PRIYADARSHAN PATIL, PH.D.

Senior Applied Scientist and Team Lead

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EXPERIENCE

Senior Applied Scientist

Electrotempo

2023 – Ongoing | Arlington, VA

- Led a team of four (SWEs, DS, DE) to develop a fleet electrification product (using a mixed-integer program and decomposition methods) from prototype to product earning $500K ARR from pilot customers in the first five months.
- Developed an equipment sizing product using behavioral/scheduling data with joint site and fleet optimization, reducing electrification lifecycle costs by 12-31% for Port of Virginia and helping underwrite investments totaling $320MM.
- Implemented data fusion, transformation, and regression models to design a regional power/energy demand estimation and forecasting product for trucking, enabling three new contracts with regional utilities totaling $1MM ARR.
- Served as product manager for the above products, gathering product requirements from stakeholders, drafting PRDs and roadmaps, developing performance metrics, creating wireframes, and presenting to clients.

Applied Scientist

Amazon

2022 – 2023 | Seattle, WA

- Developed a mixed integer linear program model to automate the short-term plan for flow and carrier allocation on Amazon's US supply chain, reducing staffing costs by 1.2%, while reducing plan WAPE from 5% to 3.3%.
- The developed model includes adherence to third-party contracts, a glide path for event days, and guidance for staffing, reducing annual contract violation penalties by $500M.
- Improved last mile topology optimizer performance using historical/prediction regression methods, reducing travel-time prediction WAPE from 16% to 11%.

Graduate Research Scientist

Center for Transportation Research

2015 – 2022 | Austin, TX

- Improved post-disaster recovery sequencing for road networks using dynamic programming and convex optimization methods, reducing solution complexity from factorial to exponential
- Conceptualized and implemented graph algorithms to optimize oversize/overweight vehicle routing for Texas DOT, reducing transportation and pavement costs by 23%. Also served as consultant for city of West Lake Hills.
- Developed a joint demand forecasting/inventory control model using generalized regression models for the 2019 AWS and INFORMS computing cluster competition, winning the first prize nationally

SUMMARY

Senior Applied Scientist with 3 years of industry work experience and 7 years of academic research experience specializing in development and deployment of optimization models, network modeling problems, machine learning and data science solutions.

LEADERSHIP & AWARDS

Member, TRB Railroad Operating Technologies Committee
Communications Coordinator

Ryuichi Kitamura paper award
Best paper award by Travel Analysis Methods section of the Transportation Research Board

Best Paper Award
Texas chapter of ITE Internationa

Winner, fORged by Machines
Awarded by INFORMS computing society cluster and AWS

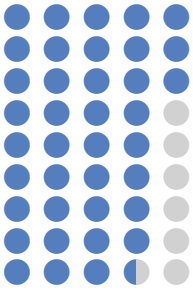
STRENGTHS

Researcher | Innovator | Problem Solver | Motivator & Leader | Team Worker | Product Manager | Collaborator

Optimization | Machine Learning | Networks | Simulation | Statistics | Data Visualization | People management | Project Management | Prototyping | Communication | Software

PROGRAMMING & TOOLS

Python
Pandas
PuLP
Scikit-learn
Seaborn
AWS
Gurobi/CPLEX/XPress
ArcGIS/QGIS
SQL



LEADERSHIP SKILLS

- Used SVM and KNN ensemble for quick traffic incident detection based on induction loop data with >90% accuracy and 0.86 F-score across all tested corridors.
- Developed efficient algorithms for symmetric traffic assignment problem, reducing solution time by 50%. Adapted these algorithms for rail-road network electrification within a bi-level problem structure

SELECT PUBLICATIONS

Journal Articles (12 total publications)

- D. Chauhan, A. Unnikrishnan, S. D. Boyles, and **Patil, Priyadarshan**, "Robust maximum flow network interdiction considering uncertainties in arc capacity and resource consumption," *Annals of Operations Research*, vol. 335, no. 2, pp. 689–725, 2024.
- **Patil, Priyadarshan**, K. Kazemzadeh, and P. Bansal, "Integration of charging behavior into infrastructure planning and management of electric vehicles: A systematic review and framework," *Sustainable Cities and Society*, vol. 88, p. 104 265, 2023.
- **Patil, Priyadarshan**, R. Walthall, and S. D. Boyles, "Budget-constrained rail electrification modeling using symmetric traffic assignment: A north american case study," *Journal of Infrastructure Systems*, vol. 28, no. 2, p. 04 022 007, 2022.
- C. Gokalp, **Patil, Priyadarshan**, and S. D. Boyles, "Post-disaster recovery sequencing strategy for road networks," *Transportation research part B: methodological*, vol. 153, pp. 228–245, 2021.
- **Patil, Priyadarshan**, K. C. Ross, and S. D. Boyles, "Convergence behavior for traffic assignment characterization metrics," *Transportmetrica A: Transport Science*, vol. 17, no. 4, pp. 1244–1271, 2021.
- R. Venkatraman, S. D. Boyles, R. James, A. Unnikrishnan, and **Patil, Priyadarshan**, "Adaptive routing behavior with real-time information under multiple travel objectives," *Transportation Research Interdisciplinary Perspectives*, vol. 10, p. 100 395, 2021.
- S. Astroza, **Patil, Priyadarshan**, K. I. Smith, and C. R. Bhat, "Transportation planning to accommodate needs of wind energy projects," *Transportation Research Record*, vol. 2669, no. 1, pp. 10–18, 2017.
- **Patil, Priyadarshan**, S. K. Dubey, A. R. Pinjari, E. Cherchi, R. Daziano, and C. R. Bhat, "Simulation evaluation of emerging estimation techniques for multinomial probit models," *Journal of choice modelling*, vol. 23, pp. 9–20, 2017.

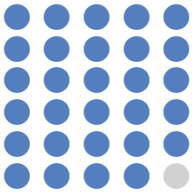
Conference Proceedings (18 total presentations)

- Y. Xu, **Patil, Priyadarshan**, and D. Huynh, "Optimizing the electrification of cargo handling operations at air force bases," in *2025 A&WMA Annual Meeting and Conference*, 2021.
- V. Pandey, **Patil, Priyadarshan**, M. Ganesh, and S. Boyles, "Computationally - efficient decomposition heuristic for the static traffic assignment problem," in *2020 INFORMS TSL conference*, 2020.

Preprints (4 total preprints)

- D. R. Chauhan, A. Unnikrishnan, S. Boyles, and **Patil, Priyadarshan**, *Equitable relief prepositioning and distribution for post-disaster scenarios using drone deliveries*, 2024.
- **Patil, Priyadarshan**, *A fresh look at symmetric traffic assignment and algorithm convergence*, 2023.

Ownership
Bias for Action
Innovation
Organization
Deliver Results
Organization



EDUCATION

Ph.D. in Operations Research and Industrial Engineering
The University of Texas at Austin

Dissertation title: Traffic Assignment – Applications and Efficacy

M.S.E. in Transportation Engineering
The University of Texas at Austin

Thesis title: Simulation evaluation of emerging estimation techniques for multinomial probit models

B.Tech. in Civil Engineering
IIT Madras

Thesis title: Network Algorithms for Sustainability Objectives

SERVICE

Grant Reviewer
National Academy of Sciences

ACRP and NCHRP program grants ($750K)

Grant Reviewer
National Science Foundation

Arctic Social Sciences Program grant ($800K)

Journal Guest Editor
Modern Transportation

Paper Reviewer
Over 120 Reviews

- Transportation Research Part B
- Transportation Research Part C
- Transportation Research Part E
- Transportation Research Part F
- Transportmetrica A: Transport Science
- Transportation Letters
- Networks and Spatial Economics
- Transportation Research Record
- Transportation Research Interdisciplinary Perspectives
- TRB Annual Meeting
- ASEE Annual Conference
- And more