

# WONG SHI XUAN GABRIEL

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## SKILLS

### Data Science and Deep Learning

Python (TensorFlow, Keras, OpenCV, NLTK, Pandas), R

### Web Scraping and Automation

Selenium, BeautifulSoup, Telegram Bot

### Web and App Development, Databases

HTML, CSS, JavaScript, React, React Native, Vue, Jekyll, Firebase, MySQL

### Electronics and Miscellaneous

Arduino, Processing, SolidWorks, ROS

## EDUCATION

### Singapore University of Technology and Design (SUTD)

May 16 to Present

#### Bachelor of Engineering (Information Systems Technology and Design)

- Computer Science major, with a specialization in Artificial Intelligence and Business Analytics
- Current GPA of 4.76/5.0, on track for summa cum laude, expected to graduate in August 2019
- Awarded SUTD Asian Leadership Programme Scholarship
- Awarded SUTD Honours List for Freshmore Terms for placing within top 10% of cohort

### NUS High School of Mathematics and Science

Jan 08 to Dec 13

#### Diploma with Honours in Mathematics, Chemistry and Physics, and Major in Computing Studies

- GPA of 4.3/5.0 (Distinction)
- Awarded CCA Achievement Award (2011, 2012, 2013)
- Coursework: Database Design, Data Structures and Algorithms, Software Engineering, Computer Networking

## WORK EXPERIENCE

### Taiger Singapore Pte. Ltd.

May 18 to Nov 18

#### Data Science Research Intern

- Selected from 300 participants for the Summation Apprenticeship Programme by SGInnovate, a deep tech accelerator
- Researched and developed a signature extraction engine alone from scratch, that is now used in client sales demos
- Built a document processing pipeline for the extraction, classification and post-processing of signatures
- Devised methods for textual data extraction and labelling to perform named entity recognition
- Worked with computer vision and natural language processing frameworks such as OpenCV, TensorFlow and NLTK

## COMPETITIONS & HACKATHONS

### Startup Weekend Singapore Mega 2018 – Most Impactful Idea Winner

Sep 18

- Competed over the course of 48 hours, winning against over 250 participants across 46 teams
- Developed the idea for rapid production of educational audio resources to encourage lifelong learning
- Conducted various iterations of market research and customer validation to determine a viable business plan
- Built a demonstrative proof-of-concept through a combination of text-to-speech software and Google APIs

### DSTA Cyber Defenders Discovery Camp 2018 – First Place

Jun 18

- Won First Place in both University/Polytechnic and Open categories, beating out 50 local and 7 international teams
- Exploited vulnerable remote servers using common reconnaissance tools such as Nmap, Dirb, Nikto and Metasploit
- Infiltrated a WiFi network via wireless network tools in Aircrack-ng to remotely hijack a remote-operated drone

### What The Hack @ SUTD – Best Environment Idea, Best Hardware Hack

Sep 17

- Won the Best Environment Idea and Best Hardware Hack awards, earning prizes worth \$18,000
- Worked in a team of 4 to create a personal wearable device for haze prevention using air-curtain technology
- Developed the IoT functionality of the device using the ESP8266, an Arduino-compatible WiFi module

### DSTA Cyber Defenders Discovery Camp 2016 – First Place

Jun 16

- Beat 400 students, winning the First Place in the University/Polytechnic category, alongside an \$8,000 cash prize
- Used common penetration testing tools in Kali Linux such as Aircrack-ng, Nmap, Wireshark and Metasploit to infiltrate wireless networks and identify vulnerabilities in local network machines

### Past Achievements

- Singapore Space Challenge – First Runner Up Aug 13
- Singapore VEX Robotics Championship – 3rd Place, Judge Build Award Jun 13
- National Junior Robotics Competition – Best Programming Award Sep 12
- Cyber Defenders Discovery Camp 2012 (JC/IP Category) – 3rd Place Jun 12
- NUS IEEE Robotics Challenge – 2nd Place Mar 12

## **PERSONAL PROJECTS**

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### **Signature Matching with GAN-Augmented Data**

**Nov 18 to Present**

- Using Siamese neural networks to match different handwritten signatures signed by the same owner
- Training generative adversarial networks (GANs) for the synthesis of signature images to tackle small dataset

### **One-Shot Image Recognition with Siamese Neural Networks**

**Apr 18 to Aug 18**

- Experimented with one-shot image classifiers using Siamese convolutional neural network classifiers
- Created and trained models for classification of the Omniglot dataset, as well as handwritten signatures
- Self-learned popular deep learning frameworks on Python such as TensorFlow and Keras

### **MouseHunt (Facebook Game) Bot with CAPTCHA Solver**

**Jan 18 to Feb 18**

- Designed and developed a Selenium-powered bot to play Facebook game MouseHunt
- Circumvented anti-bot CAPTCHAs through image pre-processing with OpenCV and OCR with Tesseract
- Deployed bot on a Raspberry Pi, as well as an Amazon Web Services Elastic Cloud Compute (AWS EC2) server

### **SUTD Facilities Automated Booking System**

**Jan 18 to Feb 18**

- Built and deployed a Python server to automatically carry out bookings on SUTD web portal via Selenium
- Created an Android application using React Native for user interface

## **SCHOOL PROJECTS**

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### **Automated Coffee Barista – Software and Electronics Engineer**

**Dec 18 to Feb 19**

- Designed and built a system for automated coffee serving with a 6-axis robotic arm
- Programmed robot movements and sensor controls on a Raspberry Pi using ROS and Arduino
- Worked in collaboration with SUTD faculty as the star showcase for Open House 2019, with over 4000 visitors

### **Computer Vision: Crowd Detection – TensorFlow Production and Deployment**

**Oct 17 to Dec 17**

- Awarded Singtel Best Project award (2nd place) for the application of IoT systems
- Built a CNN model using TensorFlow to predict crowdedness in a location
- Deployed the model on a camera-fitted Raspberry Pi to obtain live updates on crowd levels in locations around school

### **Chinese New Year (CNY) 2017 Street Light-Up – Web Developer**

**Dec 16 to Jan 17**

- Created a web application, allowing users to send New Year greetings to a display screen
- Screen was set-up for public display in Chinatown as part of the annual CNY festive decorations, lasting 21 days
- Developed a front-end display using HTML, CSS & JavaScript, through collaboration with Kreta Ayer-Kim Seng CCC

## **CO-CURRICULAR ACTIVITIES**

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### **SUTD Digital Design and Development Club – Workshop Lead, Instructor**

**Sep 16 to May 17**

- Designed, led and conducted a 60 mins workshop on creating IoT devices with Arduino during SUTD Open House 2017, and inspired over 50 prospective students to apply to SUTD
- Prepared course materials for 3 workshops on Python, CSS, and Java, and conducted lectures and practical exercises for experiential learning with more than 100 participants across all workshops
- Aided in the conduct of ISTD faculty outreach workshops to National Junior College students, and guided them through several hands-on exercises on the basics of procedural programming

### **SUTD Undergraduate Teaching Opportunities Programme – Teaching Assistant**

**Sep 16 – Jan 19**

- Provided focused coaching for a small group of peers as a teaching assistant in Physics bootcamp, resolved queries during lectures and guided them through cohort exercises with basic problem-solving steps
- Helped students with in-class practices for a Python introductory course, prepared teaching materials for and conducted extra-curricular consultation sessions
- Assisted workshop instructors in LaTeX course for peers, provided guidance to participants during practice exercises