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SCHOOL OF ELECTRICAL AND COMPUTER ENGINEERING
The UNIVERSITY of OKLAHOMA

✦ INVITED TALK ✦

Learning to Compute without Reliable Power

Wednesday, April 15 · 11:00 AM – 12:00 PM
Location: GLG 126

Prof. Jacob Sorber

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ABSTRACT

The Internet of Things has a battery problem, and its promises will remain out of reach until we learn to compute without reliable power. We are simply not going to recharge, replace, and dispose of trillions of batteries. Battery-less sensing devices offer a more sustainable option (smaller, cheaper, more environmentally friendly) that can be deployed for decades (batteries typically wear out after 2–5 years), but they store less energy and lose power more often. Even with energy harvesting advances, today's batteryless devices are difficult to program, test, and deploy, due to unpredictable energy supplies, limited energy storage, and frequent power failures.

In this talk, I will describe a decade or work learning to compute in the face of unreliable power. I will describe hardware and software, tools and techniques, and new programming models for building tiny sensing systems that depend on harvested energy, that can be deployed for long periods of time without battery changes, and that can adapt to uncertain energy conditions and thrive in spite of frequent power failures.

ABOUT THE SPEAKER

Jacob Sorber is a Professor and Division Chair in Computer Science at Clemson University. His work makes mobile sensors and embedded systems more efficient, robust, deployable, and secure, by exploring novel systems (both hardware and software) and languages. His research has received support by the National Science Foundation (including a CAREER Award), the US Geological Survey, General Electric, and other sources. He works on problems in health, biology, agriculture, and manufacturing. Before joining Clemson, he was a postdoctoral researcher at Dartmouth College and a graduate student at UMass Amherst.

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