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 **2011-Present**

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

EDUCATION

Graduate Student, University of Wisconsin-Madison **August 2011-Present**

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

EMPLOYMENT

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)

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

- **CS NEST Competition**, First Place, April 2016
- **Transcend Madison Innovation Competition**, First Place, March 2016
- **Dvorak Energy and Global Stewardship Prizes**, Fall 2015
  Wisconsin Energy and Sustainability Challenge
- **Dvorak Energy Prize**, Spring 2015
  Wisconsin Energy and Sustainability Challenge
- **US Department of Energy Fellowship 2013, renewed for 2014**
  through the Building Innovators Program
- **NSF Travel Grant** to attend ACM SenSys, 2013, 2015

PUBLICATIONS

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

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

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

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

PROJECTS

DyCE: An Architecture for Complementary Execution

- Developed a microprocessor that can represent all data and instructions in either true or complementary mode. This is a technique for reducing the wear on MOSFET gates by normalizing the duty cycle on the gate drive. Computers manufactured with this technology would theoretically fail less frequently due to timing failures associated with gate degredation.

A Study of Cache Prefetchers

- Evaluated the performance of several cache prefetching algorithms for L2 caches.

EXTRA CURRICULARS

UW Internet of Things Lab

Vice Chair of IEEE Student Chapter