EDUCATION

University of Toronto
Engineering Science Robotics
Class of 2017
Term Grade: 95% (rank 2/160)

LANGUAGES

C++	▲▲▲▲▲
Python	▲▲▲
C	▲▲▲▲
Java	▲▲▲
Javascript	▲▲▲

SKILLS

Algorithm Design	▲▲▲▲▲
Optimization	▲▲▲▲
Communication	▲▲▲▲
Debugging	▲▲▲▲
UX Design	▲▲▲
Embedded programming	▲▲▲▲

CONTACT

johnsonzhong.me

johnsonzhong@hotmail.ca

github.com/lemonpi

Johnson Zhong

EXPERIENCES

FPGA CAD Routing Optimization — Aug 2015

Summer research with USRA NSERC 5k grant – more at johnsonzhong.me/projects/vpr

- Routing component of VPR under the Verilog-to-routing toolchain
- Developed route tree pruning algorithm for incremental rerouting, speeding up routing by up to **3x speedup** on difficult benchmarks
- Designed targeted rerouting algorithm for critical yet suboptimal connections, producing up to **30% faster (Fmax) circuits**
- Benchmarked over realistic circuits, with speedup scaling with difficulty
- Won 2nd place in category at UnERD 2015 (undergraduate research conference)

Autonomous Cooperating Robots — Apr 2015

AER201 Design Course Project in a team of three– more at johnsonzhong.me/projects/robot

- Mobile robots cooperatively playing real time connect-4 competitively
- Targeted randomly placed high-reward ball dispensers to obtain the **fastest ball retrieval time** (3 ball/min vs average 0.5 ball/min)
- Designed and programmed subsumption architecture, obstacle avoidance, and PID controlled navigation on Arduino microcontroller

SAL – Algorithms and Data Structures Library — Jan 2015

Personal project – more at johnsonzhong.me/sal/

- Header only C++ template library with an interactive tester
- Implemented efficient algorithms with a focus on generality and readability
- Implemented Set and Map with Treaps for **4x insertion and 2x read time** improvement over the standard library

Language Interpreter (LISP) — Aug 2014

Personal project – more at johnsonzhong.me/projects/clisp

- Small and fast interpreter at around 550 lines of C++
- Implemented lexical scoping, first class functions, and tail recursion optimization
- Automated garbage collection with RAII

Programming Contests — 2013 - now

Team based problem solving

- 1st place ($2000) in Ontario Engineering Competition (OEC) 2016 programming
- Google Cloud Platform prize ($1000 in credit) for ForenShips (relationship forensics) web application for Hack the North 2015 devpost
- Context.io API prize ($500) for Snowball (calendar updates from emails) web application for PennApps Winter 2015 devpost
- 28/6800 (**1st in Canada**) in IEEEXTreme 9.0
- 52/unknown (**8th in Canada**) in IEEEXTreme 8.0 placement
- 43/7500 (**6th in Canada**) in IEEEXTreme 7.0 placement