

#### **EDUCATION**

University of Toronto
Engineering Science Robotics
Class of 2018
Cumulative GPA: 3.91/4
Major GPA: 4.00/4

# LANGUAGES [>LOC]

C++ 50k

Javascript 10k

Python 5k

C 5k

Java 2k

## **SKILLS**

Algorithm Design

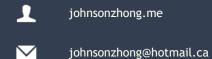
Optimization

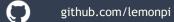
Machine Learning

Design Iteration

Embedded programming

### CONTACT





# Johnson **Zhong**

#### **EXPERIENCES**

## **Verity Studios R&D Engineering Intern**

May 2016

16 months Professional Development Year – company website veritystudios.com

- Modelled localization system that inform drones of their location
- Used model to estimate localization performance at any point given hypothetical flightspace configuration
- Achieved 0.86 correlation with real performance with 95% confidence of >0.80
- Designed and implemented cross-platform parameters framework that retained stored values intelligibly after firmware updates

# **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 2<sup>nd</sup> 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

#### **Programming Contests**

Aug 2014

Team based problem solving

- 1<sup>st</sup> 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 <u>devpost</u>
- Context.io API prize (\$500) for Snowball (calendar updates from emails) web application for PennApps Winter 2015 <a href="devpost">devpost</a>
- 28/6800 (1st in Canada) in IEEEXTreme 9.0 johnsonzhong.me/res/ieee9.pdf
- 52/unknown (8th in Canada) in IEEEXTreme 8.0 placement
- 43/7500 (6th in Canada) in IEEEXTreme 7.0 johnsonzhong.me/res/ieee.jpg