Pramesh Pudasaini

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Ph.D. student seeking Data Science internship for Summer 2024. I bring 3 years of research experience using machine learning, statistical, and optimization tools and 5 years of industry experience in project management.

Education

University of Arizona   **August 2021 – Present**
Ph.D. in Transportation Engineering (minor in Statistics & Data Science)   *Tucson, AZ*
- **Dissertation**: Data-Driven Approaches for Improving Operations & Safety at Signalized Intersections using High-Resolution Event Data (Advisor: Dr. Yao-Jan Wu)
- **Research areas**: application of machine learning, simulation, statistical, and optimization tools in traffic operations and safety, specifically signal retiming, dilemma zone modeling, and dynamic traffic assignment.
- **Awards**: Herbold Fellowship, Roots for Resilience Data Science Scholarship, Delbert R. Lewis Graduate Fellowship, Jenny L. Grote Student Leadership Award
- **Organizations**: President, UA Institute of Transportation Engineers; Manager, Smart Transportation Lab

Tribhuvan University   **April 2017 – May 2019**
M.Sc. in Transportation Engineering   *Kathmandu, Nepal*
- **Thesis**: A multi-objective analysis of a petroleum transportation network under uncertainty.

Experience

University of Arizona   **August 2021 – Present**
Research Assistant   *Tucson, AZ*
- Developed an XGBoost-based optimization framework (in Python) with 95% precision for reidentifying vehicles between detectors at signalized intersections using high-resolution signal and detection data.
- Developed mesoscopic simulation models for various dynamic traffic assignment scenarios in the Pima County network.
- Developed an algorithm (in Python) to predict experienced travel time on signalized corridors using multi-source traffic data; currently working on implementing this algorithm to generate low-cost, medium-resolution vehicle trajectory data.
- Programmed and deployed scripts using R Shiny, SQL, and Docker to develop a network-wide mobility assessment tool for assessing corridor-level traffic operations and safety metrics in the City of Phoenix.
- Developed a real-time intersection queue length estimation model (in R) with 86% accuracy using highly noisy datasets of vehicle detection from video sensors in the City of Tucson.

Nepal Oil Corporation Limited   **March 2017 – August 2021**
Deputy Manager   *Kathmandu, Nepal*
- Assisted the project manager in demand forecasting, sales projection, scenario analysis, and optimization for project planning of two large-scale cross-country petroleum pipeline supply chain projects.
- Assisted the director of Engineering & Projects Department in preparing annual budget, procurement plans, and capital expenditure policies for three fiscal years.
- Prepared scope of works and contract documents for hiring consultants; reviewed detailed designs, drawings, and cost estimates from consultants; coordinated with contractors for field supervision and timely execution of contract.
- Prepared detailed designs and drawings, cost estimate, bill of quantities, bidding document, and contract document for four medium-scale civil construction projects; supervised three junior engineers and two overseers in the process.
- Key achievements: promotion to Manager in 4.5 years; contributed to timely completion of over 50% of civil construction projects and 90% of consulting tasks.

Skills

Languages (years): Python (2+), R (3+), SQL (2+), MATLAB, HTML
Packages: Python (pandas, numpy, matplotlib, sklearn, tensorflow), R (data.table, plotly, shiny, ggplot2, sf, leaflet)
Analytics: A/B testing, regularization, DS pipeline (cleaning, EDA, modeling, interpretation, visualization)
Modeling Tools: GAMS for optimization, DynusT for mesoscopic traffic simulation
Developer Tools: VS Code, Spyder, RStudio, Docker, JupyterLab, Google Colabs
Technologies: Spark, Dask, APIs, version control (Git), LaTeX (Overleaf), web design, SEO, WordPress

Publications

- Pudasaini, P., Karimpour, A., & Wu, Y.-J. (2023). Real-Time Queue Length Estimation for Signalized Intersections Using Single-Channel Advance Detector Data. Transportation Research Record, 2677(7), 144-156. DOI
- Pudasaini, P. (2021). Integrated planning of downstream petroleum supply chain: A multi-objective stochastic approach. Operations Research Perspectives, 8, 100189. DOI