

Dan Tan

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EDUCATION

University of Waterloo (CA) & University of Leeds (UK)

Sep 2015 – Oct 2020

Civil Engineering, Honours BSc

- **Courses:** Algorithms & Data Structures, Optimization, Pattern Recognition, Artificial Intelligence, Numerical Computation, Systems Programming & Concurrency, Databases & Software Design

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, Bootstrap**)
- **Web Crawler:** Implemented asynchronous I/O with cURL for web crawling PNG files (**C, Valgrind**)
- **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**)

EXPERIENCE

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
- Developed and debugged model subroutines with 2000+ lines of code through pair programming
- Evaluated model predictions by analysing hydrologic time-series data through the ARIMA and DTW techniques
- **Publication:** [dynamic_time_warping/Dynamic%20Time%20Warping%20Publication.pdf](#)
- Presented research summary of the model algorithms at the 2018 Canadian Geophysical Union conference to a group of 30+ researchers

Student Entrepreneur – Craft Collective (For Us, By Us)

Sept – Dec 2018

Hult Prize, Waterloo

- Pitched a handicraft e-commerce solution with a platform mock-up for employing 10,000 women and empowering handicraft cooperatives
- 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
- Selected as one of the top 8 student entrepreneurship teams out of 30 teams

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