Joel Tam

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EDUCATION

University of California, Berkeley **Aug. 2024 – Present**

Master of Science in Transportation Systems, Graduate Certificate in Applied Data Science

Awards/Licenses: Transportation Departmental Fellowship, Engineering-in-Training (EIT)

University of California, Berkeley **Aug. 2020 – May 2024**

Bachelor of Science in Civil and Environmental Engineering *GPA: 3.5*

TECHNICAL SKILLS

Languages: Python, SQL, MATLAB (Simulink), R, FME
Technologies: PowerBI, Excel, ArcGIS, QGIS, AutoCAD, Microstation, Git
Machine Learning: TensorFlow, PyTorch, Scikit-learn

EXPERIENCE

Safe Transportation Research & Education Center **Aug. 2024 – Present**

Graduate Researcher *Berkeley, CA*

- Applied docTR, a TensorFlow and PyTorch-based deep learning library, for optical character recognition (OCR) to analyze 4 sensitive collision reports, successfully extracting critical information of interest through statistical methods.
- Implemented and fine-tuned large language models (LLMs) using Python and local servers, improving accuracy and efficiency in analyzing 25+ transportation safety articles, producing actionable insights for enhancing pedestrian safety.

Lawrence Livermore National Laboratory **May 2024 – Aug. 2024**

Critical Infrastructure Systems Analyst Intern *Livermore, CA*

- Built machine learning models (e.g., Random forest, Logistic Regression) to predict top vulnerabilities in 55,000+ power substations with 90% accuracy in predictive analytics for infrastructure risk mitigation.
- Applied advanced metrics and refined scoring algorithms within the Quantitative Intelligent Adversary Risk Assessment (QIARA) framework, improving vulnerability detection for 10 major national cyber, physical, & supply chain events.
- Predicted site features and formulated a comprehensive vulnerability metric by factoring 10+ features per substation.
- Reviewed the Optimization Planning Tool for Urban Search (OPTUS): route optimization under time restrictions.

TranSystems **Dec. 2023 – May 2024**

Transportation Engineering Intern *Berkeley, CA*

- Compiled and updated engineering drawings for the projects for the Federal Railroad Administration, US Coast Guard, Amtrak, Union Pacific, and LAX.

Arup **Jun. 2023 – Aug. 2023**

Transportation Planning Intern *San Francisco, CA*

- Optimized transportation network models by integrating APIs (e.g., OpenTripPlanner) and large-scale data from OpenStreetMap and bus route GTFS data to model travel time across 4 different transport modes.
- Developed a Python-based system to automate transit operator cataloging within designated regions based on inputted latitude-longitude by filtering through 2000+ services, enhancing accessibility of public transit data.
- Performed geospatial analysis across 6 Central Valley counties, handling large datasets to assess land zoning, trip mobility, and geocoding 300,000+ addresses using FME.

Topcon Positioning Systems **Jun. 2022 – Aug. 2022**

Surveying Intern *Livermore, CA*

- Computed and modeled the volume of site stockpile, achieving a 99.6% accuracy operating with MAGNET Suite (Survey and LiDAR Processor) and geospatial technology: GPS solutions, optical instruments, scanners, and lasers.

RESEARCH

Civil and Environmental Engineering Department **Jan. 2024 – Present**

- Developed an automation tool to extract 23 years of Caltrans detector data and a script to investigate induced traffic demand across 58 California counties, applying linear regressions to compare VMT, lane miles, GDP, and population.

Transportation Sustainability Research Center **Aug. 2023 – Present**

- Authored a 20-page review on microtransit pilots, analyzing trends from 50+ sources. Additionally, produced a 15-page paper on North American bike lending and EV charging. Creating analytics for Waymo survey responses.