Curriculum Vitae – Aaron D. Striegel

Revised: May 16th, 2018

I. PERSONAL DATA

Dept. of Computer Science and Engineering
384 Fitzpatrick Hall
University of Notre Dame
Notre Dame, IN 46556

Telephone:	(574) 631-6896
Fax:	(574) 631-9260
E-Mail:	striegel@nd.edu
	aaron.striegel@gmail.com
Twitter	@AaronStriegel

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Website: http://www.nd.edu/~striegel
                https://www.linkedin.com/pub/aaron-striegel/5/9bb/370
                https://scholar.google.com/citations?user=w88NouMAAAAJ

II. EDUCATION

- Ph.D., Computer Engineering, Iowa State University Dec. 2002
    Major Professor: Dr. Manimaran Govindarasu
- B.S. Computer Engineering, Iowa State University   Dec 1998

III. ACADEMIC EXPERIENCE

- Professor, University of Notre Dame - May 2018 to present
- Associate Professor, University of Notre Dame – May 2009 to May 2018
    Associate Chair - May 2012 to Summer 2018
    Assistant Professor, University of Notre Dame – Jan 2003 to May 2009
        Department of Computer Science and Engineering
- Research Exchange, Université de Technologie de Compiègne) – Jan 2002 – May 2002
- Graduate Student, Iowa State University – 1999 - 2002
    Department of Electrical and Computer Engineering

IV. HONORS AND AWARDS

2014-2016   Leadership Award - ICCCN Service

2013   Best Paper Award - ACM HotPlanet Workshop @ SIGCOMM

2012   National Academy of Engineering Indo-American Frontiers of Engineering Symposium
            (IAFOE)

        Selected Participant, National Academies Keck Futures Initiative (NAFKI),
            "The Informed Brain in the Digital World"

2011   Best Paper Award - IEEE Healthcom

   National Academy of Engineering Frontiers of Engineering Education Symposium
          One of 65 individuals selected nation-wide

2010   Iowa State ECpE Early Career Impact Award

2009   Adviser to 2nd place team – National Security Innovation Competition

2008   Best Paper Award – Large Installation System Administration (LISA) 2008

2006   Notre Dame Computer Science & Engineering Teacher Faculty Award

2003   NSF CAREER Award, 1st Attempt

2002   ISU Research Excellence Award
        DSN'2002 – IEEE Student Travel Award

2001   Faculty Member Nomination (2 students) - Student Scholars and Leaders Recognition
        Ceremony
        Participant – NSF Engineering Educators & Scholars Workshop (August 2001)
        New Faculty Fellow Grant – Frontiers in Education (FIE'2001)

2000   ISU Teaching Excellence Award
        NSF Graduate Research Fellowship – Honorable Mention

1999   Iowa State University EE/Cpr E Fellowship

Summary: 3x Best Paper Awards
            2x NAE Symposium (Selected Participant)

V. PROFESSIONAL MEMBERSHIPS

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

Senior Member (2017), Full Member since 2002, Student Member 98-02

ASSOCIATION OF COMPUTING MACHINERY (ACM)

Full Member since 2006

AMERICAN SOCIETY FOR ENGINEERING EDUCATION (ASEE)

Full Member since 2011

2001   New Faculty Fellow, Frontiers in Education, October 2001.

Academic Honor Societies

   Eta Kappa Nu
   Tau Beta Pi

VI. TECHNICAL PUBLICATIONS AND PRESENTATIONS

Most publications are available via IEEE Xplore or the ACM Digital Library.

<u>Major Current Projects</u>

<u>Tesserae:</u> The focus of this project expands on our prior work with NetSense / NetHealth (see below) to explore how smartphones, wearable devices, social media, and context can be used to capture and model workplace productivity. The work will instrument seven hundred and fifty working professionals and instrument their day to day activities over a period of one year. I am serving as the lead PI with Notre Dame as the lead institution ($7.938M). Six contributing institutions also are part of the effort (UC-Irvine, Georgia Tech, Dartmouth, Carnegie Mellon, Colorado-Boulder, Ohio State). The work began in June 2017 and will run through March 2019.

<u>Fast Mobile Network Characterization:</u> The goal of the Fast Mobile Network Characterization (FMNC) work is to explore how cleverly constructed packet probing trains can be created to accurately, rapidly, and efficiently capture the link characteristics for various types of wireless links (WiFi, LTE). Current work includes explorations of active and passive approaches to link characterization.

<u>NetSense Smartphone Study:</u> The NetSense smartphone study has instrumented nearly two hundred incoming freshmen at the University of Notre Dame for the purposes of exploring the interplay between smartphone usage (always-on networking) and social ties (make / keep friends). The study has now been gathering data since August of 2011 and is slated to run through May of 2015. My particular focus for this work is with respect to the instrumentation on the device itself (data backend, data security) as well as exploring network usage patterns / optimization efforts. Our current research efforts are focusing on indoor optimization, WiFi offloading, and streamlined content distribution in ultra-dense environments (ex. stadium, dining hall, classroom).

<u>NetHealth Study:</u> The NetHealth study expands upon the NetSense study to instrument 500 incoming freshmen in the fall of 2015 with smartphone agents, health sensors (Fitbit Charge HR), and co-location sensing (Bluetooth LE). The focus of the work from a sociological perspective is to explore the underlying network effects with regards to homophily on quantitative metrics such as physical activity levels and sleep. The study is instrumenting 500 students with rich sensing capabilities and has been running for two years.

<u>WeHab:</u> The WeHab study explores how low-cost motion-based gaming peripherals (ex. Nintendo Wii Balance Board, Microsoft Kinect) can be used to deliver enhanced balance rehabilitation with applications for post-TBI (stroke, concussion) and orthopedic physical therapy. Our current research efforts are focusing on robust framework development (open source instrumentation platform), audio feedback mechanisms, and predictive modeling for mapping in-therapy results to existing evaluation mechanisms (Berg Balance, FIM).

<u>Research Summary / Impact</u>

      24 peer-reviewed journal papers
      78 peer-reviewed conference papers
      6 invited papers
      11 graduated PhD students, 7 completed Masters theses
      3 Best Paper Awards

      Google Scholar   Top cited papers – 137, 97, 85, 65 citations
                          1837 citations, h-index 26, i-10 index 51

Journal Publications (Peer-Reviewed)

Students advised directly by myself are noted in bold. The legend for inclusion is as follows: (*) Undergraduates, (@) for Graduate Students, and (+) for Post-doctoral Appointees.

1. **@L. Meng**, A. Striegel, T. Milenkovic, "Local versus Global Biological Network Alignment," *Bioinformatics*, vol.32, no. 20, October 2016. DOI: 10.1093/bioinformatics/btw348

2. **@L. Meng**, Y. Hulovatyy, T. Milenkovic, A. Striegel, "On the Interplay Between Individuals' Evolving Interaction Patters and Traits in Dynamic Multiplex Social Networks," *IEEE Transactions on Network Science and Engineering (TNSE)*, vol. 3, no. 1, pp. 32-43, Jan 2016. DOI: 10.1109/TNSE.2016.2523798

3. **@L. Meng, @S. Liu**, A. Striegel, "Analyzing the longitudinal impact of proximity, location, and personality on smartphone usage," *Computational Social Networks*, 1:6, Dec 2014.

4. M. Kazjer, J. D'Arcy, C. R. Crowell, A. Striegel, **D. Van Bruggen**, "An exploratory investigation of message-person congruence in information security awareness campaigns," *Computers & Security*, vol. 43, pp. 64-76, June 2014.

5. M. Kennedy, C. Crowell, A. Striegel, M. Villano, J. Schmiedeler, "Relative efficacy of various strategies for visual feedback in standing balance activities," *Experimental Brain Research*, vol. 230, no. 1, pp. 117-125, Sep 2013.

6. **@S. Liu**, +**Y. Jiang**, A. Striegel, "Face-to-Face Proximity Estimation Using Bluetooth On Smartphones," *IEEE Transactions on Mobile Computing*, vol. 13, no. 4, pp. 811-823, April 2014.

7. **@Q. Liao**, A. Striegel, Z. Li, "Could Firewall Rules Be Public -- A Game Theoretical Perspective", in *Security and Communications*, vol. 5, no. 2, pp. 197-210, Feb. 2012. DOI: 10.1002/sec.307

8. **@Q. Liao, @A. Blaich, @D. VanBruggen**, A. Striegel, "Managing Networks through Context: Graph Visualization and Exploration," *Computer Networks*, vol. 54, no. 16, pp. 2809-2824, Nov. 2010.

9. **@Q. Liao**, Z. Li, **@A. Blaich**, A. Striegel, "Fighting Botnets with Economic Uncertainty," *Security and Communication Networks*, vol 4, no. 10, pp. 1104-1113, October 2011.

10. **@A. Blaich**, A. Striegel, D. Thain, "Reflections on The Virtues of Modularity: A Case Study in Linux Security Modules," *Software: Practices and Experience*, vol. 39, no. 15, pp. 1235-1251, Oct. 2009.

11. **@Y. Jiang**, A. Striegel, "An Analysis of the Effects of State Granularity Through (m,k) Real-Time Streams," *IEEE Transactions on Computers*, vol. 58, no. 6, pp. 784-798, June 2009.

12. P. Brenner, **@J. M. Wozniak**, D. Thain, A. Striegel, J. W. Peng, J. A. Izaguirre, "Biomolecular Committor Probability Calculation Enabled by Processing in Network Storage," *Parallel Computing*, vol. 34, no. 11, pp. 652-680, Nov 2008.

13. **@Q. Liao, @D. Cieslak**, A. Striegel, N. Chawla, "Using Selective, Short-Term Memory to Improve Resilience Against DDoS Exhaustion Attacks," *Security and Communication Networks,* vol. 1, no. 4, pp. 287-299, Jul/Aug 2008.

14. **@C. Mano, @A. Blaich, @Q. Liao, @Y. Jiang, @D. Cieslak, @D. Salyers**, A. Striegel, "RIPPS: Rogue Identifying Packet Payload Slicer Detecting Unauthorized Wireless Hosts Through Network Traffic Conditioning," *ACM Transactions on Information and System Security (TISSEC),* vol. 11, no. 2, pp. 1-23, March 2008.

15. **@J. M. Wozniak**, P. Brenner, D. Thain, A. Striegel, J. A. Izaguirre, "Making the Best of a Bad Situation: Prioritized Storage Management in GEMS," *Future Generation Computer Systems,* vol. 24, no. 1, pp. 10-16, January 2008.

16. **@D. Salyers, @Y. Jiang**, A. Striegel, C. Poellabauer, "JumboGen: Dynamic Jumbo Frame Generation for Network Performance Scalability," *ACM Computer Communications Review (CCR)*, vol. 37, no. 5, pp. 53-64, October 2007.
17. **@X. Li**, A. Striegel, "A Case for Passive Application Layer Multicast," *Computer Networks*, vol. 51, no. 11, pp. 3157-3171, Aug 2007.
18. **@C. D. Mano, *J. Smith, *W. Bordogna, *A. Matta, *D. Dugovic**, A. Striegel, "CLog: Low Cost Gigabit Full Packet Logging," *Journal of Communications*, vol. 1, no. 7, pp. 17-23, Nov/Dec 2006
19. **@Y. Jiang**, A. Striegel, "A Distributed Traffic Control Scheme based on Edge-Centric Resource Management," *ACM Computer Communications Review (CCR)*, vol. 36, no. 2, pp. 5-16, April 2006.
20. A. Striegel, G. Manimaran, "DSMCast: A Scalable Approach for DiffServ Multicasting," *Computer Networks,* vol. 44, no. 6, pp. 713-735, April 2004.
21. A. Striegel, G. Manimaran, "Dynamic Class-Based Queue Management for Scalable Media Servers," *Journal of Systems and Software (JSS),* vol. 66, no. 2, pp. 119-128, June 2003.
22. A. Striegel, G. Manimaran, "A Survey of QoS Multicasting Issues," *IEEE Communications,* vol. 40, no. 6, pp. 82-87, June 2002.
23. A. Striegel, G. Manimaran, "Packet Scheduling with Delay and Loss Differentiation," *Computer Communications,* vol.25, no.1, pp.21-31, Jan. 2002.
24. A. Striegel, G. Manimaran "Best-effort Scheduling of (m,k)-firm Real-time Streams in Multihop Networks," *Computer Communications,* vol.23, no.13, pp.1292-1300, July 2000.

Under Preparation: 3x

- Journalized version of IMC paper with data from new stadium WiFi deployment
- Journalized version of workshop paper at MobiWorld
- Journalized version of SECON paper

Conference / Workshop Publications

Acceptance rates when available included below:

1. **@L. Song**, A. Striegel, "SEWS: A Channel-Aware Stall-Free WiFi Video Streaming Mechanism," to appear in *Proc. of NOSSDAV*, June 2018.
2. L. Faust, P. Jimenez, D. Hachen, O. Lizardo, A. Striegel and N. Chawla, "Long-term Compliance Habits: What Early Data Tells Us," to appear in *Proc. of Workshop on Long-Term Tracking* (workshop at CHI), 2018.
3. **@R. Purta**, A. Striegel, "Estimating Dining Hall Usage Using Bluetooth Low Energy Beacons," in *Proc. of UbiMI workshop* at Ubicomp, Maui, Hawaii, September 2017.
4. S. Vhaduri, C. Poellabauer, A. Striegel, O. Lizardo and D. Hachen, "Discovering Places of Interest Using Sensor Data from Smartphones and Wearables," in *Proc. of IEEE UIC (Ubiquitous Intelligence and Computing)*, 2017.
5. **@L. Song**, A. Striegel, "Leveraging Frame Aggregation for Estimating WiFi Available Bandwidth" in *Proc. of IEEE SECON*, San Diego, CA, June 2017 (Acceptance Rate 26.5%)
6. **@X. Hu**, A. Striegel, "Redundancy Elimination Might Be Overrated: A Quantitative Study on Wireless Traffic," in Proc. of I*NFOCOM IECCO Workshop (Integrating Edge Computing, Caching, and Offloading in Next Generation Networks)*, Atlanta, GA, May 2017.

7. **@L. Song**, A. Striegel, "Leveraging Frame Aggregation to Improve Access Point Selection," in *Proc. of INFOCOM International Workshop on Mobility Management in the Networks of the Future World (MobiWorld)*, Atlanta, GA, 2017.

8. L. Faust, **@R. Purta**, D. Hachen, A. Striegel, C. Poellabauer, O. Lizardo, N. Chawla, "Exploring Compliance: Observations from a Large Scale Fitbit Study," in *Proc. of SocialSens* workshop, 2017.

9. **@R. Purta**, **@L. Song**, S. Mattingly, D. Hachen, O. Lizardo, J. Payne, C. Poellabauer, A. Striegel, "Experiences Measuring Sleep and Physical Activity Patterns Across a Large College Cohort With Fitbits," in *Proc. of ISWC (International Symposium on Wearable Computing)*, September 2016.

10. **@L. Meng**, J. Crawford, A. Striegel, T. Milenkovic, "IGLOO: Integrating global and local biological network alignment," *in Proc. of 12th International Workshop on Mining and Learning with Graphs (workshop at KDD)*, San Francisco, CA, August 2016.

11. Q. Liao, Z. Li, A. Striegel, "On the Economics of Mobile Content Pre-Staging," in *Proc. of 5th Workshop on Smart Data Pricing* (at *IEEE INFOCOM*), San Francisco, April 2016.

12. J. Shi, **@L. Meng**, D. Koutsonikolas, C. Qiao, A. Striegel, G. Challen, "A Walk on the Client Side: Monitoring Enterprise Wifi Networks Using Smartphone Channel Scans," in *Proc. of IEEE INFOCOM*, San Francisco, CA, April 2016 (Acceptance Rate 18.25%).

13. **@R. Purta**, D. Hachen, J. Liew, A. Striegel, "Toward a System for Longitudinal Emotion Sensing," in *Proc. of the 1st International Workshop on Social Sensing (SocialSens)*, workshop at IEEE MASS, Oct. 2015.

14. **@X. Hu**, **@L. Song**, **@D. Van Bruggen**, A. Striegel, "Is There WiFi Yet? How Aggressive Probe Requests Deteriorate Energy and Throughput," in *Proc. of ACM Internet Measurement Conference (IMC)*, Tokyo, Japan, Oct. 2015 (Short Paper - 16% acceptance rate on short papers). Dataset made public.

15. T. Neal, D. Woodard, A. Striegel, "Mobile Device Application, Bluetooth, and Wi-Fi Usage Data as Behavioral Biometric Traits" in *IEEE BTAS (Biometrics Theory, Applications and Systems)*, Arlington, VA, Sept. 2015. (Acceptance Rate: 44%)

16. **@B. Bockstege**, A. Striegel, "A Management System for Motion-Based Gaming Peripherals for Physical Therapy Instrumentation," in *Proc. of IEEE Healthcom*, Natal, Brazil, Oct. 2014.

17. **@X. Hu**, **@L. Meng**, A. Striegel, "Evaluating the Raw Potential for Device-to-Device Caching via Co-Location," in *Proc. of MobiSPC*, August 2014 (Acceptance Rate = 47%).

18. Q. Liao, Z. Li, A. Striegel, "Is More P2P Always Bad for ISPs? -- An Analysis of P2P and ISP Business Models," in *Proc. of HotData*, July 2014.

19. **@L. Meng, @S. Liu**, A. Striegel, "Analyzing the Impact of Proximity, Location and Personality on Smartphone Usage," Proc. of Workshop on Dynamic Social Networks (DySON), April 2014.

20. **@L. Meng**, T. Milenkovic, A. Striegel, "Systematic Dynamic and Heterogeneous Analysis of Rich Social Network Data," in *Proc. of CompleNet (5th Workshop on Complex Networks)*, March 2014.

21. **@X. Hu**, A. Striegel, "Preserving Location Privacy on the Release of Large-scale Mobility Data," in *Proc. of IEEE Globecom*, Atlanta, GA, Dec. 2013.

22. **@S. Liu**, A. Striegel, "Exploring the Potential in Practice for Opportunistic Networks Amongst Smart Mobile Devices," in *Proc. of ACM MOBICOM*, pp. 315-326, Miami, FL, Oct 2013.

23. **@D. Van Bruggen, @S. Liu**, M. Kazjer, A. Striegel, C. Crowell, J. D'Arcy, "Modifying User Smartphone Locking Behavior," in *Proc. of SOUPS (Symposium on Usable Privacy and Security)*, Newcastle, UK, July 2013.

24. A. Striegel, **@S. Liu, @L. Meng**, C. Poellabauer, D. Hachen, O. Lizardo, "Lessons Learned from the NetSense Smartphone Study," in *Proc. of ACM HotPlanet (workshop at ACM SIGCOMM),* Hong Kong, Aug 2013. **Best Paper Award**

25. @**A. Blaich**, @**S. Liu**, A. Striegel, "Re-thinking 802.11 Rate Selection In The Face of Non-Altruistic Behavior," in *Proc. of WiMAN (Workshop at ICCCN)*, July 2013.

26. @**Y. Jiang**, @**S. Liu**, A. Striegel, "Save For Later: A Technique for Improving End-to-End Mesh Network Performance," in *Proc. of WiMAN (Workshop at ICCCN)*, July 2013.

27. @**S. Liu**, A. Striegel, "Casting Doubts on the Viability of WiFi Offloading," in *Proc. of Cellular Networks: Operations, Challenges, and Future Design (CellNet)*, Helsinki, Finland, August 2012.

28. @**Q. Liao**, A. Striegel, "Intelligent Network Management Using Graph Differential Anomaly Visualization," in *Proc. of IEEE/IFIP Network Operations and Management Symposium (NOMS 2012)*, Maui, HI, 2012.

29. L. Shi, @**Q. Liao**, Y. He, R. Li, A. Striegel, Z. Su, "SAVE: Sensor Anomaly Visualization Engine," in *Proc. of IEEE VAST 2011*, Providence, RI, October 2011.

30. M. Kennedy, J. Schmiedeler, A. Striegel, C. Crowell, M. Villano, J. Kuitse, "Enhanced Feedback in Balance Rehabilitation using the Nintendo Wii Balance Board," in *Proc. Of IEEE HealthCom*, 2011 (Best Paper Award).

31. C. Miller, S. Chasins, C. Farris, J. Varner, C. Carmony, C. Poellabauer, and A. Striegel, "An Integrated Monitoring System for Mobile Phones", *Proceedings of the 1st International Workshop on Sensing for App Phones (PhoneSense)*, Zurich, Switzerland, November 2010.

32. @**Q. Liao**, A. Striegel, N. Chawla "Visualizing Graph Dynamics and Similarity for Enterprise Network Security and Management," in *Proceeding of the ACM 7th International Symposium on Visualization for Cyber Security (VizSec'10)*, Sept. 2010.

33. Z. Li, @**Q. Liao**, and A. Striegel. "Toward a socially optimal wireless spectrum management", In *Fifth IEEE Workshop on Networking Technologies for Software-Defined Radio and White Space*, held in conjunction with IEEE SECON, Boston, Massachusetts, June 21, 2010.

34. A. Striegel, @**D. Van Bruggen**, "Work in Progress: Development of a Human Computer Interface Course on the Microsoft Surface," in *Proc. Of Frontiers in Education (FIE)*, Oct. 2010.

35. *****M. Overholt, *S. Zhang**, A. Striegel, "WiiDoRF: Decision and Recording Framework for Educational Labs Centered on the Nintendo Wiimote," in *Proc. Of Frontiers in Education*, Oct. 2010.

36. @**A. Blaich,** A. Striegel, ""Is High Definition a natural DRM?" in *Proc. Of ICCCN 2009 Workshop on Multimedia Communications and Computing*, August 2009.

37. @**Q. Liao**, Z. Li, A. Striegel, "Information Game of Public Firewalls," in *Proc. of 5th Workshop on Network Protocols and Security (NPSec),* 2009.

38. @**Y. Jiang**, A. Striegel, "Fast Admission Control for Short TCP Flows," in *Proc. of IEEE GLOBECOM*, Honolulu, Hawaii, Nov. 2009.

39. *****J. Brindza, *J. Szweda**, @**Q. Liao**, @**Y. Jiang**, A. Striegel, "WiiLab: Bringing Together the Nintendo Wiimote and MATLAB," in *Proc. of Frontiers in Education (FIE)*, 2009.

40. @**A. Blaich,** A. Striegel, "On the Difficulties of Passively Detecting 802.11n Rogue Wireless Access Points," in the *Proc. of IEEE WoWMoM*, June 2009.

41. @**D. Salyers**, A. Striegel, C. Poellabauer, "Opportunistic Wireless Broadcast (OWB): Dynamic Redundancy Detection in the Wireless Medium", in *Proc. of 8th IEEE International Workshop on Wireless Local Networks (WLN)*, Montreal, Canada, Oct 2008.

42. @**Q. Liao, @A. Blaich**, A. Striegel, D. Thain, "ENAVis: Enterprise Network Activities Visualization," in *Proc. of LISA (Large Installation System Administration) Conference*, San Diego, CA, Nov. 2008 (Best Paper Award).

43. @**D. Salyers**, A. Striegel, C. Poellabauer, "A Light Weight Method for Maintaining Clock Synchronization for Networked Systems," in *Proc. of IEEE ICCCN,* St. Thomas, US Virgin Islands, August 2008 (Acceptance Rate: 24.6%).

44. Z. Li, @**Q. Liao**, A. Striegel, "Botnet Economics: Uncertainty Matters," in *Proc. of Workshop on Economics of Information Security*, Hanover, New Hampshire, June 2008.

45. ***K. O'Brien, @D. Salyers**, A. Striegel, C. Poellabauer, "Power and Performance Characteristics of USB Flash Drives," in *Proc. of IEEE WOWMOM (IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks)*, Newport Beach, CA, June 2008 (short paper).

46. **@D. Salyers**, A. Striegel, C. Poellabauer, "Rethinking 802.11 Packet Loss," in *Proc. of IEEE WOWMOM (IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks)*, Newport Beach, CA, June 2008 (short paper).

47. N. Shillingford, **@D. Salyers**, C. Poellabauer, A. Striegel, "Delay- and Energy-Aware Multi-Path Routing in Wireless Ad Hoc Networks," in *Proc. of MobiQuitous*, pp. 1-8, August 2007.

48. **@M. J. Chapple**, N. Chawla, A. Striegel, "Authentication Anomaly Detection: A Case Study On A Virtual Private Network," in *Proc. of 3rd Annual ACM Workshop on Mining Network Data (MineNet),* pp. 17-22, San Diego, California, June 2007.

49. **@J. M. Wozniak, @Y. Jiang**, A. Striegel, "Effects of Low Quality Time Estimates in Policed Schedulers," in *Proc. of 40th Annual Simulation Symposium (ANSS)*, pp. 283-292, 2007.

50. P. Brenner, **@J. M. Wozniak**, D. Thain, A. Striegel, J. A. Izaguirre, J. Peng, "Biomolecular Path Sampling Enabled by Processing in Network Storage," in T*he Sixth IEEE International Workshop on High-Performance Computational Biology* at *IPDPS,* pp. 1-6, 2007.

51. **@J. M. Wozniak**, P. Brenner, D. Thain, A. Striegel, J. A. Izaguirre, "Access Control for a Replica Management Database," in *Proc. of the Second ACM Workshop on Storage Security and Survivability*, pp. 41-46, Alexandria, VA, Oct. 2006.

52. **@X. Li**, **D. Salyers**, A. Striegel, "Improving Packet Cache Scalability Through the Concept of an Explicit End of Data Marker," in *Proc. of HotWeb,* pp. 1-12, Boston, MA, Nov. 2006.

53. **@C. Mano**, L. DuHadway, A. Striegel, "A Case for Instilling Security as a Core Programming Skill," in *Proc. of Frontiers in Education (FIE)*, pp. 13-18, San Diego, CA, Oct. 2006.

54. **@C. Mano, *J. Smith, *W. Bordogna**, A. Striegel, "High Speed Packet Logging on a Budget," in *Proc. of IFIP Networking*, pp. 501-512, Coimbra, Portugal, May 2006. (Acceptance Rate: 20.4%)

55. **@D. Cieslak**, N. Chawla, A. Striegel, "Combating Imbalance in Network Intrusion Datasets," in *Proc. of IEEE Granular Computing*, pp. 732-737, May 2006.

56. **@C. Mano**, A. Striegel, "Resolving WPA Limitations in SOHO and Open Public Wireless Networks," in *Proc. of IEEE Wireless Communications and Networking Conference (WCNC)*, Las Vegas, NV, pp. 617-622, April 2006.

57. **@Y. Jiang**, A. Striegel, "Granularity-aware (m,k) Queue Management for Real-Time Media Servers," in *Proc. of Real Time Application Symposium (RTAS)*, pp. 103-112, San Jose, CA, April 2006.

58. **@C. Mano**, A. Striegel, "Group Matrix Architecture for Computation Grid Data Integrity," in *Proc. of Trusted Internet Workshop (TiW)*, Dec. 2005.

59. D. Thain, S. Klous, **@J. Wozniak**, P. Brenner, A. Striegel, and J. Izaguirre, "Separating Abstractions from Resources in a Tactical Storage System," in *Proc. of the International Conference for High Performance Computing and Communications (Supercomputing)*, Nov 2005. (Acceptance Rate: 24.2%)

60. **@J. Wozniak**, P. Brenner, D. Thain, A. Striegel, J. Izaguirre, "Generosity and Gluttony in GEMS: Grid Enabled Molecular Simulations," in *Proc. of IEEE Symposium on High Performance and Distributed Computing (HDPC),* pp. 191-200, July 2005. (18.0% Acceptance Rate)

61. **@C. Mano**, A. Striegel, "Introducing Security Concepts Through An Electronic Voting Project," in *Proc. Of Frontiers In Education (FIE)*, Indianapolis, IN, Oct 2005.

62. **@C. Mano**, A. Striegel, "Trusted Security Devices for Bandwidth Conservation in IPSec Environments," in *Proc. of IFIP Networking – LNCS 3462,* pp. 166-177, Waterloo Canada, May 2005. (24.5% acceptance rate)

63. **@D. Salyers**, A. Striegel, "A Novel Approach to Transparent Bandwidth Conservation," in *Proc. of IFIP Networking – LNCS 3462*, pp. 1219-1230, Waterloo, Canada, May 2005. (24.5% acceptance rate).

64. **@J. M. Wozniak**, **@D. Salyers**, A. Striegel, J. Izaguirre, "GIPSE: Streamlining the Management of Simulation on the Grid," in *Proc. Of 38th Annual Simulation Symposium (ANSS)*, pp. 130-137, April 2005.

65. A. Striegel, "Stealth Multicast: A Novel Catalyst for Multicast Deployment," in *Proc. Of IFIP Networking – LNCS 3042*, pp. 817-828, Athens, Greece, May 2004. (19.1% acceptance rate)

66. A. Striegel, A. Bouabdallah, H. Bettahar, G. Manimaran, "EBM: Edge-Based Multicast in DiffServ Networks," in *Fifth International Workshop on Network Group Communication (NGC) - LNCS 2816*, pp. 131-142, Munich, Germany, Sep. 2003. (33.3% acceptance rate)

67. A. Striegel, G. Manimaran, "Dynamic DSCPs for Heterogeneous QoS in DiffServ Multicasting," in *Proc. of IEEE GLOBECOM*, pp. 2123-2127, Nov. 2002. (30.6% acceptance rate)

68. A. Striegel, D. Rover, "Enhancing Student Learning in an Introductory Embedded Systems Laboratory," in *Proc. of Frontiers in Education (FIE),* pp. T1D7-T1D12, Nov. 2002.

69. A. Striegel, D. Rover, "Problem-based Learning in an Introductory Computer-Engineering Course," in *Proc. of Frontiers in Education (FIE),* pp. F1G7-F1G12, Nov. 2002.

70. A. Chakrabarti, A. Striegel, G. Manimaran, "A Case for Tree Evolution in QoS Multicasting," in *Proc. of International Workshop on Quality of Service (IWQoS),* pp. 116-125, 2002. (18.9% acceptance rate)

71. A. Striegel, G. Manimaran, "An Edge-Based Fault Detection Scheme for DiffServ Networks," in *Proc. of Dependable Systems and Networking (DSN)'2002,* pp. 79-88, Washington D.C., June 2002.

72. A. Striegel, "Distance Education and Its Impact on Computer Engineering Laboratories," in *Proc. of Frontiers in Education* (FIE), pp. F2D4-9, Reno, Nevada, USA, Oct. 2001.

73. A. Striegel, J. Bonney, R. Ramanujin, "A Protocol Independent Internet Gateway for Ad-Hoc Wireless Networks," in *Proc. of Local Computer Networks (LCN),* pp. 92-101, Tampa, Florida, USA, Nov. 2001.

74. A. Striegel, G. Manimaran, "A Scalable Protocol for Member Join/Leave in a Multicast DiffServ Environment," in *Proc. of Conf. on Local Computer Networks (LCN)*, pp. 395-404, Tampa, Florida, USA, Nov. 2001.

75. A. Striegel, G. Manimaran, "A Scalable Approach to DiffServ Multicasting," in *Proc. International Conference on Communications (ICC)*, pp. 2327-2331, Helsinki, Finland, June 2001.

76. A. Striegel and G. Manimaran, "A scalable QoS adaptation scheme for media servers," in *Proc. Intl. Workshop on Parallel and Distributed Real-time Systems (WPDRTS)*, pp. 1045-1052, San Francisco, USA, Apr. 2001.

77. A. Striegel, G. Manimaran, "Dynamic Class-Based Queue Management for Scalable Media Servers," in *Proc. IEEE Real-time Technology and Applications Symposium (RTAS),* Washington DC, USA, pp.228-236, May 2000.

78. A. Striegel, G. Manimaran "Best-effort Scheduling of (m,k)-firm Real-time Streams in Multihop Networks," in *Proc. Intl. Workshop on Parallel and Distributed Real-time Systems (WPDRTS)*, Cancun, Mexico, pp. 743-752, Apr. 2000.

LNCS – Lecture Notes in Computer Science (Springer-Verlag)

Under Review: None

Book Chapters

1. Tempestt J. Neal, Damon Woodard, Aaron D. Striegel, "Mobile device usage data as behavioral biometrics," to appear as Chapter 7 in *Mobile Biometrics*.
2. **@M. Chapple**, A. Striegel, C. Crowell, "Firewall Security Maintenance," in *CT Ethics and Security in the 21st Century: New Developments and Applications*, IGI Global.
3. **@J. M. Wozniak**, A. Striegel, "Investigating Deadline-Driven Scheduling Policy via Simulation with East," to appear as a chapter in *Quantitative Quality of Service for Grid Computing: Applications for Heterogeneity, Large-Scale Distribution and Dynamic Environments*, IGI Global.

Invited Conference Papers

1. **@L. Song**, A. Striegel, "A Lightweight Scheme for Rapid and Accurate WiFi Path Characterization," to appear in *Proc. of ICCCN*, Hangzhou, China, August 2018.
2. **@X. Hu**, A. Striegel, "PASS: Content Pre-staging through Provider Accessible Storage Service," in *Proc. of ICCCN*, Vancouver, Canada, August 2017.
3. A. Striegel, **@S. Liu, @X. Hu**, "LTE and WiFi: Experiences with Quality and Consumption," in *Proc. of MobiSPC*, August 2014.
4. **@L. Meng, @S. Liu**, A. Striegel, "Characterizing the Utility of Smartphone Background Traffic," in *Proc. of WiMAN*, Shanghai, China, July 2014.
5. **@S. Liu**, A. Striegel, "Accurate Extraction of Face-to-Face Proximity Using Smartphones and Bluetooth," in *Proc. of Fifth International Workshop in Wireless Mesh and Ad Hoc Networks (WiMAN)*, Maui, HI, July 2011.
6. **@C. D. Mano, @D. C. Salyers, @Q. Liao, @A. Blaich**, A. Striegel, "SAABCOT: Secure Application-Agnostic Bandwidth COnservation Techniques", in *Proc. of IEEE BroadNets*, September 2007 (Invited Paper).

arXiv Papers (Non-Refereed)

1. N. Kleber, J. Chisum, A. Striegel, B. Hochwald, A. Termos, J. Laneman, **@Z. Fu**, J. Merritt, " RadioHound: A Pervasive Sensing Network for Sub-6 GHz Dynamic Spectrum Monitoring," posted Oct 2016, https://arxiv.org/abs/1610.06212
2. **@X. Hu**, A. Striegel, "Redundancy Elimination Might Be Overrated: A Quantitative Study on Real-World Wireless Traffic," posted May 2016, http://arxiv.org/abs/1605.04021
3. **@L. Meng**, T. Milenkovic, A. Striegel, "IGLOO: Integrating global and local biological network alignment," posted April 2016, http://arxiv.org/abs/1604.06111
4. **@X. Hu, @L. Song**, A. Striegel, "Is There WiFi Yet? How Aggressive Probe Requests Deteriorate Energy and Throughput," posted Feb 2015, http://arxiv.org/abs/1502.01222

Under Preparation: 1x

Non-Refereed Conference / Poster Publications

1. N. Kleber, A. Termos, **@G. Martinez**, J. Merritt, B. Hochwald, J. Chisum, A. Striegel, J. Laneman, "RadioHound: A Pervasive Sensing Platform for Sub-6 GHz Dynamic Spectrum Monitoring," demo at *IEEE DySpan 2017*.
2. M. Kazjer, C. Crowell, A. Ferreira, J. D'Arcy, **@D. Van Bruggen**, A. Striegel, "Poster: Memorability of Computer Security Posters as Affected by Message Type," at *SOUPS (Symposium on Usable Privacy and Security)*, July 2013.
3. **@M. Chapple**, A. Striegel, J. D'Arcy, "An Analysis of Firewall Rulebase (Mis)Management Practices," *Information Systems and Security Journal*, Jan 2009.

4. **@A. Blaich, Q. Liao**, A. Striegel, D. Thain, "Simplifying Network Management with Lockdown," at *Workshop on Usable IT Security Management (USM '08) – Symposium on Usable Privacy and Security (SOUPS)*, July 2008.
5. **@C. Mano**, A. Striegel, "Demo: Rogue Identifying Packet Payload Slicing via RIPPS," demonstration at *INFOCOM 2008*.
6. A. Striegel, **@D. Salyers, @Y. Jiang, @A. Blaich,** "Improving Medium-Sized Media Clip Distribution Through Transparent Tail Synchronization," extended abstract/poster in *Proc. Of IEEE BroadNets*, Sept. 2007.
7. **A. Blaich, Q. Liao, B. Sullivan, G. Allan**, A. Striegel, D. Thain, "Lockdown: Distributed Policy Analysis and Enforcement within the Enterprise Network," poster at *USENIX Security*, August 2007.
8. **@J. Wozniak**, P. Brenner, D. Thain, A. Striegel, J. A. Izaguirre, "Applying Feedback Control to a Replica Management System," in *Proc. of Southeastern Symposium on System Theory (SSST)*, pp. 472-476, March 2006.
9. **@D. Salyers, @X. Li**, A. Striegel, S. Chandra, "Wireless Stealth Multicast: Bandwidth Conservation for Last-Mile Wireless Clients," poster at *IEEE INFOCOM*, Miami, FL, March 2005.
10. **J. M. Wozniak**, A. Striegel, D. Salyers, J. A. Izaguirre, "Overview of the GIPSE Architecture," poster at *GlobusWorld*, Boston, MA, Feb. 2005.
11. A. Striegel, J. A. Izaguirre, *M. Shorts, @D. Salyers, *K. McCusker, *B. Bien, *G. Shewakramani**, "Taming the grid management beast with GRIM," poster at GlobusWorld, San Francisco, CA, Jan. 2004.
12. A. Striegel, "Security Issues in a Differentiated Services Internet," *Trusted Internet Workshop - HiPC*, Bangalore, India, Dec. 2002.
13. A. Striegel, C. Reynolds, G. Manimaran, "An integrated heuristic for best effort scheduling of (m,k)-firm streams in point-to-point networks," *FTCS-29 Fast Abstracts,* Madison, WI, USA, June 1999.

Editor - Journals or Books

1. K. Sha, A. Striegel, M. Song, "Advances in Computer Communications: From Green, Mobile, Pervasive Networking, to Big Data Computing," *River Publishers Series* in Communications, 2017. (Selected papers from ICCCN 2015)
2. K. Sha, A. Striegel, M. Song, "Security, Privacy, and Reliability in Computer Communications and Networking," *River Publishers Series in Communications*, 2017. (Selected papers from ICCCN 2015).
3. S. Mao, H. Wang, A. Striegel, K. Sha, "Guest Editorial: Special Issue on Cognitive, Cellular and Mobile Networks," Special Issue in *EAI Endorsed Transactions on Wireless Spectrum*, vol. 2, no. 7, January 2016. (http://eudl.eu/issue/ws/2/7)

Books or Chapters of Books

- Proofreader – "Resource Management in Real-Time Systems and Networks", G. Manimaran, C. Siva Ram Murthy, MIT Press, Apr. 2001

Patents / Provisional Patents / Disclosures

- A. Striegel, **@D. Salyers**, **@C. Mano**, **@X. Li**, **@,+Y. Jiang**, "TWiCE: Transparent Wireless Capacity Enhancement," Provisional Patent, #61/628,883, Nov. 2011.
- **@C. Mano**, A. Striegel, "RIPPS: Rogue Identifying Packet Payload Slicing," provisional patent #60/752,945.
- A. Striegel, **@L. Song**, "Rapid End-to-End Path Characterization involving Wireless Network Hops," disclosure on April 19, 2016.

- **@L. Song**, A. Striegel, "Simplified Mechanism for Conveying Residual Capacity at a Wireless Access Point," disclosure on April 19, 2016.
- **@L. Song**, A. Striegel, "Systems and Methods for Rapidly Estimating Available Bandwidth in a WiFi link," 15/967,532, applied on April 30, 2018. (Full Patent)

Software Artifacts

- *Colocation*: Simplified toolset for detecting co-location (proximity) between multiple individuals for longitudinal interaction monitoring between individuals
- *FMNC:* Fast Mobile Network Characterization
- *MBP-M*: Motion-Based Peripheral Management for open source logging / instrumentation of low-cost gaming peripherals such as the Nintendo Wii and Microsoft Kinect
- *PhoneMonitor*: Agent for monitoring critical phone / digital communications on Android for the NetSense study
- *Scalebox:* Unified framework for bandwidth efficiency and network emulation
- *PyBluez:* Python toolkit for Bluetooth operations
- *CheapLogger*: Tool for logging full packet payloads at near Gigabit speeds
- *EEOD:* Linux kernel / Apache modifications for TCP explicit end of data as well as underlying packet caching software
- *RIPPS*: Tool for identifying rogue wireless access points (RWAPs)
    - Integrated as part of ScaleBox code base
- *GEMS*: Reliable storage mechanism for storing molecular simulations on the grid of inexpensive host storage devices (hosted on SourceForge)
- *PALM*: C-based implementation of Passive Application Layer Multicast
- *GIPSE*: Toolkit for managing parameter sweep jobs on the grid
- *Libpcap tutorial*: Extensive libpcap tutorial for packet capture / creation
- *East*: Grid resource simulator
- *GenMcast*: Generic framework for multicast simulation in ns-2
- *Tesserae:* Software suite in support of the Tesserae effort including
    - Android, iOS phone agents
    - Automated data ingestion for Qualtrics, Garmin Health API, Gimbal Bluetooth LE beacons
    - User-facing portal and issue management
    - Numerous back-end tools for data integrity management
    - Machine learning toolkits for data analysis
- *Wiilab*: Toolkit for interfacing MATLAB with the Nintendo Wiimote via C# / Bluetooth
- *WiiDoRF*: Toolkit for designing educational modules with Java and the Nintendo Wiimote
- *WeHab*: Stroke / balance rehabilitation
    - http://wehab.nd.edu/

Public Datasets
- Dataset for IMC 2015 paper on WiFi probe requests
    - Posted: October 2015
    - 6x home football game probe request captures - gates + bowl
    - DeBartolo 101
        - https://drive.google.com/folderview?id=0B8WDgYSa7Pe6X1dFd2pCcF RBTU0&usp=sharing
- Dataset for INFOCOM 2016 paper on WiFi scanning (client-side)
    - Posted: March 2016
    - Scans from SUNY-Buffalo and Notre Dame

- o Posted to CRAWDAD
  - ▪ http://crawdad.org/buffalo/phonelab-wifi/20160309/

Popular Press

- Interview with WSBT (local CBS affiliated) - Aired February 19th, 2018
  - o Overview of Tesserae
  - o http://wsbt.com/news/local/notre-dame-studies-how-wearable-trackers-can-make-workers-happier-more-productive
  - o Picked up by 9 and 10 in Michigan
    - ▪ http://www.9and10news.com/2018/02/20/notre-dame-studies-workplace-satisfaction-participants-activity-trackers/
- Interview with ABC57 on Tesserae
- Interview with WVPE (local NPR affiliate) - February 14, 2018
  - o Overview of Tesserae
  - o http://wvpe.org/post/notre-dame-researchers-use-wearable-tech-study-workplace-success
- ND Press Release on Tesserae, February 12, 2018
  - o https://news.nd.edu/news/researchers-use-wearables-mobile-devices-to-study-workplace-performance/
- Interview with ABC 57 on Alexa / Smart Home Devices - TBA - February 2018
- Engineer for the Soul interview:
  - o https://engineerforthesoul.weebly.com/interviews/aaron-striegel
- "Cybersecurity Experts Warn Companies Against Hackers" on WSBT News by Niko Burton, August 10, 2017
- "Special Report: Your attachment to your smartphone could be hurting your family" on WSBT News by Catlin Connin (first appeared on 6 PM news), February 6, 2017
- Internet Radio Show, Global Business on Steroids: The DT Revolution Is Real, hosted by Bonnie D. Graham, http://www.voiceamerica.com/episode/92056/global-business-on-steroids-the-dt-revolution-is-real, May 5th, 2016
- "New technology to provide insights into the health of students," ND Newswire http://news.nd.edu/news/63538-new-technology-to-provide-insights-into-the-health-of-students/
- "Here's the truth about the frightening hacking scenario in Cisco's ads," quoted in Business Insider article by Danielle Muoio, December 3rd, 2015.
- "Student computers face virus threat", The Observer (ND Student Newspaper) http://ndsmcobserver.com/2008/10/student-computers-face-virus-threats/
- Featured Alumni in Iowa State University ECpE Connections on Wii Game Work, Spring 2013 (http://www.ece.iastate.edu/news/alumni-newsletter/)
- Commentary on Anonymous hack of Berrien County Website, WSBT, March 30, 2013 (evening news program via phone interview)
- "Striegel to participate in Frontiers of Engineering Education symposium," ND Newswire, November 2011 http://newsinfo.nd.edu/news/27320-striegel-to-participate-in-frontiers-of-engineering-education-symposium/
- "Wehab: Wii Homework For Stroke Victims," Fast Company, August 2011, http://www.fastcompany.com/1773118/wehab-wii-homework-helps-stroke-victims-heal
- WeHab, Just Before 6 Segment, WNDU, http://www.youtube.com/watch?v=TFjXJ8xPmz0
- "Much more than a game," Notre Dame Newswire, February 2011, http://newsinfo.nd.edu/news/18407/

- "Course innovates with the Wii", The Observer, February 18, 2011, http://www.ndsmcobserver.com/news/course-innovates-with-wii-1.2004571
- "Notre Dame students tie Wii to stroke patient rehab," WSBT, March 4, 2011, http://articles.wsbt.com/2011-03-04/wiihab_28654533

VII. GRANTS AND CONTRACTS

Funded Grants (Active)

- (PI) A. Striegel, N. Chawla (ND), S. D'Mello (CU-Boulder), G. Mark (UC-Irvine), M. DeChoudhury (GTech), A. Campbell (Dartmouth), A. Dey (Univ. Washington / CMU), "A Comprehensive Approach to Modeling Job Performance via Unobtrusive, Continuous, Multimodal Sensing," IARPA, $7.938M, 6/23/17 - 5/ 3 /19.
- (PI) A. Striegel, " NeTS: Small: Lightweight, Accurate Network Estimation at the Wireless Edge," NSF, $500k, Aug 2017 - July 2020.
- (PI) A. Striegel, "Opportunistic Content Pushing from the Network Edge," NSF, $110k, Oct 2017 - Sep 2019
- (Co-PI) J. Laneman, A. Striegel, B. Hochwald, T. Pratt, A. Striegel, "NSF IU/CRC Grant", National Science Foundation, Aug 2014-2019.
  - 2014[1]: $65k NSF, $160k industry, $40k industry (in-kind)
  - 2015: $65k NSF, $120k industry
  - 2016: $65k NSF, $130k industry
- (Co-I) O. Lizardo, D. Hachen, A. Striegel, C. Poellabauer, N. Chawla, "NetHealth: Modeling the Co-Evolution of Social Networks and Health Behaviors," National Institute of Health (NIH) R01, $2.9M, Sep 2014-Aug 2018
- (PI) A. Striegel, J. Laneman, "Stadium Video Pilot," Oct 2015-Sept 2016, IBM, $30k.
  - Spring 2017: Additional $30k
- (Site PI) Sub-contract under N. Fox (Maryland) for NIH grant on longitudinal monitoring of at-risk individuals. ND portion is roughly $10k / year for 4 years.

Funded Grants (Completed)

- (PI) A. Striegel, "EAGER: NeTS: Pilot Studies on Proximity for Taming the Wireless Data Tsunami," National Science Foundation, Jan 2015 – August 2015, $49,467.
- (Co-PI) D. Hachen, A. Striegel, J. Liew, "Exploring Passive Voice Monitoring for Emotionality in Social Interactions via Smart Devices," National Academies / Keck Futures Initiative (NAKFI), $100k, May 2013 - April 2015.
- (PI) A. Striegel, C. Poellabauer, D. Hachen, O. Lizardo, "SoCS: Explorations on the Effects of Pervasive Networking on Social Relationships and Resource Planning," National Science Foundation, August 2010 – July 2012, $748,825. Cost-sharing ND ($105k), Industrial Support ($300k - Sprint (Aug 2011), $300k - Sprint (Aug 2013))
- (Co-PI) J. Schmiedeler, A. Striegel, C. Crowell, M. Villano, "SHI: Low-Cost Rehabilitation via Gaming Peripherals," National Science Foundation, Sept. 2011 – Aug. 2014 (+1 year No-Cost), $499,000.
- J. Laneman, B. Hochwald, M. Haenggi, A. Striegel, "NSF IU/CRC Planning Grant", National Science Foundation, $15k,April 2013-March 2014.
- (PI) A. Striegel, T. Milenkovic, Google Faculty Research Grant, $35k, March 2013 - February 2014.

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[1] Award amounts for the IU/CRC Site are based on company memberships at $40k / each.

- A. Striegel, "Collaborative Data Analysis - NetSense Study," Alcatel-Lucent, $30k, July 2012- June 2013.
- C. Poellabauer, A. Striegel, "REU Site: Experimental Research on Wireless Networking," *National Science Foundation*, $354,628, Jan 2011 – Dec 2013, CNS-1062743.
- A. Striegel, C. Crowell, J. D'Arcy, "TC:Small: A Formal Inter-Disciplinary Study of the Impact of Security Awareness Efforts on User Behavior," NSF, $477,783, Sep 2009 – Aug 2012.
- A. Striegel, A. Chaudhury, C. Crowell, M. Villano, "Curriculum and Laboratory Development Through 3-D Interfacing via the Nintendo Wiimote," NSF, $170,000, Dec 2009 – Dec 2012.
- A. Striegel, Visualization of PCMD / CDR Data, Sprint, July 2011-January 2012, $75k.
- A. Striegel, "Use of a visual feedback with the Nintendo Wii system in rehabilitation of balance among acute stroke patients," Notre Dame Pilot Development, $15,733, Jan 2010 – Dec 2010.
- C. Poellabauer, A. Striegel, "REU Site: Wireless Network Research," May 2008 – Aug 2010, $300k.
- C. Poellabauer, A. Striegel, N. Laneman, "Wireless Mesh Network at Notre Dame," ONR DURIP (Defense University Research Instrumentation Program), equipment grant, $259.874.
- A. Striegel, "CAREER: Transparent Techniques for Bandwidth Conservation," NSF CAREER grant (ANIR) - $435,440, March 2004 – February 2009 (Award No. 0347392) *REU Supplement:* Summer 2005 ($12k), Summer 2006 ($12k), Summer 2007 ($12k), Summer 2008 ($12k)
- C. Poellabauer, A. Striegel, "Mobile WiFi-based Content Sharing," Motorola Labs, $20k, May 2008.
- J. Izaguirre, A. Striegel, J. Peng, "Grid-enabled Integration of Experimental Data for Simulations of Flexible Protein Docking," NSF, $831,884, March 2005 – Feb 2007 plus one year no-cost extension. *REU Supplement:* Summer 2005 ($22k), Summer 2007 ($12k)
- A. Striegel, "SGER: GRIM Core Framework Development," NSF Shared Cyber Infrastructure (SCI), $49,182, June 2004 – May 2005. *REU Supplement:* Summer 2004 ($12k)
- A. Striegel, "TCP/IP Control Plane Enhancements," DARPA, $150,000, sub-contract under Architecture Technology Corporation, Feb 2005 – Jul 2006.
  - Successfully passed performance review – Phase I
- C. Poellabauer, A. Striegel, "IXP Development of Wireless Stealth Multicast," Intel Corporation, $25,000, May 2005.
- A. Striegel, "Trust Inference," Notre Dame Grant, $9.8k, Jan 2007-Dec 2007.

Cumulative Funding: > $17.2M

Project Proposals (pending / under preparation)

- Radio Forensics w/Crane - $120k - to be submitted in October 2017
  - Awarded - awaiting proper fund allocation
- REU Site: $450k, Sr. Personnel, submitted August 2017
  - Awarded - awaiting proper fund allocation
- NSF Secure / Trustworthy Spaces with O. Nov from NYU (Nov 2017) - NYU as lead
- NSF MRI - Submitted February 2018
- NSF I/UCRC - Phase 2 - Submitted October 2017 (Co-PI)

Equipment / Software Grants

- A. Striegel, D. Thain, Sun Equipment Grant (AEG) – Thin Clients for Security Validation, $40k
- A. Striegel, D. Thain, "Academic Equipment Grant," Sun Microsystems, $58k.
- A. Striegel, "Itanium2 Initiative at Notre Dame", Hewlett-Packard Itanium2 Initiative - $120k – May 2003
- A. Striegel, "Academic Equipment Grant", Sun Microsystems - $50k – July 2003
- A. Striegel, LANDecoder32 licenses, Architecture Technology Corporation, $6k – Feb 2003.

VIII. TECHNICAL PRESENTATIONS

Panelist

- INFOCOM 2018 - Machine Learning in Network / Smart Networking
- USENIX CSET 2015 - Experimental Testbeds for Mobile Devices and Large-scale Testing on Mobile Devices
- HotData – Workshop @ ICCCN 2014 – Wireless Big Data
- IEEE CCW 2013 - Panel Organizer - Smartphone Experimentation
- IEEE BroadNets – IP vs. Ethernet in the MAN and WAN

Tutorials

- Tutorial – Mobile IP – Architecture Technology Corporation – August 2000
- A. Striegel, "Security Issues in a DiffServ Internet," tutorial at *CERT'2001*, Omaha, Nebraska, USA.

Invited Talks
- April 2016
  - Industry / University Projects
    - SAP Day @ Notre Dame
- Nov 2015
  - Remote, Accessible Testbeds for Cyber-Physical Systems
    - NSF Workshop - Presented work on NetSense / NetHealth study logistics
- May 2015
  - The Neurodevelopment of Stress Regulation, Social Buffering and Fear Learning Integration and Crosstalk
    - NSF Workshop – Presenting work on Co-Location / Proximity Detection
- Fall 2012
  - "How Computer Gaming Brings Social Justice to Rehabilitation", Hope College
  - "Network Analytics," Sprint Developer Conference (panel w/Sprint, Guavus)
- Summer 2012
  - "How Computer Gaming Brings Social Justice to Rehabilitation", St Pius X University Lecture Series
- Spring 2012:   Stroke Rehab   Notre Dame Thinks Big
- Summer 2010:   Lockdown   IBM Research (Beijing)
- Spring 2010:   Lockdown   Iowa State University
- Fall 2009:   Lockdown   Hope College
- Spring 2008:   ScaleBox   Boston Univ., Univ. Kentucky
- Spring 2008:   RIPPS   Univ. Connecticut, MIT

- Fall 2007:   ScaleBox, North Carolina State
- Fall 2004:   Stealth Multicast, Michigan State
- Spring 2004:   Stealth Multicast, Purdue
- Fall 2003:   Stealth Multicast, UIUC

IX. GRADUATE STUDENTS DIRECTED

<u>Doctoral Dissertations Completed</u>
1. Chad Mano: Graduated with Ph.D in summer 2006
   Assistant Professor – Utah State University – Dept. of Computer Science
2. Justin Wozniak, Graduated with Ph. D in spring 2008
   Research Staff – Argonne National Labs – Chicago, IL
3. Dave Salyers, Graduated with Ph. D in summer 2008
   Oracle, Seattle, WA
4. Mike Chapple: Graduated with Ph. D. in summer 2009
   Senior Director, Enterprise Support Services, Univ. Notre Dame
5. Yingxin Jiang: Defended Ph. D in spring of 2010
   Engineer at Google
6. Andrew Blaich: Defended Ph.D. in fall 2010
   Researcher at Lookout Security
7. Qi Liao: Defended Ph. D. in spring of 2011
   Assistant Professor – Central Michigan University
8. Shu Liu: Defended Ph. D. in spring of 2014
   Winner of CSE Grad Student Research Award
   Data Engineer at SalesForce
9. Dirk Van Bruggen: Defended Ph.D in spring of 2014
   Scientist at the Department of Defense
10. Lei Meng: Defended PhD in spring of 2016 (co-advised with T. Milenkovic)
    Engineer at Google
11. Xueheng Hu (started Fall 2011)
    PhD Proposal - June 2015
    PhD Defense - Defended in July 2017, Graduated in January 2018

<u>Masters Theses Completed</u>
1. Xialong Li: Graduated with Masters in summer 2006
   Completed Ph. D University California - Irvine
2. Dave Cieslak – (started Fall 2004) – working on Masters/Ph.D.
   Completed Masters (Spring 2006)
   Research assistant at ND Center for Research Computing
3. Dave Salyers – (started Fall 2003) - working on Masters/Ph.D.
   Completed Masters (Fall 05), See above
4. Qi Liao
   Completed Masters (Fall 2007), See above
5. Dirk Van Bruggen
   Completed Masters (Fall 2012), See above
6. Ben Bockstege
   Completed Masters (Fall 2014)
7. Rachael Purta
   Completed Masters (Fall 2015)

<u>Current Graduate Students</u>

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1. Rachael Purta (started Fall 2013)
   Masters - Nov 2015
   PhD Proposal - August 2016
2. Lixing Song (started Fall 2014)
   PhD Proposal - May 2017, graduating in summer 2018
3. Gonzalo Martinez (started Fall 2016)
4. Zhongying Qiao (started Fall 2017)

Past Post-Doctoral Researchers
1. Yingxin Jiang

Current Post-Doctoral Researchers
1. Stephen Mattingly (started August 2017)

Current Staff
1. Peter Mycue - Senior Software Engineering (started October 2017)

Undergraduate Researchers

Year	Researchers
2018:	J. A. Leon, C. Pickard, S. Spencer
2017:	K. Dingens, A. Flores, T. Franchetti
2016:	B. Byrne, N. Klair, D. Mattia, C. Sonderman
2015:	M. Nulle, D. Mellitt
2014:	C. Barron, M. Nulle
2013:	T. Young, M. Streeter, A. Aman, E. Kloswick, R. Tang, M. Nulle, E. Vaughn, J. Hu
2012:	K. LaBelle, J. Schnieder, T. Young, M. Maguire
2011:	K. LaBelle, S. Suddarth, J. Fetsch
2010:	B. Pacione, M. Mooney, T. Walton, S. Ringling, B. Shrewsbury, C. Carmony, S. Chasins, C. Farris, J. Flores, P. Monroe, J. Varner, M. Kaufman, T. Young
2009:	O. Holtz, S. Adeyemi, S. Zhang, M. Overholt, N. Carrion, Y. Colon, C. Norman, S. Tucker, X. Zhang
2008:	B. Roesch, J. Langley, J. Hof, J. Brindza, J. Szweda
2007:	M. Hudson, B. Roesch, J. Hof, P. McGowan, M. Moriarity, P. Strei, G. Allan, N. Kohlmeier, K. O'Brien
2006:	N. Schott, D. Dugovic, A. Matta
2005:	B. McRoskey, M. Sheehan, J. Smith, B. Jeffrey, W. Bordogna, H. Mooers, R. Pingalore, C. Hancock
2004:	M. Shorts, E. Stuntebeck, C. Picardo, K. McCusker, J. Gentile, W. Leimkuhler
2003:	M. Shorts, G. Shewakramani, B. Bien, E. Stuntebeck, K. McCusker

X. PROFESSIONAL ACTIVITIES – EXTERNAL SERVICE

1. **Technical Program Committee (TPC)**

IFIP Networking	2005-2008
IEEE GLOBECOM	
Wireless Symposium	2004, 2009+
Control of High Performance Networks	2006
Trusted Internet Workshop (TiW)	2004-2005
Workshop at HIPC	
IEEE AINA	2010
CNSR	2007-2009
Computer Network and Services Research	

CNSS	2007
Computer and Network Security Symposium	
AReS	2007-2011
Int'l Conference on Availability, Reliability, and Security	
ICCCN	
Internet Services, Systems, and Applications	2009
IEEE BroadNets	2007
INFOCOM External Reviewer	2008
INFOCOM Session Chair	2008
INFOCOM	2009+
IWCMC	2007-2008
SECRYPT	2007-2008
WiMAN (workshop at ICDCS)	2008, 2012
IEEE PIMRC	2013
Symposium on Personal, Indoor, Mobile Radio Communications	
IEEE CNS	2014, 2016
ALGOSENSORS	2014
ICNP	2014, 2015
ICC	
Social Networking (SN) Track	2014
PerCom WIP	2014, 2015

2. Program Chair / Volunteer Work

Workshop on Enterprise Network Security – Co-Chair	2006
Workshop at Securecom 2006	
IEEE ICCCN	
Internet Services and Applications (Track Co-Chair)_	2008
Publicity Co-Chair	2009
Multimedia, QoS (Track Co-Chair)	2012
Workshop, General Publicity Co-Chair	2012
Workshop Co-Chair	2013, 2014
Program Chair	2015
General Chair	2016
Workshop on Cooperation in Pervasive Environments	2009
Co-Chair of workshop at Percom 2009	
IEEE BroadNets	
Internet Services and Applications (Co-Chair)	2009
IEEE INFOCOM	
Publication Co-Chair	2011, 2016
IEEE ICNC	
Internet Services and Applications – Co-Chair	2012
Green Computing - Track Co-Chair	2018
HotPlanet	
Co-Chair w/Yanyong Zhang	2014
Workshop at IEEE MASS 2014	
Jointly held with MiSeNet	
HotPlanet	2016
Workshop at ACM Ubicomp (Heidelberg, Germany)	
IEEE MASS	2016
Track Chair	

3. Reviewing

Reviewer
(Journal):   IEEE Trans. Networking, IEEE Network, IEEE Communications,
                  Computer Communications, Computer Networks, IEEE Surveys/Tutorials,
                  IEEE Trans. Computers, IEEE Trans. Parallel and Distributed Systems,
                  Journal of High Speed Networking, Journal of Communications

Reviewing: Distinguished Reviewer - IEEE INFOCOM   2014, 2015

Area Editor / Editor

    2014-15   EURASIP Journal on Wireless Communications and Networking
    2018+   IEEE Networking Letters

4. NATIONAL SCIENCE FOUNDATION

Panels: CyberTrust (1), NeTS (3), CSR (1), CHS (1), CRI (1)

2016   Participant - NSF Future Cities Workshop (Feb 2016)
        Participant - NSF US / Japan Workshop on Trustworthy Systems (March 2016)
        Participant - NSF Testbed Experiences Workshop (Nov 2016)

2004   NSF CAREER award

2001   Engineering Education Workshop (EES), August 2001.

2000   Graduate Research Fellowship – Honorable Mention

5. INTERNET ENGINEERING TASK FORCE (IETF)

2001-2003   DiffServ mailing list administrator (with Dr. Brian Carpenter)
2000-2010   DiffServ-Interest mailing list admin

6. Government

2017   Workshop on Technological Gaps and Opportunities for Realizing Open Source based
        end-to-end Network Architecture @ Mobicom 2017 (NSF PAWR, 5GinFire)

2016   Workshop on Future Cities @ NSF
                One of 36 invited participants
        Workshop on Large Scale Testbeds @ NSF
                One of 30 invited participants

2015   Workshop on Fear and Social Buffering @ NSF
                Invite to present on co-location work

        Workshop on Accessible Remote Testbeds
                Invite to present on NetSense / NetHealth efforts

2010   Cyber Security Grass Roots Effort (Multiple Agencies, led by PNNL)

2007   Dept. of Energy – Cyber Security Needs for Open Science Workshop

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2006   DARPA ARO Workshop on BotNets

XI. UNIVERSITY ACTIVITIES – INTERNAL SERVICE

Departmental / College Committees

University of Notre Dame

2018+	Faculty Board of Athletics
2017-18	Dean Review Committee
2016+	Faculty Senate (CSE Representative)
2016	SAFE Committee (OIT committee on two-step authentication)
2015	Young Leader Notre Dame (YLND) steering committee
2015+	College of Engineering Elections Committee
2013+	University Committee on Academic Technology (UCAT)
2012+	Associate Chair (Dept. Comp Sci & Engr)
2012+	Wireless Institute (Executive Committee)
2008+	Assessment Committee (Chair)
2010+	Wireless Institute (Founding Member)
2010,2012+	Committee on Assessment / Promotion (CAP)
AY 2010+	Faculty Search
2009-2012, 2014-2017	College Council (Engineering)
2008	University Security Policy for Research (Engineering Rep)
2007-2011	College of Engineering – College Computing Committee (CCC)
2007-present	College of Engineering Security Facilitator
AY 2007	Infrastructure, Assessment (Chair)
AY 2006	Faculty Search, Assessment
AY 2005	Faculty Search, Curriculum, Facilities
AY 2004	Curriculum, Facilities
AY 2003	Graduate Student, Facilities

Notable Administrative Efforts as Associate Chair
- 2017 - Led Notre Dame ABET accreditation effort (Two programs - CS + CPEG)
- 2015 - Evaluation of offering an on-line Masters in Data Science
- 2013 - Led ND CSE ten-year self-study report creation / data collection
- 2011 - Led Notre Dame ABET accreditation effort - (Two programs - CS + CPEG)
- Mentored junior faculty
  - Through three-year renewal: 5 (L. Riek, T. Milenkovic, C. McMillan, D. Wang, T. Weninger)
  - Through tenure: 3 (S. D'Mello, T. Milenkovic, L. Riek)
  - Teaching feedback
- Staff Supervision (3x admins, 1 technician)

Efforts on Wireless Institute Executive Committee
- Recruitment / retention of industrial partners
  - Sprint, Alcatel-Lucent, Inter-Digital, Cisco, IBM, AT&T, Nokia, ONR, LTS
- Grant development
  - IU/CRC site, MRI submission
- NDXG steering committee for wireless on Campus Crossroads Project
  - October 2015 - Summer 2016
- Offered WiFi for University Relations tent at home football games

　　　o　2014, 2015, 2016, 2017

Iowa State University
　　　2001-2002　　　University CAC (Computer Assessment Committee) – Grad student rep
　　　2000-2002　　　EE/CpE Ambassador

XII. TEACHING

Teaching - Course Experience

The overall course experience is drawn from either Q11 (CIFS, >= Fall 2008) or Q17 (TCE, < 2008). In the spring of 2012, I was on sabbatical and did not have any course duties. The overall student rating is the Instructor Effectiveness (or appropriate analog). In the spring of 2013, I was on release time for being Associate Chair and have a course release of one course per year for serving in that role (Fall 2012 through Spring 2018).

Course	Title/Content	Dates (Students)	Overall Effectiveness
Notre Dame CSE 34468	**Internet of Things** Embedded systems, networking, Raspberry Pi, Python Dublin Summer Program	2017 Summer (14)	On Request
Notre Dame / edX EG240x	**Understanding Wireless** co-taught with Profs. Bellia, Laneman, Keating MOOC focusing on principles of wireless across business, law, and engineering	2015 Summer (11k+ enrolled)	N/A
Notre Dame CSE 30341	**Operating System Principles** Required course for all CSE undergrads, threading, storage, memory management	2013 Spring (50) 2017 Spring[2] (60) 2018 Spring (48)	On Request
Notre Dame CSE 60641	**Graduate Operating Systems** Required course for all CSE graduate students, research aspects of operating systems	2011 Fall (25) 2012 Fall (28) 2013 Fall (27) 2014 Fall (27) 2015 Fall (36)	On Request
Notre Dame CSE 30264	**Computer Networks** Undergraduate computer networks	2010 Fall (23)	On Request
Notre Dame CSE 40416	**System Interface Design** Human / Computer Interaction	2009 Fall (22) 2010 Fall (16)	On Request
Notre Dame EG 10111	**Introduction to Engineering** Programming Module	2007 Fall (380) 2008 Fall (420)	On Request
Notre Dame CSE 20211	**Fundamentals of Computing I** C/C++ Programming	2005 Fall (46) 2006 Fall (65)	On Request
Notre Dame CSE 60744	**Advanced Networking** Inter/intra-domain routing, QoS, content distribution, TCP dynamics	2007 Spring (12) 2008 Spring (2)	On Request
Notre Dame	**Computer Security**		On Request

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[2] CSE30341 class was simultaneously streamed to Silicon Valley as CSE34341 with 12 remote students.

CSE 498U	Security Fundamentals, Cryptography, Network Security, Database Security, Ethics	2003 Fall (22) 2004 Fall (16)	
Notre Dame CSE 422 CSE 40422	**Computer System Design** VHDL, C, Embedded Programming Labs – Altera FPGA Senior Design Projects (Capstone)	2003 Spring (8) 2004 Spring (14) 2005 Spring (1) 2006 Spring (5) 2008 Spring (10) 2009 Spring (17) 2011 Spring (2)	On Request
Notre Dame CSE 40522	**Capstone Design** Capstone design project involving mixed hardware + software design	2015 Spring (10)	On Request
ISU Cpr E 211 (Instructor)	**Introduction to Microcontrollers** C, Assembly, Emb. Programming Labs – Motorola 68HC11	1999 Summer 2000 Spring 2001 Spring 2001 Summer	4.47 / 5 4.29 / 5 4.44 / 5 4.50 / 5

Course Development

ISU - Cpr E 211 – Introduction to Microcontrollers
      Migration from 68HC11 to PowerPC 555, introduction of semester-long final projects
ND – CSE 20211 – Fundamentals of Computing I
      Migration from Scheme to C/C++
ND – CSE 60744 – Advanced Networking
      New graduate course offering in networking
ND – CSE 40416 – System Interface Design
      New course on human / computer interface on the Nintendo Wiimote / Microsoft Surface
edX - EG240x - Understanding Wireless
      MOOC on wireless from a legal, economic, and technical perspective
      Modules on networking basics, WiFi basics, cellular basics
ND - CSE 34468 - Internet of Things
      Summer course for the Dublin Summer Program involving embedded systems, networking, Raspberry Pi, Python, 3D printing / design

Teaching Areas
- Computer Networking, Computer Security
- Programming – C/C++/C#/Java/Assembly
- Real-time Systems, Fault-Tolerant Systems, Multimedia Systems
- Embedded Systems
- Human Computer Interface
- Operating Systems (Undergraduate, Graduate Levels)

XIII. Industrial Experience / Collaborations

Industrial Collaborators: Sprint, Alcatel-Lucent, Google, IBM, InterDigital, AT&T

Sun Microsystems, Summer 2002
    o Work on Sun Network Element (NEON), pre-cursor to Software Defined Networks / Open Flow
Motorola / Universite de Technologie – Compiegne, Spring 2002
    o Edge QoS for mobile systems supporting rapid roaming with QoS considerations

Architecture Technology Corporation, Summer 2000
- o Ad Hoc Routing Protocol Development – Cluster Gateway blending NAT / MobileIP for ad hoc routing support with asymmetry

Fisher Controls (now Emerson Process) – 1996, 1997, 1998 – internships
- o C++ development – multiplexing for HART, LabView – support for Fieldbus, multithreading support for ValveLink software package

Expert Consultation
- Source code review, validity analysis, infringement analysis
  - o Deposition experience