Dan Tan

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EDUCATION --

University of Waterloo (CA) & University of Leeds (UK Exchange)   Sep 2015 – Oct 2020
Civil Engineering, Honours BASc (w/ graduate-level coursework)
- **Relevant 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**)
  - **URL:** dd-spellbooks.herokuapp.com
- **Web Crawler:** Implemented asynchronous I/O with cURL for web crawling PNG files (**C, Valgrind**)
- **Heredity:** Architected a Bayesian network to assess the likelihood of a genetic trait inside a family (**Python**)
- **Crossword:** Wrote an AI that solves crossword puzzles through backtracking & heuristics (**Python**)
- **Traffic:** Created a convolutional neural network that predicts traffic signs with 97% accuracy (**TensorFlow**)
- **Fifth Grader:** Designed a math game UI with various operations and difficulty levels (**React**)
- **CFD:** Investigated the effects of fluid flow and heat transfer in microchannels through FVM (**MATLAB, Ansys)**

EXPERIENCE --

Research Assistant – Hydrologic Model Development & Analysis
Water Institute, Waterloo   Apr – Aug 2018
- Calibrated and optimized model performance through various sets of geographical soil data and the NSE metric
- Debugged hydrologic software through codebase comprehension and version comparison
- Presented research summary of the interflow & infiltration algorithms at the 2018 Canadian Geophysical Union Conference and reviewed 5+ research papers for publication preparation
- Conducted statistical and time series analysis of hydrologic data by utilizing ARIMA and dynamic time warping techniques through R
- **Publication:** dynamic_time_warping/Dynamic%20Time%20Warping%20Publication.pdf

Technical Intern
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 requirements to clients
- Identified and investigated critical engineering design issues and revised architectural drawings based on the underlying scientific principles, improving building enclosure performance and durability
- Drafted 10+ technical reports and verified product submittals based on shop drawings and datasheets, in 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
- **URL:** anchor.fm/uwaterlooewb/

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

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

Hult Prize Waterloo Finalist – Craft Collective (For Us, By Us)   **Sept – Dec 2018**
- Addressed youth unemployment by pitching a handicraft e-commerce solution and selected as one of the top 8 finalist teams out of 20+ teams
- Conducted in-depth research, survey, and analysis of rural unemployed female youth in developing countries
- **URL:** waterloo.ca/conrad-school-entrepreneurship-business/news/student-entrepreneurs-pitch-solutions-youth-unemployment

Tennis Canada Instructor   **Jun – Aug 2018**
- Lead students by presenting clear visual demonstrations and concise explanations as well as providing positive feedback for tactical and technical improvements
- Organized games and practice sessions while maintaining a safe and fun environment

UW Varsity Tennis   **Sept – Dec 2018**
- Selected as one of the top 9 roster players and successfully managed to balance academic workload while committing to 10 hrs of training per week
- **URL:** athletics.uwaterloo.ca/sports/mens-tennis/roster/2018-19

Emmaus Leeds   **Mar 2019**
- Fundraised for the Leeds charity branch through jailbreak hitchhike to Cologne, Germany
- **URL:** emmaus.org.uk/leeds/students-complete-jailbreak-hitch-for-emmaus-leeds/

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, unittest