# Dan Tan

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## EDUCATION ------------------------------------------------------------------------------------------------------

**University of Waterloo (CA) & University of Leeds (UK)**                    **Sep 2015 – Oct 2020**

*Civil Engineering, Honours BASc*

- **Courses:** Algorithms & Data Structures, Optimization, Pattern Recognition, Artificial Intelligence, Systems Programming & Concurrency, Databases & Software Design, Entrepreneurial Strategies, Social Entrepreneurship

## PROJECTS ------------------------------------------------------------------------------------------------------

- **Dungeons & Dragons:** Developed a full-stack D&D app that helps users manage spellbooks (**Ruby on Rails, SQL**)
  - **App:** dd-spellbooks.herokuapp.com
- **Fifth Grader:** Designed a math game UI with various operations and difficulty levels (**React**)
- **Shopping:** Created an ML model to predict whether online customers will complete a purchase (**Scikit-learn**)
- **Crossword:** Wrote an AI that solves crossword puzzles through backtracking & heuristics (**Python**)
- **Traffic:** Architected a convolutional neural network that predicts traffic signs with 97% accuracy (**TensorFlow**)
- **Web Crawler:** Implemented asynchronous I/O with cURL for web crawling PNG files (**C, Valgrind**)

## EXPERIENCE ------------------------------------------------------------------------------------------------------

**Student Entrepreneur – Craft Collective (For Us, By Us)**                    **Sept – Dec 2018**

**Hult Prize, Waterloo**

- Conducted handicraft market and seller research by surveying 22 collectives and analysing sociodemographic reports and data of young women in developing countries
- Established revenue growth strategies, potential partnerships, and value proposition to address pain points
- Pitched a handicraft e-commerce solution with a platform mock-up for employing 10,000 women and empowering handicraft cooperatives
- Selected as one of the top 8 student entrepreneurship teams out of 30 teams

**Research Assistant – Hydrologic Model Development & Analysis**

**Water Institute, Waterloo**                    **Apr – Aug 2018**

- Calibrated and optimized model performance by tuning input parameters through the NSE metric
- Debugged hydrologic software by examining the interflow and infiltration subroutines with 2000+ lines of code
- Presented research summary of the model algorithms at the 2018 Canadian Geophysical Union conference to a group of 30+ researchers
- Evaluated model predictions by analysing hydrologic time-series data through the ARIMA and DTW techniques
- **Publication:** dynamic_time_warping/Dynamic%20Time%20Warping%20Publication.pdf

**Engineering Consultant**

**Simpson Gumpertz & Heger, San Francisco**                    **Sept – Dec 2019**

- Developed and presented algorithmic flowcharts and decision trees based on engineering documentation and specifications, thus pinpointing minimal design requirements to clients
- Identified and revised 100+ engineering design issues based on the underlying scientific principles, improving building enclosure performance and durability
- Examined product submittals and drafted 10+ consulting reports for enclosure QA in close collaboration with senior project consultants and managers

**UW EWB Podcast Co-host – Ideas Without Borders**                    **May – Aug 2018**

- Advocated systems-thinking to engineers and university students through podcasts with 1000+ views
- **Topics:** Big data, feedback loops, biases & heuristics, sustainable transportation, and healthy food options

**Project Coordinator**
**EllisDon – Ottawa Light Rail Transit Project, Ottawa**                    **Sept – Dec 2017**
- Coordinated project schedules by documenting daily progress & meeting minutes and interfacing with subcontractors in a 200+ people team
- Estimated and verified material quantities and invoices for cost control, successfully reducing the closure phase

**Structural Modelling Intern**
**HongRun Construction Group, Shanghai**                    **Feb – Apr 2017**
- Iterated model design by analysing output and evaluating key metrics including stress-strain distributions, shear, and bending moment with respect to the local building code
- Drafted structural dimensions and details through AutoCAD as per design requirements

**Tennis Canada Instructor**                    **Jun – Aug 2018**
- Lead a group of 20+ students by presenting clear visual demonstrations, explanations, and feedback for tactical and technical improvements
- Organized games and practice sessions while maintaining a safe environment

**UW Varsity Tennis**                    **Sept – Dec 2018**
- Selected as one of the 9 roster players and ranked as the top 4 teams in Ontario

**Stepping Stones China**                    **Feb – Apr 2017**
- Taught a class of 15+ migrant children conversational English to improve English test score

## TECHNICAL SKILLS ----------------------------------------------------------------------------------------------------------
- **Languages:** C++, C, Python, R, MATLAB, SQL, HTML, CSS, JavaScript, Ruby
- **Frameworks and Libraries:** Rails, React, Bootstrap, Pandas, Scikit-learn, TensorFlow
- **Tools:** Git, Valgrind & Helgrind, RSpec, AutoCAD, Bluebeam Revu