- **Jason Mars**
  - **Title:** Online Adaptation for Application and Datacenter Performance and Efficiency
  - **Abstract:** Achieving effective online adaptation for natively executed applications has proved quite challenging and to date has not been widely adopted. Traditionally, at the binary level, a run-time layer is added that virtualizes the execution of the application by performing dynamic binary to binary translation, injecting trampolines and instrumentation into the translated code to maintain control of the application. This approach often adds high overhead and complexity to the application, discouraging its use and adoption in industry and for commercial applications. We propose a new paradigm for online adaptation. We propose a lightweight approach to online adaptation that leverages current microarchitectural advances to efficiently enable online monitoring and adaptation without the complexity of binary translation or fine-grain instrumentation. Our proposed methodology takes advantage of the ubiquitous hardware performance monitors present in modern chip micro-architectures to dynamically monitor the micro-architectural events of a chip and application behavior with negligible overhead. By leveraging these capabilities to develop an innovative lightweight online adaptation framework (Loaf) we will be able to address a number of important real-world online adaptation problems in the Datacenter.
  - **Bio:** Jason Mars is a Ph.D. candidate at the University of Virginia and was recently awarded the 2010 Google Fellowship in Compiler Technology, one of 15 Google Fellowships awarded in the United States and Canada. Mars' research in compiler and runtime technology attacks the problem of contention in multicore processors and online adaptation in the Datacenter. Mars strives to do truly great work and looks forward to the problems on the horizon. (more at http://www.jasonmars.com)