

Dr. Aaron Joseph Beach
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Education

- **Northwestern University**
B.S., Computer Science (honors), 2006
- **University of Colorado**
Ph.D., Computer Science, 2011

Work & Research History

- **Postdoctoral Researcher** - Since 2011 NREL Golden, CO
I was hired to do energy informatics research by the National Renewable Energy Laboratory in Spring 2011. My work at NREL includes the semantic markup, scalable processing, anonymization, and privacy friendly distribution of energy related data.
- **NSF Fellow** - 2008-2010 NSF GK-12 Fellowship, Boulder, CO
I designed STEM (science, technology, engineering, and mathematics) curriculum along with its necessary infrastructure and materials. I implemented and deployed two eco-system monitoring wireless networks and designed activities that utilized data from the networks to teach ecosystem biology and computer technology to K-12 students in the Boulder Valley School District.
- **Founder & Chief Architect** - 2008-2011 Techoshark, inc., Boulder, CO
In February of 2008 I founded Techoshark, inc. with my advisor Professor Richard Han. The company received an SBIR (Small Business Innovative Research) grant from the National Science Foundation and produced a technology patent focused on Social/Location aware mobile advertising. I helped develop and present a business plan which won the award for best computer science business plan at the CU New Venture Challenge in April 2009. I was Chief Architect, publicly represented the company, and still sit on the executive board.
- **Visiting Research Specialist** - Summer 2007 NCAR, Boulder, CO
I designed and implemented a power efficient and reliable wireless routing protocol to support long-term alpine ecosystem monitoring. This project included extensive field testing with real-hardware.
- **Teachers Assistant** - 2006-2008, 2010-2011 University of Colorado Boulder, CO
My teaching at the University of Colorado included advising half the senior projects (2006), TA-ing the intro class (2007), redesigning/TA-ing project curriculum for the Operating Systems class (2008) and TA-ing the Data Structures class (2010-2011).
- **Research Assistant** - Summer 2006 Mantis Lab, CU-Boulder, CO
I did research in the Mantis Lab at CU for 5 years, helping produce 11 peer-reviewed papers, 4 tech reports, 2 patents and 2 accepted NSF grants. My work spanned topics from MAC and routing protocols to recommendation algorithms to user interface design to data policy publications.
- **Research Assistant** - 2004-2006 Northwestern University, Evanston, IL
Before graduating undergrad I had done research in Network Security and Ad-hoc Routing that resulted one peer-reviewed paper and a tech report, both of which have been cited many times.
- **Database Programmer** - Summer 2003 Northwestern University, Evanston, IL
Programmer using PHP and MySQL to develop back-end management systems for the engineering school at Northwestern University.
- **Electrician** - 2002 R-TEK Electric, Denver, CO
After turning 18 I spent my senior year of high school working as a licensed apprentice electrician on both commercial and residential applications.
- **Waterproofer** - 2001 WeatherSure Systems, Denver, CO
I worked as a waterproofer doing primarily commercial jobs in 2001.

Grants & Awards

- **Outstanding TA Award (2011)**
The department of computer science at the University of Colorado awarded me the outstanding TA award for my teaching role in the Fall-2010 Data Structures Course.
- **NSF SBIR Phase 1 (2009)**
An SBIR (Small Business Innovative Research) grant awarded to Techoshark, inc., entitled SBIR Phase I: Improving Business-Consumer Commerce Via Mobile Social Networking Services
- **NSF GK-12 Fellowship (2008-2010)**
Integrating sensor technology into STEM curriculum and teaching with it in the Boulder Valley School District
- **Ford Motor Research Grant (2005)**
Implement theoretical ad-hoc routing protocols for vehicular networks and test performance in the real-world with Professors Robert Dick and Fabian Bustamante
- **Motorola Research Grant (2005)**
Evaluate ad-hoc wireless routing protocols for indoor extension of cellular coverage with Professor Robert Dick
- **Undergraduate Research Grants (2004,2005)**
Awarded twice by Northwestern University once advised by Professor Yan Chen and once by Professor Robert Dick

Patent Disclosures

- U.S. Patent Provisional Patent No. 61/163,967, Entitled: SOCIAL NETWORKING PLATFORM; In the Name of TechoShark, Inc., March 27, 2009.
- U.S. Patent Provisional Patent No. 61/221,866, Entitled: CONTEXT-AWARE MOBILE SOCIAL NETWORKING; June 30, 2009.

Professional Service

- On Program Committee for CIOT 2010 and MCSN 2011
- Reviewer for: IEEE SocialCom 2011, IEEE Communication Letters, ISCC 2011, PETS 2011, Mobile HCI 2011, IEEE Internet Computing, Pervasive 2011 SenSys 2010, Pervasive 2010, CHI 2010, WoWMoM 2010, Pervasive Health 2010, SenSys 2007

Relevant Coursework: Northwestern University (ECE/CS) & University of Colorado (CSCI)

CSCI 7143 Mobile Computing	CSCI 7143 Wireless Sensor Networks
CSCI 5551 Parallel Processing	CSCI 6454 Advanced Algorithms
CSCI 5312 Medical Informatics	CSCI 5753 Computer Performance Modeling
CSCI 5828 Software Engineering	CSCI 5444 Theory of Computing
ECE 590 Adaptive Embedded Operating Systems	CS 443 Advanced Operating Systems
CS 395 Algorithmic Techniques for Bioinformatics	CS 395 Resource Virtualization
ECE 397 Real-Time Operating Systems	CS 395 Content Management
CS 395 Research Seminar in Network Security	CS 345 Distributed Systems

Publications

- [1] Y. Chen, A. Beach, and J. Skicewicz, "Cyber disease monitoring with distributed hash tables: A global peer-to-peer intrusion detection system," Department of Computer Science, Northwestern University, Tech. Rep. Technical Report NWU-CS-04-40, July 2004.
- [2] Z. Li, Y. Chen, and A. Beach, "Towards scalable and robust distributed intrusion alert fusion with good load balancing," in *LSAD '06: Proceedings of the 2006 SIGCOMM workshop on Large-scale attack defense*. New York, NY, USA: ACM, 2006, pp. 115–122.
- [3] C. Gruenwald, A. Hustvedt, A. Beach, and R. Han, "Swarms: A sensornet wide area remote management system," in *IEEE/Create-Net 3rd International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities (TridentCom)*, 2007, pp. 1–10.
- [4] A. Beach, M. Gartrell, S. Panichsakul, L. Chen, C. Ching, and R. Han, "X-layer: An experimental implementation of a cross-layer network protocol stack for wireless sensor networks," Department of Computer Science, University of Colorado at Boulder, Tech. Rep. Technical Report CU-CS-1051-08, December 2008.
- [5] A. Beach, M. Gartrell, S. Akkala, J. Elston, J. Kelley, K. Nishimoto, B. Ray, S. Razgulin, K. Sundaresan, B. Surendar, M. Terada, and R. Han, "Whozthat? evolving an ecosystem for context-aware mobile social networks," *IEEE Network*, vol. 22, no. 4, pp. 50–55, July-August 2008.
- [6] A. Beach, M. Gartrell, B. Ray, and R. Han, "Secure socialaware: A security framework for mobile social networking applications," Department of Computer Science, University of Colorado at Boulder, Tech. Rep. Technical Report CU-CS-1054-09, June 2009.
- [7] A. Beach, M. Gartrell, X. Xing, R. Han, Q. Lv, S. Mishra, and K. Seada, "Socialfusion: Context-aware inference and recommendation by fusing mobile, sensor, and social data," Department of Computer Science, University of Colorado at Boulder, Tech. Rep. Technical Report CU-CS-1059-09, December 2009.
- [8] A. Beach, M. Gartrell, and R. Han, "Solutions to security and privacy issues in mobile social networking," in *International Conference on Computational Science and Engineering, 2009 (Workshop on the Social Mobile Web 2009, associated with IEEE SocialCom 2009)*, cse., vol. 4, 2009, pp. 1036–1042.
- [9] A. Beach, B. Ray, and L. Buechley, "Touch me wear: Getting physical with social networks," in *CSE '09: Proceedings of the 2009 International Conference on Computational Science and Engineering (Workshop on Social Computing with Mobile Phones and Sensors: Modeling, Sensing and Sharing 2009, associated with SocialCom 2009)*, vol. 4. Washington, DC, USA: IEEE Computer Society, 2009, pp. 960–965.
- [10] A. Beach, M. Gartrell, X. Xing, R. Han, Q. Lv, S. Mishra, and K. Seada, "Fusing mobile, sensor, and social data to fully enable context-aware computing," in *The Eleventh Workshop on Mobile Computing, Systems, and Applications (ACM HOTMOBILE) 2010, to appear*, 2010.
- [11] A. Beach, M. Gartrell, and R. Han, "Social-k: Real-time k-anonymity guarantees for social network applications," in *IEEE International Workshop on SECurity and SOCial Networking (SESOC) at PerCom 2010, to appear*, 2010.
- [12] A. B. Q. L. M Gartrell, X. Xing and R. Han, "Enhancing group recommendation by incorporating social relationship interactions," in *Proceedings of the 2010 international ACM conference on Supporting group work (Group 2010)*, 2010.
- [13] M. G. A. Beach and R. Han, "q-anon: Rethinking anonymity for social networks," in *2nd International Conference on Social Computing (SocialCom 2010)*, 2010.
- [14] K. B. D. Grunwald, A. Beach and Q. Lv, "The risks and regulation of location," in *38th Research Conference on Communication, Information and Internet Policy (TPRC 2010)*, 2010.
- [15] M. Gartrell, A. Beach, J. Ramanarayananankrishnaniyer, X. Xing, Q. Lv, R. Han, S. Mishra, and K. Seada, "Integrating wikipedia, facebook, and other personal online context into collaborative e-brainstorming," in *CIorg Workshop on Collective Intelligence in Organizations Tools and Studies associated with Group 2010*, 2010.
- [16] A. Beach, M. Gartrell, and R. Han, "q-anon: Practical anonymity for social networks," *International Journal of Social Computing and Cyber-Physical Systems*, 2011.