

I am a curious individual holding a keen interest in the field of network system architecture, embedded systems, and security. I strive for learning and continuous improvement and bring my experience in design thinking to provide quick feedback cycle.

## EDUCATION

### Singapore University of Technology and Design

Class of 2016

Bachelor of Engineering with Honours majoring in Information Systems Technology and Design.  
Specialization: Security and Communications, Artificial Intelligence.

## SKILLS

**Core** - Python, C++, Docker, Git, Linux, GNU Make.

**Additional** - Javascript, Java, HTML, CSS, GDB, PostgreSQL, OpenCV, Ruby-on-Rails, SQLite, Laravel, Vue, Flutter.

## WORK EXPERIENCE

### Software Engineer in MicroSec Pte. Ltd.

Dec'17 - Present

A Deep Tech IoT company where I am leading the technical design, development, and maintenance of a web server, System Administration, and Intern management and supervision. Additionally, I am assisting in Backend Web Development, and Customer Support.

- Engineering a multithreaded concurrent network server which provides an end to end TLS 1.3 equivalent security for ultra-low powered embedded devices which supports various protocols: LoRaWAN, Bluetooth, NBIoT, etc.
- Database schema design to ensure non-duplicate data across multiple instances of the network server.
- Supervision and training to develop interns to full time employees following companies work culture.
- Intern Management on an average of 5 candidates per batch.
- Development of continuous integration pipelines, managing cloud deployments for pilot projects, ensuring high system availability and basic system administration.
- Development of new features and business logic in our Web Stack.
- Use Case driven feature planning and sprint planning following Agile Principles.
- Multiple customer support duties on-site and off-site to install, update, and maintain our products.

*Tech Stack:* C++, Python, Flask, SQLAlchemy, Hypothesis, Docker, Nginx, Gitlab CI, Puppet, PostgreSQL, Vue, Angular, Valgrind, Wireshark, AWS EC2, Droplets.

### Research Assistant in iTrust Research Center for CyberSecurity

Nov'16 - Oct'17

Developed and implemented a network protocol library to reproduce packets of Common Industrial Protocol (CIP) for Secure Water Treatment (SWaT) testbed.

- Analyzed and reconstructed high volume CIP packets for both TCP and UDP section using Wireshark.
- Designed and implemented an API for the package using TDD and SOLID principles of OOP.
- The library was used in a CaptureTheFlag competition in an international inter-university competition for Secure Cyber-Physical (Scy-Phy) Systems Week.
- Deployed and maintained a web challenge in Amazon EC2 for the competition.
- Research and Network Analysis for vulnerabilities in testbeds: SWaT and EPIC.

*Tech Stack:* Python, Flask, Wireshark, LxC, EtherNet/IP.

*Publication:* A. Siddiqi, N. O. Tippenhauer, D. Mashima, and B. Chen, "On practical threat scenario testing in an electric power ics testbed," in Proceedings of the cyber-physical system security workshop (cpss), co-located with asiaccs, 2018.

### Web Developer in Souschef

Oct'16 - Jan'17

Prototyping and development of a configuration panel which takes user input, stores in a DB, and uploads them across multiple remote machines

- Improve my knowledge in the fundamentals of JS, Express, and TDD. A part-time adventure.

*Tech Stack:* Node, Python, Express.

### Teaching Assistant in General Assembly

Aug - Sep'16

Assisted instructor to help teach students the basics of web development.

- Taught CLI, git, HTML, CSS, Javascript, and Express.
- Managed multiple tasks which included analyzing project codes and programming tests.

### Web Developer Intern in Tinkerbox Studios

May - Aug'15

Programmed backend functionality and wrote test cases for projects following agile methodology.

- Practiced Test Driven Development using Ruby-on-Rails.
- Worked on models, views, and controllers and wrote/refactored their new/old tests.
- Implemented simple front-end interactive pages.

*Tech Stack:* Rails, HTML, CSS, Heroku.

## PROJECTS

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### Social Project for Children with Autism

Sep'16 - Nov'17

Researched and designed a new curriculum to teach programming concepts and simple robotics to special needs children.

- Analyzed the students initial performance by taking several tests which measured their memory and sequential task handling abilities.
- The curriculum used Edison robot to provide the visual interface for programming and Lego bricks as a simple building block for robotics and integrates them.

*Stack:* Edison Robot, Academic Research.

### Capstone Project - Interactive Animatronic Dragon

Jan - Aug'16

Established a network to transfer data between multiple sections of a prototype of an animatronic dragon which detects user movements in its peripherals to provide interactive feedback. The full project includes design and construction of mechanical, aesthetic, and user experience.

- Implemented an ad-hoc network with static IP for P2P connections between two RaspberryPi.
- Developed a state machine to categorize different outputs according to user inputs.
- Used Open CV to detect user movement to be used as inputs for the statemachine.
- Worked in a student team of 6 people from different technical tracks.

*Tech Stack:* Python, OpenCV.

### Web Development - Non-academic University Project

Dec'15 - July'16

Create a platform for a booking system of graduate students seating.

- Developed the platform using Laravel and hosted in university server.

*Tech Stack:* Laravel, Artisan, Php.

## ACTIVITIES

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**External Involvements** - NUS XCTF 2016, Finalists for APEX Business-IT Global Case Challenge 2016, SG50 Hackathon 2015 Smart Nation, Secretary for University Photography Club.

**Interests** - Photography, Running, Non-Profit Social Events, Exploring Culture, CaptureTheFlag, Network Security, Physical Systems Security, Linux, Arch and Emacs.

**Languages** - English (Full Professional Proficiency), Bengali (Native).