

# Branden Ghena

## *Contact Information*

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Electrical Engineering & Computer Science  
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## *Education*

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**University of California, Berkeley**, Berkeley, California (2017–Present)  
PhD Candidate — Electrical Engineering and Computer Science  
Advisor: Prabal Dutta

**University of Michigan, Ann Arbor**, Ann Arbor, Michigan (2013–2017)  
M.S.E. Computer Science and Engineering (2017)  
PhD Candidate — Computer Science and Engineering  
Advisor: Prabal Dutta

**Michigan Technological University**, Houghton, Michigan (2008–2013)  
B.S. Computer Engineering & Electrical Engineering  
GPA: 3.98 — Summa Cum Laude

## *Research Experience*

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**University of California, Berkeley**, Berkeley, California  
Graduate Student Research Assistant, Electrical Engineering & Computer Science (2017–Present)

**University of Michigan, Ann Arbor**, Ann Arbor, Michigan  
Graduate Student Research Assistant, Computer Science and Engineering (2013–2017)

**Michigan Technological University**, Houghton, Michigan  
Aerospace Enterprise, Designed and built a satellite in conjunction with the Air Force Research Lab with tentative launch in June 2018 (2009–2013)  
On-Board Data and Command Team Leader, Led team to complete computer hardware on the satellite, including thermal, wiring, and acceptance testing (2012–2013)  
University Nanosatellite Program, first place finish in national competition (2011)

NSF Research Experience for Undergraduates, Research in the field of Hybrid-Electric Vehicles. Studied analytical model for a continuously variable transmission. Created procedure for vehicle coast-down testing (2011)

**NASA Jet Propulsion Laboratory**, Pasadena, California  
Summer Internship, Created testing framework for ASIC processor designs including both hardware and software testing (2013)

Summer Internship, Designed and fabricated a computer board to interface a thruster with a satellite Command and Data Handling system (2012)

**Jefferson High School**, Monroe, Michigan  
FIRST Robotics Competition, Team member (2004–2008)

## *Teaching Experience*

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### **University of California, Berkeley**, Berkeley, California

Instructor, CS61C: Great Ideas in Computer Architecture (Summer 2019)

Graduate Student Instructor, EE 149: Introduction to Embedded Systems (Fall 2018)

Guest Lecturer, EE 149: Introduction to Embedded Systems (Fall 2017–2019)

### **University of Michigan, Ann Arbor**, Ann Arbor, Michigan

Guest Lecturer, EECS 373: Design of Microprocessor-Based Systems (Fall 2014, Winter 2015)

Graduate Student Instructor, EECS 370: Computer Organization (Fall 2013)

## *Industry Experience*

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### **Hitachi Global Storage Technologies**, Rochester, Minnesota

Test and Tools Co-op Student, Created hard drive testing tools using TCL and C++ languages. Worked with HDDs and SSDs as well as SATA and SCSI protocols (2010)

### **Fermi 2 Nuclear Power Plant**, Monroe, Michigan

Summer Internship, Created plant configuration management documentation (2009)

## *Conference, and Journal Publications*

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1. **Branden Ghena**, Joshua Adkins, Longfei Shangguan, Kyle Jamieson, Phil Levis, and Prabal Dutta. Challenge: Unlicensed lpwans are not yet the path to ubiquitous connectivity. In *Proceedings of the 25th Annual International Conference on Mobile Computing and Networking*, MobiCom'19, October 2019. Acceptance Rate: 30 of 186
2. Joshua Adkins, **Branden Ghena**, Neal Jackson, Pat Pannuto, Samuel Rohrer, Bradford Campbell, and Prabal Dutta. The Signpost Platform for City-Scale Sensing. In *Proceedings of the 17th ACM/IEEE International Conference on Information Processing in Sensor Networks*, IPSN'18, New York, NY, USA, April 2018. ACM. Acceptance Rate: 22 of 83
3. Amit Levy, Bradford Campbell, **Branden Ghena**, Daniel B. Giffin, Pat Pannuto, Prabal Dutta, and Philip Levis. Multiprogramming a 64kB Computer Safely and Efficiently. In *Proceedings of the 26th Symposium on Operating Systems Principles*, SOSP'17, New York, NY, USA, Oct 2017. ACM. Acceptance Rate: 17%
4. Bradford Campbell, Meghan Clark, Samuel DeBruin, **Branden Ghena**, Neal Jackson, Ye-Sheng Kuo, and Prabal Dutta. Perpetual Sensing for the Built Environment. *IEEE Pervasive Computing*, 15(4), 2016
5. Samuel DeBruin, **Branden Ghena**, Ye-Sheng Kuo, and Prabal Dutta. PowerBlade: A Low-Profile, True-Power, Plug-Through Energy Meter. In *Proceedings of the 13th ACM Conference on Embedded Networked Sensor Systems*, SenSys'15. ACM, 2015. Acceptance Rate: 27 of 132

## *Workshop Publications*

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1. **Branden Ghena**, Jean-Luc Watson, and Prabal Dutta. Embedded OSes must embrace distributed computing. In *Proceedings of the 1st International Workshop on Next-Generation Operating Systems for Cyber-Physical Systems*, NGOSCPS'19, April 2019

2. Joshua Adkins, **Branden Ghena**, and Prabal Dutta. Freeloader’s Guide Through the Google Galaxy. In *Proceedings of the 20th International Workshop on Mobile Computing Systems and Applications*, HotMobile’19, New York, NY, USA, February 2019. ACM. Acceptance Rate: 26 of 57
3. Joshua Adkins, Bradford Campbell, **Branden Ghena**, Neal Jackson, Pat Pannuto, and Prabal Dutta. Energy Isolation Required for Multi-tenant Energy Harvesting Platforms. In *Proceedings of the Fifth ACM International Workshop on Energy Harvesting and Energy-Neutral Sensing Systems*, ENSsys’17, New York, NY, USA, November 2017. ACM. Acceptance Rate: 6 of 18
4. Amit Levy, Bradford Campbell, **Branden Ghena**, Pat Pannuto, Prabal Dutta, and Philip Levis. The Case for Writing a Kernel in Rust. In *Proceedings of the 8th Asia-Pacific Workshop on Systems*, APSys’17, New York, NY, USA, September 2017. ACM
5. Amit Levy, Michael P Andersen, Bradford Campbell, David Culler, Prabal Dutta, **Branden Ghena**, Philip Levis, and Pat Pannuto. Ownership is Theft: Experiences Building an Embedded OS in Rust. In *Proceedings of the 8th Workshop on Programming Languages and Operating Systems*, PLOS 2015. ACM, Oct 2015. Acceptance Rate: 7 of 16
6. Brad Campbell, **Branden Ghena**, and Prabal Dutta. Energy-Harvesting Thermoelectric Sensing for Unobtrusive Water and Appliance Metering. In *Proceedings of the 2nd International Workshop on Energy Neutral Sensing Systems*, ENSsys ’14. ACM, November 2014. Acceptance Rate: 9 of 11
7. **Branden Ghena**, William Beyer, Allen Hillaker, Jonathan Pevarnek, and J. Alex Halderman. Green Lights Forever: Analyzing the Security of Traffic Infrastructure. In *8th USENIX Workshop on Offensive Technologies*, WOOT ’14. USENIX Association, August 2014. Acceptance Rate: 17 of 35

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### *Magazine, Demo, and Poster Publications*

1. Joshua Adkins, **Branden Ghena**, and Prabal Dutta. Signpost: Enabling City-Scale Sensing for Citizens and Scientists. In *GetMobile: Mobile Computing and Communications*, volume 22 of *GetMobile*, New York, NY, USA, September 2018. ACM
2. Joshua Adkins, Bradford Campbell, **Branden Ghena**, Neal Jackson, Pat Pannuto, Samuel Rohrer, and Prabal Dutta. Demo Abstract: Applications on the Signpost Platform for City-Scale Sensing. In *Proceedings of the 17th ACM/IEEE International Conference on Information Processing in Sensor Networks*, IPSN’18, New York, NY, USA, April 2018. ACM
3. Joshua Adkins, Bradford Campbell, **Branden Ghena**, Neal Jackson, Pat Pannuto, and Prabal Dutta. The Signpost Platform for City-Scale Sensing. In *TerraSwarm 2017 Annual Review*, TerraSwarm’17, October 2017
4. Bradford Campbell, **Branden Ghena**, Ye-Sheng Kuo, and Prabal Dutta. Demo Abstract: Swarm Gateway. In *Proceedings of the 3rd ACM International Conference on Systems for Energy-Efficient Built Environments*, BuildSys’16, November 2016
5. Joshua Adkins, Bradford Campbell, **Branden Ghena**, Neal Jackson, Pat Pannuto, and Prabal Dutta. Demo Abstract: The Signpost Network. In *Proceedings of the 14th ACM Conference on Embedded Networked Sensor Systems*, SenSys’16, November 2016
6. Bradford Campbell, **Branden Ghena**, Ye-Sheng Kuo, and Prabal Dutta. Demo Abstract: Swarm Gateway. In *Proceedings of the 3rd ACM International Conference on Systems for Energy-Efficient Built Environments*, BuildSys’16, November 2016
7. Samuel DeBruin, **Branden Ghena**, Ye-Sheng Kuo, and Prabal Dutta. Demo: PowerBlade A Low-Profile, True-Power, Plug-Through Energy Meter. In *Proceedings of the 13th ACM Conference on Embedded Networked Sensor Systems*, SenSys’15. ACM, 2015

## *Awards and Grants*

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Outstanding Graduate Student Instructor, EECS Department (Fall 2018)

Best Demo Runner Up - IPSN'18 (2018)

David Wessel Best Demo Award - Terraswarm Annual Review (2017)

TI Innovation Challenge 2015 - Best Environmental Impact, \$2,000 (2015)

National Science Foundation Graduate Research Fellowship, \$96,000 plus tuition (2014–Present)

Outstanding Graduate Student Instructor, EECS Department (Fall 2013)

Michigan Technological University, Electrical and Computer Engineering Departmental Scholar (2012)