# Ze Ming (Tommy) Xiang

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## Professional Experience

- **Google LLC**, *Software Engineering Intern*, Google Docs Team — 2018 Summer
  - Implemented MVC structured, accessibility-friendly user interface for layout formatting on Google Docs Android
  - Discovered and proposed solution for flaws in code base that will potentially cause 30% increase in typing latency
  - Released completed feature to Google Docs Android, reaching over 100 million users
  - Technologies: JavaScript, Java + Android, Google Closure, Bazel
- **University of Toronto**, *Research Assistant* — 2017 Summer
  - Assisted CS Professor with educational game design research, written report on effective game design elements
  - Design and developed educational game Deadlock (Link) , constructed survey, gathered data from 20+ testers
  - Implemented in-game graphical block scripting interface and compiler in Unity **C#**, using embedded JS engine
  - Received A+ evaluation from supervisor: Prof. Steve Engels. Featured on UofT News (Link)

## Education

**- University of Toronto, Honors B.Sc, Computer Science Specialist** — **Class of 2020**

- **CGPA: 3.97**, Dean's List Scholar, President's Entrance Scholarship
- Upper-level Courses:
  - Neural Networks and Machine Learning
  - Algorithm Design & Complexity
  - Software Engineering
  - Natural Language Computing
  - Introduction to Visual Computing
  - Computer Graphics

## Skills

- **Languages**: Python, C/C++, C#/Java, HTML, CSS, JavaScript, TypeScript, QML, Haxe, SQL, Verilog, Bash, Emacs Lisp.
- **Frameworks + Libraries**: Node.js, Express, Angular 2, Ionic, Bootstrap, Qt Quick, Vue.js, PyTorch, OpenFL, Google Closure.
- **Tools + Software**: Linux, Vim, Emacs, Git, Eclipse, Photoshop, Flash Professional, Unity3D, Microsoft Office.

## Personal Projects

- **Time Management App** — **TypeScript, Angular 2**
  - Implemented rigorous time-management hybrid app using HTML, CSS, TypeScript, Angular 2 and Ionic, with automatic scheduling and reward system.
  - Designed greedy algorithm to achieve real-time planning up to 365 days into the future
- **TensorBuilder**(Link) — **QML, JavaScript**
  - Implemented a GUI editor for TensorFlow™ in QML and JavaScript using Qt, with intuitive drag-and-connect interface
  - Compiles the graph directly to Python for execution
- **Neuro-evolution Demo**(Link) — **C++**
  - Implemented neural network with evolutionary algorithm in C++ using SFML framework during high school
  - Successfully trained simulated ants to seek food by learning
- **Procedural Game**(Link) — **Unity, C#**
  - Designed and developed procedural-generated 2D action / adventure game in Unity C# and Haxe
  - Implemented procedural generation as well as culling algorithm to support seamless map with 60000+ tiles
  - 1st place in UofT Game-Making Deathmatch 2017

## Course Projects

- **Reddit Political Persuasion Classifier** — **Python**
  - Trained Python program to study political affiliation of comments on Reddit
  - Pre-processed and tokenized the data, manually extracted features, trained multiple classifiers using scikit-learn
- **ShareSchedule**(Link) — **Node.js + Express, PostgreSQL**
  - Developed vanilla JS website with Node.js + Express and PostgreSQL, with RESTful API
  - Interface with UofT API, intelligently plan time tables for UofT students, with Facebook login and schedule sharing
  - Uses backtracking algorithm to solve for conflict-free schedules
- **Machine Translator** — **Python**
  - Written Python application to translate text across different languages, using smoothed n-gram model
  - Applied IBM-1 alignment model, evaluates with BLEU
- **Emoji Style-Transfer** — **Python, PyTorch**
  - Implemented CycleGAN, a Deep Convolutional Generative Adversarial Network (DCGAN) in PyTorch
  - Generates iOS-style emoji from/to Windows-style emoji

## Awards and Contributions

- 1st Place - Bloomberg Codecon UofT — 2017
- 2nd Place - Microsoft Code Competition UofT — 2017
  - Solved one of the hardest problem
- 2nd Best Accuracy - (National) USC Competition — 2017
  - Developed geo-tagging tool for drone mission
- Silver Medalist - (National) Canadian Computing Olympiad(Link) — 2016
- Co-President of Game Design and Development Club — 2017 - 2018
- 1st - UofT Game-Making Deathmatch — 2017
  - Best Overall and Best Technical Achievement Award
  - Judges recommended commercial release
- 3rd Place - Big Data Challenge — 2016
  - Analyzed and visualized open data using Python
  - Journal Published on STEM Fellowship(Link)
- Vision Subdivision Lead of University of Toronto Aerospace Team: Aerial Robotics division — 2017 - 2018