Colleen A. Josephson

PhD Candidate in EE at Stanford University
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Education

Stanford University, PhD Candidate — Stanford, CA
Electrical Engineering (GPA 3.7/4) — *2016 – present*
Area: Digital Communications and Computer Systems (Prof. Sachin Katti)

Massachusetts Institute of Technology, MEng — Cambridge, MA
Electrical Engineering and Computer Science (GPA 5/5) — *2013 – 2014*
Thesis: Anonymity Properties of Network Coded Gossip (Prof. Muriel Medard)

Massachusetts Institute of Technology, SB — Cambridge, MA
Electrical Engineering and Computer Science (GPA 4.7/5) — *2009 – 2013*

Relevant Coursework: Artificial Intelligence, Wireless Communications, Digital Signal Processing, Distributed Systems, Computer Networks, Operating Systems, Computer System Engineering, Algorithms, Convex Optimization

Awards and Honors

Schlumberger Innovation Fellow — *2017*

Stanford Graduate Fellowship Recipient (declined due to deferral) — *2015*

Google Cambridge Invited Speaker for Anonymity Research — *Aug. 2014*

Member of Eta Kappa Nu, EECS Honor Society — *2013 – Present*

Member of Tau Beta Pi, Engineering Honor Society — *2013 – Present*

MIT EECS Undergraduate Research and Innovation Scholar — *2012 – 2013*

Institution for Savings Scholarship — *2009 – 2013*

Publications

FreeRider: Backscatter Communication Using Commodity Radios — CoNEXT 2017
P. Zhang, C. Josephson, D. Bharadia, S. Katti

Backscatter Downlink and MAC Layer with Ambient WiFi [Poster] — SIGCOMM 2017
C. Josephson — *N2Women Workshop*

Research Experience

Stanford Network Systems Group — Palo Alto, CA
Graduate Research Assistant — *Sept. 2016 - present*

- Designed a MAC layer protocol for low-power ISM band RF backscatter devices
- Researching low-power encoding techniques to improve IoT throughput

MIT RLE Network Coding and Reliable Communications — Cambridge, MA
Graduate Research Assistant — *Jan. 2012 - Sept 2014*

- Designed a network-coded gossip protocol for anonymous communication on heterogeneous networks
- Implementing a Python network simulation framework to measure robustness and anonymity of protocol
- Created GNU radio signal processing blocks in C++ to implement a network coding algorithm

MIT Media Lab — Cambridge, MA
Undergraduate Research Assistant in Music, Mind, and Machine Group — *June 2010 – Dec. 2010*

- Ported a Python audio synthesizer to a client-server web application
- Analysis of thirteen-dimensional vectors of audio data collected via the 'Aubio' audio library

Teaching Experience

Stanford EE107 Networked Embedded Systems — Stanford, CA
Teaching Assistant — *Fall 2017*
- Design labs and course materials based on our IoT camera research
- Guide students on their final course project

MIT 6.02 Digital Communications Systems — Cambridge, MA
Lab Assistant — *Spring 2011*
- Help students complete digital communications labs (Python/Numpy)
- Answer technical questions, conceptual questions

MIT 6.189 Intro to Python — Cambridge, MA
Teaching Assistant — *Winter 2010*
- Help students complete their weekly Python assignments
- Proofread and generate solutions for assignments, grade and comment on students' assignments

Industry Experience

Uhana, Inc. — Palo Alto, CA
Research Intern — *Summer 2016*
- Worked with Spark Streaming to build a cellular analytics system
- Designed visualization backend to present analytics data

Cisco Meraki — San Francisco, CA
Firmware Engineer (full-time) — *Nov. 2014 – Mar. 2016*
- Designed a system to share data across APs in the same network to improve user roaming experience
- Implemented latency tracking on wireless routers

ShotSpotter — Newark, CA
Signal Processing Intern — *Summer 2013*
- Designed and evaluated algorithms for noise reduction on outdoor sensors

Google — New York, NY
Software Engineering Intern — *Summer 2011, 2012*
- Designed, implemented and tested a Python API and query server for a new asset management system
- Created, deployed and tested a Nagios High-Availability solution using BASH, Python, C and Merlin add-on
- Created a web application to view RT tickets in KANBAN format, using Python, MySQL and Django

Skills

Signal Processing and Communications GNURadio and software defined radios, Digital filters for noise reduction, Matlab/LabView/Python, Design of network simulation frameworks

Computer and OS: Machine learning and AI techniques, Arduino and microcontrollers, parsing domain-specific languages, locking and writing multi-threaded programs, designing and writing servers and APIs **Languages:** Python (Experienced), C (Proficient), Java (Proficient), Go (Prior Experience), BASH/Shell Scripting (Proficient), C++ (Prior Experience), LabView (Proficient), Matlab (Proficient)

General: Vice President of the Xi Society Alumni board, Experience in formally leading teams of 3-10 people; Comfortable with public speaking and technical writing

Personal Projects: endless.horse, Network Controlled Arduino Laser Cat Toy, Java Chat Client GUI and Server, Color Kinetics Light Installation, Linux Audio Workstation

Volunteering

Vice President of MIT Xi Alumni Association Corporation — *Feb. 2014 – Present*

House Manager of MIT Xi Independent Living Group — *2011 – 2013*

References and additional experience available upon request.