Faculty Candidate Seminar

Why is My Phone Dead? Energy Efficient Computing with Composite Cores

Andrew Lukefahr, University of Michigan, Ann Arbor

Friday, February 5, 2016 11:00 to 12:00pm
Venue: Toomey Hall 250

(Refreshments will be served at 10:50 a.m.)

Abstract – We demand a lot from our smartphones. We want millisecond website rendering, always-on connectivity, and multi-day battery life. To meet these challenges, designers must incorporate a heterogeneous mix of high-performance and energy-efficient processor cores. Migrating between these cores is expensive, leading to infrequent and inefficient utilization of energy-efficiency cores. This talk focuses on building a single "composite" core that attempts to push the notion of heterogeneity into the core itself. This enables a Composite Core to find and exploit fine-grained phases of low performance to reduce energy consumption and enable longer battery life. Finally, I will also briefly discuss the challenges of scaling the energy efficiency for future neural-inspired applications into the mobile space.

Bio - Andrew Lukefahr is a PhD Candidate in Computer Science and Engineering at the University of Michigan. His current research focuses on improving energy efficiency of mobile devices through next-generation heterogeneous core architectures. His research interests include energy-efficient computing, embedded systems, and neural-network computation.