Elizabeth A. Bodine-Baron

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Experience

RAND Corporation, Santa Monica, CA Aug 2012 – Present

Engineer, Co-Director of the RAND Methods Center for Applied Network Analysis and System Science
Performing both national security and domestic work, involving modeling of complex systems, communication and networks, and social network analysis. Client products include briefings and published reports.

Caltech Research Sept 2007 – July 2012

(Ph.D. advisors: Adam Wierman and Babak Hassibi)

Research in the areas of complex networks, graph theory, communications, and distributed algorithms. Studied the structure of social networks, such as heavy-tailed degree distributions, small diameter, and high clustering, in order to exploit these unique structural properties to gain new understanding of, and perhaps solve, previously intractable problems, such as matching markets with peer effects and the spread of information and epidemics on complex dynamic networks.

Jet Propulsion Laboratory (JPL), Pasadena, CA Jan 2007 – June 2012

Engineer, Advanced Signal Processing Projects Group (332E)

Helped develop DoD communication standards. Developed TDMA protocol simulation using C and UNIX sockets to identify problem areas of standard and suggest solutions. Researched software defined radio architecture, network coding and LT codes, and data link layer protocols for low-power Mars micro transceiver.

Education

California Institute of Technology *Pasadena, CA* Fall 2007 – June 2012
Ph.D. Electrical Engineering June 2012
M.S. Electrical Engineering, *GPA 3.70/4.00* June 2009

University of Texas *Austin, TX* August 2002 – December 2006
B.S. Electrical Engineering, *GPA 4.00/4.00*
B.A. Plan II Honors, *GPA 4.00/4.00*

Publications

- Snyder, D., Powers, J., Bodine-Baron, E., Fox, B., Kendrick, L., Powell, M. "Improving the Cybersecurity of U.S. Air Force Military Systems Throughout Their Life Cycles", RR-1007-AF, 2014
- Bodine-Baron, E., Welser, W., Szayna, T. "Using Network Analysis Methods to Support the Global SOF Network" PT-128-SOCOM, 2014 (video podcast)
- Bodine-Baron, E., Nowak, S., Vardavas, R., Sood, N. "Conforming and Non-conforming Peer Effects in Vaccination Decisions," *ArXiv*.
- Bodine-Baron, E., Hassibi, B., Wierman, A. "Characterizing externalities and stability in matching markets via social networks," *ArXiv*.
- Bodine-Baron, E., Bose, S., Hassibi, B., Wierman, A. "Epidemic cost in complex networks: A random matrix approach," *Submitted to Mathematics of Operations Research Journal*.
- Bodine-Baron, E., Lee, C., Chong, A., Hassibi, B., Wierman, A. "Peer effects and Stability in Matching Markets," *Proceedings of the 4th International Symposium on Game Theory (SAGT) 2011*. October 2011.
- Bodine-Baron, E., Bose, S., Hassibi, B., Wierman, A. "Minimizing the social cost of epidemics," *Proceedings of GameNets 2011*, April 2011.
- Bodine-Baron, E., Hassibi, B., Wierman, A. "Distance-Dependent Kronecker Graphs for Modeling Social Networks," *IEEE Journal of Selected Topics in Signal Processing*, vol.4, no.4, pp.718-731, Aug. 2010.
- Thai, D., Bodine-Baron, E., Hassibi, B. "A symmetric adaptive algorithm for speeding-up consensus," *2010*

IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP), pp.2686-2689, 14-19 March 2010.

- Bodine, E., Hassibi, B., Wierman, A. "Generalizing Kronecker graphs in order to model searchable networks," *Allerton 2009. 47th Annual Allerton Conference on Communication, Control, and Computing*, pp.194-201, Sept. 30 2009-Oct. 2 2009.
- Bodine, E., Cheng, M. "Characterization of Luby Transform Codes with Small Message Size for Low-Latency Decoding," *ICC '08. IEEE International Conference on Communications*, pp.1195-1199, 19-23 May 2008.

Briefings

- "Social Media Analysis Across Language and Geography," ODNI Symposium on Social Media and Online Behavior, June 2015.
- "Examining ISIS Support and Opposition Networks on Twitter," RAND *PRGS Board Briefing*, June 2015.
- "Examining ISIS Support Networks on Twitter: Preliminary Results," RAND *CMEPP Board Briefing*, December 2014.
- "Social Media and Policy Research," RAND *EPRM Seminar*, October 2014, joint with Angela O'Mahony.
- "Social Network Analysis and the Inner Circles of Political Leaders," *RAND IPC Seminar and external client briefing*, 2013, joint with Jennifer Kavanagh.
- "SOCOM Social Network analysis," *Briefing to SOCOM sponsor*, 2012.

Honors and Affiliations

• RAND Silver Medal Award for Innovation	2015
• Caltech Atwood Fellowship	2010 - 2011
• NDSEG Fellowship	2007 - 2010
• Mars Micro-transceiver JPL Team Award	2008
• Phi Beta Kappa	2005
• UT College of Engineering Outstanding Scholar/Leader Runner-up	2006
• Engineering Honors Program	2002 - 2006
• Raytheon, SWE, Engineering Honors Scholarships	2002 - 2006
• IEEE	2002 - Present
• Society of Women Engineers (SWE)	2002 - Present

Skills

Matlab, Mathematica, R simulation and programming

UCINET, NetDraw, Gephi, R Social Network Analysis tools

DataSift social media aggregator

CDSL, C, C++, UNIX Socket Programming, basic shell scripting, HTML, ASP

LaTeX, Microsoft Access, Word, Excel, PowerPoint
Strong leadership and teamwork skills