part-time Ph.D.)
- Thesis title: "*Countering Malicious Documents and Adversarial Learning*"
- Post-graduation: Sandia National Laboratories
- Currently: Sandia National Laboratories

Sharath Hiremagalore (September 2009 - August 2015)
- Thesis title: "*Zero-Day Attack Detection Using Collaborative and Transduction-Based Anomaly Detectors*"
- Post-graduation: Verisign
- Currently: Verisign

Fengwei Zhang (September 2011 - April 2015)
- Thesis title: "*Using Isolated Execution Environments for Securing Systems*"
- Post-graduation: Assistant Professor at Wayne State University
- Currently: Assistant Professor at Wayne State University

Quan Jia (September 2008 - January 2014)
- Thesis title: "*Mitigating Denial-of-Service Attacks in Contested Network Environments*"
- Post-graduation: MicroStrategy
- Currently: MicroStrategy

Zhaohui Wang (September 2008 - December 2012)
- Thesis title: "*Securing Smart Mobile Devices: A Data-Centric Approach*"
- Post-graduation: N/A
- Currently: N/A

Jiang Wang (January 2008 - July 2011)
- Thesis title: "*Hardware-Assisted Protection and Isolation*"
- Post-graduation: Riverbed Technology Inc.
- Currently: Riverbed Technology Inc.

Graduated MSc. Students

1. Charalampos Andrianakis (September 2008 - September 2011)
2. Rhandi Martin (January 2009 - January 2011)
3. Spyridon Panagiotopoulos (September 2009 - December 2011)
4. Chen Liang (September 2009 - December 2011)

Service at George Mason University

Volgenau School of Engineering, Academic Director, M.S. in Management of Secure Information Systems Program, School of Management (March 2014 - 2018)
Computer Science Department, ISA Admissions & Policy Committee (September 2008 - present)
Computer Science Department, Security Recruiting Committee (September 2010 - July 2011)
Computer Science Department, APR ISA Committee (September 2010 - July 2011)
USENIX Association Campus Representative (2010 - present)
Faculty Advisor, undergraduate student group: **GMU ECHO** (Electrical & Computer Hacking Organization) (September 2009 - 2013)
Faculty Advisor, graduate student group: **GMU Information Security Association** (November 2007 - November 2009)

Teaching Experience

Virginia Tech
(Scores indicate mean course quality rating from student survey out of a maximum of 6.0)
Fall 2021: ECE/CS 5560, Fundamentals of Information Security (**71 students**)
Spring 2020: ECE/CS 5584, Nework Security **(18 students, Instr. :5.33, Class: 5.33)**
Fall 2020: ECE 4614, Telecommunication Networks **(33 students, Instr. :5.47, Class: 5.32)**

George Mason University
(Scores indicate mean course quality rating from student survey out of a maximum of 5.0)
Spring 2019: ISA 564/CS 499, Cyber Security Laboratory
Fall 2018: ISA 673, Operating Systems' Security
Fall 2017: CS 468, Secure Programing and Systems
Fall 2016: ISA 564, CS 499, Cyber Security Laboratory **(14 students, Instr.: 4.43, Class: 4.86)**
Fall 2015: ISA 564/CS 499, Cyber Security Laboratory **(19 students, Instr.: 4.13, Class: 4.31)**
Spring 2015: MSEC510, Foundations of Cyber Security **(31 students, Instr.: 4.39, Class: 4.33)**
Spring 2015: MSEC 650, Seminar: Enterprise Security Case St. **(18 students, Instr.: 4.36, Class: 4.27)**
Spring 2015: MSEC 720, Capstone Project Mgmt. Secure Info **(18 students, Instr.: 4.22, Class: 3.72)**
Spring 2015: ISA 785, Research in Digital Forensics **(13 students, no evaluation)**
Spring 2014: MSEC 511, Enterprise Security Practices **(21 students, Instr.: 4.22, Class: 3.72)**
Spring 2013: MSEC 642, Enterprise Security Technology **(27 students, Instr.: 4.55, Class: 4.54)**
Spring 2013: MSEC 511, Enterprise Security Practices **(21 students, Instr.: 4.67, Class: 4.50)**
Spring 2013: ISA 673, Operating Systems Security **(31 students, Instr.: 4.53, Class: 4.55)**
Fall 2012: ISA 674, Intrusion Detection **(29 students, Instr.: 4.71, Class: 4.71)**

Spring 2012 - Fall 2007. Weighted Average, Instructor: 4.66, Class: 4.53
Spring 2012: ISA 673, Operating Systems' Security **(36 students, Instr.: 4.71, Class: 4.48)**
Spring 2012: MSEC 511, Enterprise Security Practices **(30 students, Instr.: 4.93, Class: 4.77)**
Fall 2011: ISA 785, Research in Digital Forensics **(29 students, Instr.: 4.91, Class: 4.91)**
Fall 2010: ISA 862, Models for Computer Security (**23 students, Instr.: 4.89, Class: 4.84)**
Spring 2010: ISA 673, Operating Systems Security (**28 students, Instr.: 4.46, Class: 4.58)**
Fall 2009: CS 571, Operating Systems **(40 students, Instr.: 4.58, Class: 4.21)**
Spring 2009: ISA 564, Security Laboratory **(46 students, Instr.: 4.45, Class: 4.42)**
Fall 2008: ISA 656, Network Security **(28 students, Instr.: 4.81, Class: 4.69)**
Spring 2008: IT 862, Models for Computer Security **(29 students, Instr.: 4.38, Class: 4.25)**
Spring 2008: ISA 656, Network Security **(32 students, Instr.: 4.64, Class: 4.46)**
Fall 2007: ISA 656, Network Security **(30 students, Instr.: 4.68, Class: 4.50)**

Awarded Support for Research and Teaching (Gifts and Grants)
Total: ~$25,933,500 Total as PI: **~$22,082,500**

1. **PI DARPA STTR Twisted, Phase I, $67,500, 02/01/2021 – 11/30/2021** "Highly assured trusted information storage device" (with Trusted Science and Technology Inc.)

2. **PI DARPA WASH, ~$6,700,000, 03/01/2018 – 02/30/2022 via Kryptowire LLC** "SHINE: Sensing Health Innovatively Using Novel Empiricism"

3. **PI NIST, $473,632, 09/01/2016 - 08/31/2019** "Towards Measuring Security for IoT"

4. **Co-PI NSF, $299,935, 09/01/2016 - 08/31/2019** "City and County Cross Jurisdiction Cybersecurity Collaboration Capacity Building" (with J.P. Auffret)
5. **PI DARPA LADS (sub to PFP Cyber), $1,454,051, 05/01/2016 - 04/30/2020** "Enhanced Cyber Defense by Leveraging Involuntary Analog Emissions" (with J.P. Auffret)
6. **PI DARPA XD3, $4,433,701, 04/12/2016 - 06/30/2020** "Democratizing DDoS Defenses Using

   Secure Indirection Networks" (GMU-lead team with Columbia University, Penn. State, and BAE Systems, GMU portion **$1,529,742** without options) (with Dan Fleck)
7. **PI DAPRA XD3 (sub to Vencore, Inc), $944,150, 04/20/2016 - 04/19/2019** "Lookout - for the DARPA Extreme DDoS Defense- TA3" (with Dan Fleck)
8. **PI, Korea Agency for Defense Development, $267,682, 06/02/2014 - 02/15/2016,** "Technical consulting on the test and evaluation methodology for cyber-security technologies" (with J.P. Auffret)
9. **PI, NSF, $174,900, 09/01/2014 - 08/31/2017,** "TWC: TTP Option: Small: Collaborative: Scalable Techniques for Better Situational Awareness: Algorithmic Frameworks and Large-Scale Empirical Analyses" (with Fabian Monrose, UNC)
10. **Co-PI, DARPA (sub to Invincea Labs), $360,753, 01/15/2014 - 03/30/2015,** "TAPIO: Targeted Attack Premonition using Integrated Operational data sources" (with Dan Fleck)
11. **PI, NSF, $484,857, 08/01/2013 - 07/30/2016,** "Bridging the Cybersecurity Leadership Gap: Assessment, Competencies and Capacity Building" (with J.P. Auffret)
12. **PI, DHS/Purdue, $486,691, 07/01/2013 - 06/30/2016,** "Analysis of Mobile Application Communications Using GUI & Data Instrumentation"
13. **Co-PI, DHS, $256,000, 09/20/2012 - 08/31/2017,** "Graduate Fellowship Training for Homeland Security" (with Duminda Wijesekera and Damon McCoy)
14. **co-PI Google Research Award, $75,000, 06/2013** (with Damon McCoy)
15. **co-PI NSF II-New, $547,000 09/2012-08/2013,** "An Experimental Infrastructure for Cross-Domain Research in Wireless Computing, Cybersecurity and Data" (with Robert Simon, Daniel Barbara and Brian Mark)
16. **PI (GMU), DARPA MRC, $750,363 09/2011 - 01/2016, "MEERKATS**: **M**aintaining **E**nterpris**E** **R**esiliency via **K**aleidoscopic **A**daptation & **T**ransformation of **S**oftware **S**ervices",
    (Part of team that includes Columbia University and Symantec Corp. total budget: $6,619,270) (with Fei Li)
17. **PI, DARPA Transformative Applications/Aterrasys, $511,323 08/24/2011 - 08/24/2012,** "Securing Android Mobile Devices"
18. **PI, Army Research Office (ARO), DURIP $205,983 06/15/2011 - 06/14/2012,** "A VPN Proxy Cloud for Detecting HTTP & VoIP Malware" (with Anup Ghosh)
19. **PI, IARPA, $2,169,506 08/02/2010 - 05/31/2014,** "Securely Taking on New Executable Software of Uncertain Provenance (STONESOUP) Program" (with Anup Ghosh)
20. **PI, DARPA, $1,527,225 07/01/2010 - 06/30/2014**, "CyNomix: Detecting Zero-Day Malware by Generating Behavioral Cyber Genome Sequences" (with Huzefa Rangwala)
21. **PI, NIST/DARPA, $653,780 (+$300,000 Supplement) 08/01/2010 - 07/31/2013,** "Securing Android Smart-Phones via Automated Testing and Certified Communications" (with Anup Ghosh)

22. **co-PI, NIST, $431,902 07/01/2010 - 06/30/2013,** "Building Policies to Control Virtual Environments using the Policy Machine" (with Duminda Wijesekera)
23. **co-PI, DHS, $368,923/$980,000 08/27/2010 - 05/31/2011 (2010),** "ATHENA-Yukon Project" (with Anup Ghosh)
24. **co-PI, Secure Command, LLC $32,797 09/01/2010 - 03/31/2011,** "Enforcing Hardware-Assisted Integrity & Trust for Commodity Operating Systems" (with Kun Sun)
25. **PI, NSF, $239,884 09/2009-08/2011**, "TC: Small: Collaborative Research: Scalable Malware Analysis Using Lightweight Virtualization" (with Fabian Monrose)
26. **PI, Army Research Office (ARO), $342,400 09/2009-08/2011**, STTR Phase II: "Automatic Identification & Mitigation of Unauthorized Information Leaking from Enterprise Networks" (with Sushil Jajodia)
27. **co-PI, DARPA, $291,000 09/2009-08/2010**, "An Architecture for Providing High Assurance of Untrusted Applications on Wireless Handheld Devices" (with Anup Ghosh).
28. **co-PI, BAE Systems/DARPA, $59,875 1/1/09 - 09/11/2009,** "National Cyber Range" (with Anup Ghosh)
29. **PI, Google Inc: Research gift, $90,000 03/09,** (with Fabian Monrose)
30. **co-PI, AFOSR, $250,675 08/2009-08/2010**, DURIP: "A Laboratory for Large-Scale Testing of Self-Healing" (with Anup Ghosh)
31. **co-PI, Princeton University/DARPA, $84,937 8/16/08 - 8/31/09,** "Parallelizing Legacy Binary Code for Multi-Core Architectures via Extraction of Self-Similarity" (with Michael Locasto)
32. **co-PI, Army Research Office (ARO), DURIP $150,000 07/2009-07/2009**, "A Laboratory for Proactively Preventing Phishing and Malcode Attacks Using Web Crawlers", (with Sushil Jajodia and Anup Ghosh)
33. **co-PI, DHS/I3P Dartmouth College, $60,000 11/2009,** "Securing the Railway IT Infrastructure", (with Michael Locasto and Duminda Wijesekera)
34. **co-PI, AFOSR, $670,499 07/2009-07/2011**, "Secure Composition of Networked Systems Based on User Tasks and Organizational Policy" (with Duminda Wijesekera and Sushil Jajodia).
35. **co-PI, DARPA/BAE Systems, $50,000 1/1/09 - 6/30/09** "National Cyber Range" (with Anup Ghosh)
36. **PI DHS/I3P Dartmouth College: $150,000 8/10/08 - 8/9/09** "Open Taint: Flexible and Automatic Dataflow Tagging and Control for User-Level Programs" (with Michael Locasto)
37. **co-PI, Google Inc: Research gift, $25,000 03/08,** (with Steven M. Bellovin)
38. **co-PI, Secure Command, LLC: $50,000 9/19/08 - 3/18/09** "STTR: Fingerprinting Network Traffic" (with Sushil Jajodia)

Research Experience

Computer Science department, Columbia University,
Fu Foundation School of Engineering & Applied Science, New York, NY.
Research Assistant (Fall 2003 - Summer 2007).
Design and Implementation of protection mechanisms against DDoS Attacks using Overlay networks. | NSL Web page has more info on SOS/WEBSOS project.

Electrical Engineering department, Columbia University,
Fu Foundation School of Engineering & Applied Science, New York, NY.
Research Assistant (Spring 2002 - Fall 2003).
Design and implementation of a novel peer to peer client/server protocol in Java.
Performed Internet experiments using up to 180 concurrent nodes in various locations around the world.

European Union program TIDE/RISE for home networks application.
Development of robust home network applications for a controlled medical environment.

General Secretariat of Research and Technology of Greece.
Design and implementation of Industrial network for the Kopais industry as a part of a program from the General Secretariat of Research and Technology of Greece.

Prior to 2001 Work Experience

01/1999 - 12/2000: Network Administrator, University of Athens
03/1997 - 07/1998: Network Administrator. Westnet S.A.
09/1994 - 09/1997: University of Patras, Network Administrator

Academic Honors, Fellowships

Outstanding Research Award: 2016 Department of Computer Science, George Mason University.
IEEE Reliability Society Engineer of the Year Award (2012) - awarded January 2013.
Mason Masters In Secure Information Systems Outstanding Faculty of the Year Award (2013, 2014).
Mason Emerging Researcher/Scholar/Creator award: 2012 George Mason University (one out of three awards for 2012-2013).
Outstanding Research Award: 2010 Department of Computer Science, George Mason University.
Dissertation with Distinction Award: 2007 Computer Science Department, Columbia University.
CS Service Award: 2006 Computer Science Department, Columbia University.
Preceptor: Columbia University Fellow Spring 2004 & Fall 2005.
Best Teaching Assistant Award: Spring 2002, Columbia University.
Scholarship: from the graduate program of Algorithms, Logic & Computation for the first two years of study (1998-2000).
Greek National Fellowship Institution award: for being the second (2/180) for the first and third years of undergraduate study.

Professional References

Professor Angelos D. Keromytis, John H. Weitnauer, Jr. Chair, and Georgia Research Alliance (GRA) Eminent Scholar at the Georgia Institute of Technology
Contact: angelos@gatech.edu
Klaus 3362, 266 Ferst Dr NW, Atlanta, GA 30332
https://www.ece.gatech.edu/faculty-staff-directory/angelos-d-keromytis

Professor Fabian Monrose, Kenan Distinguished Professor in the Computer Science University of North Carolina at Chapel Hill
Contact: fabian@cs.unc.edu
3175 Sitterson Hall, UNC-Chapel Hill, NC 27599-3175
https://www.cs.unc.edu/~fabian/web.html

Professor Salvatore J. Stolfo, Computer Science Department, Columbia University
Contact: sal@columbia.edu
606 CEPSR, Mail Code 0401, 530 West 120th Street, New York, NY 10027
https://salvatorestolfo.com/

Professor Jonathan M. Smith, Olga and Alberico Pompa Professor of Engineering and Applied Science, Professor of Computer and Information Science at the University of Pennsylvania
Contact: jms@cis.upenn.edu
604 Levine Hall, CIS Dept., 3330 Walnut St. Philadelphia, PA 19104-6389
https://www.cis.upenn.edu/~jms/

Professor Steven M. Bellovin, Computer Science Department, Columbia University
Contact: smb@cs.columbia.edu
454 Computer Science Building, 500 West 120th St, M.C. 0401, New York, NY 10027-7003
https://www.cs.columbia.edu/~smb/