

CAN ZHANG

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Highlights

- Ph.D. in engineering with strong mathematical background and solid programming skills
- Rich experience in data processing, model developing and system design in projects with industry partners
- Reliable team player with good communication skills, quick-learning ability, and multi-tasking ability

Education

University of Alberta

Ph.D. in Transportation Engineering | 5 papers published | GPA:3.8/4.0

Sep 2015 – Aug 2021

Edmonton, AB, Canada

Nanjing University

M.S. in Operations Research | Provincial Outstanding Award on Thesis

Sep 2013 – Jun 2015

Nanjing, Jiangsu, China

Nanjing University

B.S. in Computational Mathematics | Minor in Financial Engineering

Sep 2009 – Jun 2013

Nanjing, Jiangsu, China

Technical Skills

Programming: MATLAB (10 yrs.), Python (3 yrs.), SQL (3 yrs.), C++, Shell Script, CSS

Academic: Statistical Modeling, Machine Learning, Data Mining, Optimization, Numerical Analysis & Simulation

Experience

University of Alberta

Research Assistant & Teaching Assistant

Sep 2015 – Aug 2021

Edmonton, AB, Canada

- Conducted research in Queuing Network model to optimize real-time large-scale network traffic signal control systems, which combines mathematical modeling, control theory, and parallel computing to solve an NP-complete problem
- Managed projects with industrial partners (e.g., proposal writing, data collection, field test, task assignment, etc.)
- Coached undergraduate course ‘Transportation Engineering’, lectured for lab, and graded homework & exams

Easy Education

Tutor & Lecturer

Sep 2018 – Jun 2020

Edmonton, AB, Canada

- Tutored over 100 undergraduate students on various math courses: Calculus, Linear Algebra, Ordinary Differential Equations, Operations Research, Graph Theory, and Ring Theory

Projects

TELUS | 5G and MEC for the Next Generation of ITS

Mar 2021 – Aug 2021

- Managed the project ‘Decentralized Traffic Signal Control for Large-Scale Networks’, which aims to develop a decentralized real-time control system for connected vehicle environment with 5G mobile data and edge computing
- Applied Reinforcement Learning and Network Decomposition to build a closed-loop system for decentralized traffic signal control. Optimized the system by iterating numerical simulations on cloud servers of Compute Canada
- Reduced computational time by over 50% compared to centralized systems

Stantec | CAV Test Track U of A South Campus Video Detection

Jan 2017 – Oct 2019

- Built a video-based vehicle detection system using 30 cameras over 11 signalized intersections
- Optimized detection coverage for vehicles by adjusting camera locations using Mixed Integer Programming
- Integrated Gradient Search & Dijkstra’s Algorithm for driving speed advisory, collision warning and real-time parking management, part of which has been applied into the driving app for ACTIVE-AURORA Testbed

Transport Canada | CV Technologies Applied at Grade Rail Crossing Warning

Jun 2017 – Jun 2019

- Developed an Active Warning System for Mixed-Traffic Intersections to protect pedestrians and drivers from collisions
- Used Probabilistic Kinematic model and MCMC method to estimate collision probability
- Decreased the collision probability by over 90%

Mitacs | Freeway Travel Time Estimation with Multiple Traffic Detection Technologies

Sep 2015 – Dec 2016

- Collected and analyzed 2.2 million records of traffic data from mobile phones, GPS handhelds, and dash cameras
- Trained travel time estimation model using Support Vector Regression
- Improved estimation accuracy by 5% compared to Kalman Filter model

Transport Canada | Variable Speed Limit Control on Whitemud Drive

Sep 2015 – Dec 2015

- Recorded real-time data from inductive loop detectors at 46 locations on a 7.4 km freeway segment for 3 month
- Applied Model Predictive Control to adjust speed limits at different segments to prevent congestion
- Achieved 12% improvement in average vehicle speed compared to non-control scenarios and created a GUI tool on Windows to visualize real-time traffic on a road network map