**James Brisson**
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## PROFILE

## EDUCATION

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|---|---|
| BS in Electrical Engineering | UT Austin in December 2013 |
| Current Enrolment | Student at UT Austin |
| Tech Areas | Computer Design, Communications/Digital Signal Processing |
| Notable Classes | Operating Systems Honours (using C), Real-time DSP Lab, Computer Architecture, Real-time Embedded Systems |

## SKILLS

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|---|---|
| Test and Measurement | Signal Generators, Oscilloscopes, Logic Analyser, Protocol Sniffer |
| Assemblies | Freescale 6812, LC3, TI TMS320C6000 DSP, Intel i686 (GAS), ARMv7E-M (GAS) |
| Mechanical CAD | AutoDesk Inventor, OpenSCAD, ImplicitCAD |
| Hardware Description Languages | Verilog, VHDL, C$\lambda$ash |
| Programming Languages | C[++], Haskell, LaTeX Python, Common Lisp, Scheme, Clojure, Ruby, Perl, Matlab/Octave, Bash/Zsh, TCL, elisp, Make |
| Software Development | Emacs, Vim, Make, Ant, Eclipse, Xilinx ISE, Cadence, SimVision |

**Operating Systems:**

- Modified the Linux kernel scheduler and implemented several kernel modules, both for research
- Developed an exokernel for the i686 in C and assembly; ext2 drivers, self-hosting, graphical
- Implemented an RTOS for the ARM Cortex-M in C and assembly
- Compiled custom kernels, Linux and Android, with patching

## RESEARCH

**Buddythreads: Scheduler-Base Side Channel Defenses:**

A modification to the Linux kernel that allows a process to request that it should always be scheduled simultaneously with another, "buddy" thread. This allows the buddy thread to make noise on shared resources that may be used for side channels. I also developed and evaluated several methods for creating noise on these shared resources and showed that perfect information of the victim's leakage is sufficient to thwart attacks..

Submitted to ISCA 2016.

**Bubbles Secure Sharing System:**

A prototype security system that refactors the sharing out of mobile and web applications and makes it secure. Sharing is then done on a 'Bubble' level, where information is grouped by the user into a single package, or folder, that may be shared. Design principles of the system include:

- Principal of Least surprise: minimise changes to the programming environment of the developer
- Interface integration between the application running in the Bubbles system and the system itself
- Lightweight: The containers that provide the security for the Bubbles system should have minimal performance impact

submitted to Okaland 2016

## PROFESSIONAL EXPERIENCE

**March 2014 - Ongoing: Staff Scientist at UT:**

Working on several academic research projects, including buddythreads and bubbles, mentioned above.

**Jan 2015 - May 2015 and Aug 2015 - Dec 2015: Teaching Assistant:**

During Spring 2015 I was a TA for EE319K, Intro to Embedded Systems, and During the Fall of the same year I was a TA for EE379K, Operating Systems.

**May 2013 - December2013: Intern Silicon Labs:**

- Automated build system creating patch-able 8051 ROM and automated patch making
- Created testing framework for pre and post silicon (simulation, FGPA emulation, evaluation)
- Wrote firmware RC oscillator calibration algorithm and several patches
- Developed waveform capture tool for firmware symbols on a simulated 8051 processor

**Summer 2010: Outback Director BTSR:**

- Managed 3 staffers leading a trek a week
- High adventure backpacking program
- Planned and tracked food and gear distribution across many campsites

**Summer 2009: Scout Skills Director BTSR:**

- Managed 3 staffers teaching classes
- Taught camping and outdoor skills
- Responsible for the teaching of 14 classes
- Lead toten chit and fireman chit sessions

## COMMUNITY SERVICE

- Mentor for 2013 and 2014 UT RAS Robotathon, Region V, and Mercury teams
- Eagle Scout Project — build privacy fence for Humane Society of Williomson county
- Over 125 hours of community service through Boy Scout Troop 513

## SOCIETY MEMBERSHIPS

- Eagle Scout
- IEEE Robotics and Automation Society UT student branch
- IEEE UT student branch

## PROJECTS

- Aura: An Arch Linux package manager wrapper written in Haskell
- Moses: A bluetooth controlled holonomic robot
- Automated framework for estimating channel capacities of contention based channels
- RASLib: intro to robotics library targeted at the TI Stellaris/Tiva Launchpads
- Custom Keyboard, with custom layout and firmware
- Intelligent ground vehicle software design
- Remote controlled mobile couch with turn signals
- Robotics Booster-pack for TI Stellaris/Tiva Launchpads (PCB design)
- Discussion Day: Tracking of student understanding through random sampling. Android application in Scheme
- Planar image stitching algorithm using phase correlation
- QPSK transceiver

Recommendations available upon request