Neil Klingensmith

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RESEARCH INTERESTS

Embedded Systems, Signal Processing in Resource-Constrained Environments, Embedded Networking, Embedded Computer Architecture

CURRENT POSITION

Research Assistant, University of Wisconsin Computer Science Department **2012-Present**

- Studying smart building automation systems to reduce resource consumption in the built environment.

EDUCATION

Graduate Student, Computer Engineering, University of Wisconsin-Madison **January 2012-Present**

Master of Science Computer Engineering, University of Wisconsin-Madison **2016**

Bachelor Science Electrical Engineering, University of Wisconsin-Madison **2010**

PROFESSIONAL EXPERIENCE

Cofounder, Emonix (http://emonix.io), Madison, WI **2014-present**

- Emonix provides network connectivity and feedback control for water softener systems.
- Gener8tor gBeta startup accelerator participant, Fall 2015 (10% acceptance ratio)
- MadWorks startup accelerator participant, summer 2016

Embedded Developer, Harvest Power Technologies, Madison, WI **2009-2011**

- Designed a wireless communication backbone for a citywide network of smart meters.

Engineering Intern, Astronautics Corporation of America, Milwaukee, WI **Summer 2008**

- Developed diagnostic software for GPS instruments deployed in Boeing aircraft.
- Tested radiative emissions of GPS devices.

Engineering Co-Op, Pentair Water, Brookfield, WI **2007-2008**

- Designed embedded motor controllers for water softeners.
- Oversaw the initial stages of large-scale production of new controller.
- Developed other embedded devices for in-house production and test equipment.

AWARDS

- **NSF Travel Grant** to attend ACM eEnergy, 2018
- **The Brew Seed Accelerator** $50k seed investment for Emonix, Fall 2017
- **MadWorks Accelerator Economic Impact Award**, 1st Place, $5k August 2016
- **UW CS NEST Award**, 1st place, $1k, April, 2016
- **Transcend Madison Innovation Competition**, 1st Place, $7.5k March 2016
- **Dvorak Energy and Global Stewardship Prizes**, Fall 2015
  Wisconsin Energy and Sustainability Challenge Both 1st place, $10k
- **Dvorak Energy Prize**, Spring 2015
  Wisconsin Energy and Sustainability Challenge 3rd place, $500

- **US Department of Energy Fellowship 2013, renewed for 2014**
  through the Building Innovators Program $110k total
- **NSF Travel Grant** to attend ACM SenSys, 2013, 2015

REFEREED PUBLICATIONS

A Hypervisor-Based Privacy Agent for Mobile and IoT Systems
Neil Klingensmith, Younghyun Kim, Suman Banerjee
ACM HotMobile, February 2019

A Fast Algorithm for Energy-Efficient Sampling of Analog to Digital Converters
Neil Klingensmith, Suman Banerjee
ACM TIOT 2019 (To Appear)

PANDA: Performance Acceleration through Nonuniform Data Acquisition
Neil Klingensmith, Suman Banerjee
ACM eEnergy, June 2018 (22% Acceptance Ratio)

Hermes: A Real Time Hypervisor for Mobile and IoT Systems
Neil Klingensmith, Suman Banerjee
ACM HotMobile, February 2018

SPOCK: A Sensor Value Prediction and Online Control Algorithm for Building Resource Management
Neil Klingensmith, Anantharaghavan Sridhar, Zachary LaVallee, Suman Banerjee
ACM BuildSys, November 2016 (20% Acceptance Ratio)

Water or Slime? A platform for automating water treatment systems
Neil Klingensmith, Anantharaghavan Sridhar, Zachary LaVallee, Suman Banerjee
ACM BuildSys, November 2015

Hot, Cold and In Between: Enabling Fine-Grained Environmental Control in Homes for Efficiency and Comfort
Neil Klingensmith, Joseph Bomber, Suman Banerjee
ACM eEnergy, June 2014 (20% Acceptance Ratio)

A Distributed Energy Monitoring and Analytics Platform and its Use Cases
Neil Klingensmith, Dale Willis, Suman Banerjee
ACM BuildSys, November 2013

POSTERS ETC

dBHound - Privacy Sensitive Acoustic Perception in Home Settings (poster)
Anantharaghavan Sridhar, Neil Klingensmith, Suman Banerjee
ACM SenSys, November 2016

Edge Computing in the Extreme for Sustainability (invited paper)
Suman Banerjee, Neil Klingensmith, Peng Liu, and Anantharaghavan Sridhar
ACM S3, October 2016

Water or Slime? A platform for automating water treatment systems (poster)
Neil Klingensmith, Pete Chulick, Joseph Bomber, Suman Banerjee
ACM BuildSys, November 2014

Wireless Control in Microgrids (poster)
Tyler Duffy, Neil Klingensmith, Giri Venkataramanan
31st WEMPEC Annual Review, May 2012

TEACHING

Graduate Teaching Assistant, ECE/CS 491 - Special Topics in Sustainability **Fall 2014**

Graduate Project Advisor, CS 407 - Foundations of Mobile Systems **Fall 2015**

PATENTS

- **METHOD AND DEVICE FOR CONTROLLING A WATER CONDITIONING SYSTEM**
  Neil Klingensmith, Zach LaVallee, Suman Banerjee
  (Pending)

INVITED TALKS

- **Launching a Startup**, UW Industrial Systems Engineering 601, March 2017
- **Online Water Softener Monitoring**, Madison Metropolitan Sewerage District, May 2016