|  |  |  |
| --- | --- | --- |
|  | | |
|
| EDUCATION | | |
| **University of Toronto**  Engineering Science Robotics Class of 2017  Term Grade: 95% (rank 2/160) | | |
| LANGUAGES [>LOC] | | |
| C++ | | 50k |
| Javascript | | 10k |
| Python | | 5k |
| C | | 5k |
| Java | | 2k |
| SKILLS | | |
| Algorithm Design | |  |
| Optimization | |  |
| Communication | |  |
| Debugging | |  |
| UX Design | |  |
| Embedded programming | |  |
| CONTACT | | |
|  | [johnsonzhong.me](http://johnsonzhong.me) | |
|  | johnsonzhong@hotmail.ca | |
|  | [github.com/lemonpi](http://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](http://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](http://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/](http://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](http://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](http://devpost.com/software/forenships) * Context.io API prize ($500) for Snowball (calendar updates from emails) web application for PennApps Winter 2015 [devpost](http://devpost.com/software/snowball) * 28/6800 (**1st in Canada**) in IEEEXTreme 9.0 * 52/unknown (**8th in Canada**) in IEEEXTreme 8.0 [placement](http://johnsonzhong.me/res/xtreme8ranking_overall.pdf) * 43/7500 (**6th in Canada**) in IEEEXTreme 7.0 [placement](http://johnsonzhong.me/res/ieee.jpg) | |