

Education

- **Boston University** *Fall 2012 - present*
 - *Ph.D. Candidate, Computer Science*
 - Advisor: Richard West
 - Research Interests: Storage and File Systems, Real-time Embedded Systems, Robotics
- **Boston University** *Fall 2008 - Summer 2012*
 - *B.A./M.A. Computer Science (Magna Cum Laude)*

Research Experiences

- **Real-time Flash-based File System** *Fall 2014 - present*
 - Building a real-time flash-based file system for Quest, a real-time operating system designed for embedded and safety-critical applications, using a PCIe-based NAND storage platform on an FPGA to develop the SSD firmware.
- **Acoustic Boat Project** *Summer 2017*
 - Worked with Professor Greg McDaniel
 - Built the system for a swarm of autonomous boats that collect sensor readings for navigation and acoustic sensing to detect sound sources underwater.
 - System includes using the Pixhawk Flight Controller for navigation, the Beaglebone Black running ROS with a DolphinEar hydrophone for acoustic sensing, and Digi XBee RF modules for communication between boats.
- **Mixed-Criticality Scheduling with I/O** *Spring 2015 - Spring 2016*
 - Developed a scheduling technique in the Quest real-time operating system, which integrates the time-budgeted management of I/O operations with Sporadic Server scheduling of tasks. We show that in a real implementation with I/O, our mixed-criticality scheduling method outperforms previous work.
- **Quantifying Redundancy in Runtime Operations** *Fall 2012 - Fall 2014*
 - Worked with Professor Jonathan Appavoo
 - Studied low-level traces of runtime operations to find similarities in execution patterns. This work is motivated by the fact that while a broad set of optimization techniques (e.g. caching, dynamic code generation, cohort scheduling) can be used to collapse redundant work, the identification of the patterns that enables these solutions is not automatic and is often application-specific. We collected low-level traces by modifying the Bochs x86 emulator and built a tool that explores the trace as a suffix tree.

Work Experience

- **General Dynamics Internship** *October-December 2017*
 - Researched identity, credential and access management solutions for the tactical edge.
 - Implemented a proof of concept with Hyperledger Fabric and Windows Active Directory domain service.

- **Bloomberg Internship**

Summer 2015

- Identified inefficient tags of an autofill program for traders in Trading Solutions team.
- Worked on backend code, created databases, and built a GUI on the Bloomberg Terminal.

Publications and Posters

- E. Missimer, K. Missimer, R. West: “Mixed-Criticality Scheduling with I/O”, in Proceedings of the 28th Euromicro Conference on Real-Time Systems (ECRTS), Toulouse, France, July 5-8, 2016.
- K. Zhao, R. West. POSTER: Real-time Designs on the OpenSSD Cosmos Board. Presented at the BU Computer Science Career/Research Day, January 29, 2016, Boston, MA.
- K. Zhao, J. Appavoo, A. Waterland, E. Angelino, M. Seltzer. POSTER: System-Level Integration and Exploitation of Machine Learning. Presented at the 10th USENIX Symposium on Operating Systems Design and Implementation (OSDI), October 8-10, 2012, Hollywood, CA.

Teaching Experience

- **BU CS 210 Computer Systems** *Fall 2013, Spring 2017/2018*
Teaching Fellow
- **BU CS 591 Tools and Techniques for Data Mining and Applications** *Spring/Fall 2016*
Teaching Fellow
- **BU CS 111 Introduction to Computer Science** *Fall 2012, Fall 2015*
Teaching Fellow
- **The Artemis Project** *Summer 2010/2011*
<http://www.bu.edu/lernet/artemis>
 - Worked with four undergraduates at Brown University in 2010 and BU in 2011 to design the curriculum for a 5-week program that introduced computer science to high school girls.
 - Worked with faculty to launch the program at BU in 2011.

Additional Experience

- Secondary Reviewer for IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2016, 2017)
- Secondary Reviewer for Operating Systems Platforms for Embedded Real-Time applications (OSPERT 2015, 2016)

Awards and Scholarships

Graduate School of Arts & Sciences Outstanding Teaching Fellow Award	<i>2016</i>
Teaching As Research Fellowship	<i>2015</i>
Clare Boothe Luce Fellowship	<i>2013 - 2015</i>
BU Computer Science Service Recognition Award	<i>2012</i>
Thomas M. Menino Scholarship (formerly: Boston High School Scholarship)	<i>2008 - 2012</i>
Undergraduate Research Opportunities Program Award	<i>Summer 2011</i>