Dan Tan

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EDUCATION

University of Waterloo (Waterloo, CA) **2015 – 2020**
Civil Engineering, Honours BASc

- **Relevant Courses:** Algorithms & Data Structures, Optimization, Probability & Statistics, Pattern Recognition
  - Systems Programming & Concurrency: Implemented asynchronous network and multi-threaded programs (synchronization patterns, deadlock recovery, file systems, web crawling) using C in Linux environment
  - Databases & Software Design: Designed and built 3-tier web applications using Ruby on Rails; Designed relational databases and wrote queries using SQL; Gained exposure with agile methodologies, scalability, CI/CD, TDD & unit testing, design patterns (SOLID) & antipatterns
  - CS50 – Artificial Intelligence: Utilized Python & libraries (Pandas, Scikit-learn, TensorFlow) to create AI models through techniques including minimax, model checking, Bayesian network, HMM, simulated annealing, backtracking search, random forest, SVM, Q-learning, CNN & RNN, bag-of-words, and skip-gram

University of Leeds (Leeds, UK) **January – June 2019**

- **Computational Fluid Dynamics Project:** Investigated the effects of fluid flow and heat transfer in microchannels through the finite volume method (MATLAB & Ansys Fluent)

SAMPLE PROJECTS

- **Dungeons & Dragons (D&D):** a spell manager that helps a user store spells & spell books (Ruby on Rails)
  - **URL:** https://dd-spellbooks.herokuapp.com
- **Traffic:** a CNN model that classifies and predicts German traffic signs (Python & TensorFlow)
  - **URL:** https://github.com/dantan123/AI/tree/master/traffic
- **Fifth Grader:** a mental math game with various difficulty levels (React)

EXPERIENCE

Research Assistant – Hydrologic Model Development & Analysis
Water Institute, Waterloo **April – August 2018**

- Modified the subroutines of the hydrologic model – MESH in collaboration with researchers and developers at the University of Saskatchewan
- Performed automated testing & model calibration with batch files and debugged compile- & run-time errors
- Conducted statistical and time series analysis of hydrologic data by utilizing regression, ARIMA, and dynamic time warping techniques through R
- Presented research summary of the interflow and infiltration algorithms at the 2018 Canadian Geophysical Union Conference (CGU) in Niagara Falls

Technical Intern
Simpson Gumpertz & Heger, San Francisco **September – December 2019**

- Developed and presented visual contents including decision trees and flowcharts based on engineering documentation and specifications, pinpointing minimal standard requirements for clients
- Quickly learned consulting practices and actively contributed to multi-million building projects in the bay area by collaborating with senior project consultants and managers
- Identified & investigated building enclosure design issues and revised architectural drawings based on building physics principles including heat flow, air ventilation, and water infiltration
- Displayed effective written/verbal communication and organizational abilities by assisting with 20+ technical reports and verifying product submittals based on shop drawings and datasheets

Project Coordinator
EllisDon – Ottawa Light Rail Transit Project, Ottawa   **September – December 2017**
- Performed scheduling (Gantt charts), documented daily progress, and met changing deadlines & priorities
- Verified material quantities and invoices for cost control; Created spreadsheets of submittal items, successfully reducing the project closure phase
- Utilized Oracle's Primavera software for organizing project documents, tracking progress, and responding to QA inquiries in a 200+ people team

Structural Modelling Intern
HongRun Construction Group, Shanghai   **February – April 2017**
- Demonstrated quantitative abilities by calculating load combinations for model input and evaluating the model output with respect to the building code
- Drafted structural dimensions and details through AutoCAD

LEADERSHIP --

Hult Prize Waterloo Finalist – Craft Collective
- Selected as one of the top 8 finalist teams to pitch youth unemployment solutions out of 20+ teams
- Conducted in-depth research, survey, and analysis of unemployed rural youth in developing countries
- **URL:** https://uwaterloo.ca/conrad-school-entrepreneurship-business/news/student-entrepreneurs-pitch-solutions-youth-unemployment

Tennis Canada Instructor
- Implemented Tennis Canada's "Learn to Play" curriculum for teaching starter players serve, rally, and score
- Effectively lead students by presenting clear visual demonstrations and concise explanations as well as providing positive feedback for tactical and technical improvements
- Set up and organized game play situations while maintaining a safe, active, and fun environment

UW Engineers Without Borders
- Explored and advocated systems-thinking for engineers and university students through podcasts
- Topics: healthy food options, sustainable transportation, feedback loops, big data, and biases
- **URL:** https://anchor.fm/uwaterlooewb/

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

Stepping Stones English Teacher
- Taught weekly a class of 15+ migrant children in rural Shanghai and prepared interactive learning materials and exercises to increase English test score

Emmaus Leeds
- Fundraised for the UK Emmaus branch through jailbreak hitchhike from Leeds to Cologne
- **URL:** https://emmaus.org.uk/leeds/students-complete-jailbreak-hitch-for-emmaus-leeds/

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, RSpec