

*The University of Alabama
Department of Computer Science
Colloquium Series Speaker*

**John Lusth
University of Arkansas**

Research and Education Initiatives

**Wednesday, March 21
11:00a.m., Houser 108**

Abstract:

In this presentation, I will talk about my recent academic endeavors. These can be categorized into three areas: developing novel architectures for computation, designing extensibility into programming languages, and improving recruitment and retention of undergraduate computer science majors. With regards to novel architectures, I will talk about fabricating a simple nanoscale device to show proof of concept as well as discuss the implications of discovering that random structures naturally compute interesting and useful functions. Concerning programming language design, I will explain a recent result by my PhD student, Ben Zhang, that unifies imperative and functional languages while preserving the ability to optimize tail recursion. Finally, I will discuss my attempts to improve recruitment and retention by describing my soon-to-be-awarded NSF-CCLI grant to teach Calculus concepts via programming exercises. I will also give examples from last Fall's Computer School of Rock, an elective CS class devoted to computer-based generation of music.

Bio:

Dr. John Lusth is an Associate Professor at the University of Arkansas. He began his career as a researcher at the Southwest Research Institute, exploring the practical uses of Artificial Intelligence. He continued this line of inquiry at the Becton Dickinson Research Center, focusing on medical applications of AI. While a PhD student at the University of Alabama, he became interested in computation via novel architectures, eventually winning an NSF Career grant to study the computational abilities of Quantum-dot Cellular Automata. In his first academic position at Boise State University, his teaching repertoire included both Algorithms and Programming Languages. His experiences in these courses led to the development of the Sway programming language, which was recently used in the Simulation of Computers course at the University of Arkansas. In the near future, Dr. Lusth will use Sway in a skills building course designed to boost retention of computer science students.