

# Priyadarshan Patil

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## Education

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### The University of Texas at Austin

Aug' 17 - Current

Ph.D. – Operations Research and Industrial Engineering ◇ Graduate Certificate in Engineering

Education (*Completed*) ◇ GPA : 3.96/4.00

### The University of Texas at Austin

Aug' 15 - Dec'16

M.S. – Civil and Architectural Engineering (Transportation Engineering) ◇ GPA : 3.94/4.00

### Indian Institute of Technology, Madras

Jul' 11 - May' 15

B.Tech – Civil Engineering ◇ Minor : Innovation and Social Entrepreneurship ◇ GPA :8.48/10.00

## Refereed publications

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6. Gokalp C., Patil P., Boyles S.D., Post-disaster recovery sequencing strategy for road networks. (*Under review*)
5. Venkatraman R., Boyles S.D., James R., Unnikrishnan A., Patil P., Adaptive routing behavior with real-time information under multiple travel objectives. *Transportation Research Interdisciplinary Perspectives*, 10(100395).
4. Andrews M.E. & Patil P., A systematic review of argument assessment frameworks in engineering education. *ASEE Annual Conference and Exposition, Conference Proceedings (Accepted, Vol. 2021)*
3. Patil P., Ross K., and Boyles S., Convergence behavior for traffic assignment characterization metrics. *Transportmetrica A: Transport Science*, 17(4), 1244-1271.
2. Astroza S., Patil P., Smith K., and Bhat C., Transportation planning to accommodate needs of wind energy projects. *Transportation Research Record: Journal of the Transportation Research Board*, (2669), 10-18. - **Ryuichi Kitamura paper award, 2017**
1. Patil P., et al., Simulation evaluation of emerging estimation techniques for multinomial probit models, *Journal of Choice Modelling*, 23, 9-20.

## Conference Presentations

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11. Andrews M.E. & Patil P., A systematic review of argument assessment frameworks in engineering education. *ASEE Annual Conference and Exposition 2021 - Long Beach, CA (Accepted)*
10. Gokalp C., Patil P., Boyles S., Post-disaster recovery sequencing strategy for road networks. *100th Annual Meeting of the Transportation Research Board - Washington, DC/Virtual*
9. Patil P., Liao C., Boyles S., Effects of origin-destination matrix errors on user equilibrium. *100th Annual Meeting of the Transportation Research Board - Washington, DC/Virtual*
8. Gokalp C., Patil P., Khosvirikia F., Boyles S., Post-disaster recovery sequencing strategy for road networks. *INFORMS Annual Meeting, 2020 - Maryland/Virtual*
7. Patil P., Liao C., Boyles S., Effects of origin-destination matrix errors on user equilibrium. *INFORMS Annual Meeting, 2020 - Maryland/Virtual*
6. Pandey V., Patil P., Ganesh M., and Boyles S., Computationally-efficient decomposition heuristic for the static traffic assignment problem *2020 INFORMS Transportation Science and Logistics Society Conference - Arlington, VA*
5. Patil P., Ross K., and Boyles S., Convergence behavior for traffic assignment characterization metrics. *99th Annual Meeting of the Transportation Research Board - Washington, DC*
4. Patil P., Ross K., and Boyles S., Convergence behavior for traffic assignment characterization metrics. *INFORMS Annual Meeting, 2019 - Seattle, WA*
3. Pandey V., Patil P., and Boyles S., Online routing of heterogeneous vehicles on stochastic time-varying managed lane networks. *INFORMS Annual Meeting, 2018 - Phoenix, AZ*
2. Boyles S., Patil P., and Alexander W., Quantifying disruption impact across transportation networks, *INFORMS Annual Meeting, 2018 - Phoenix, AZ*
1. Astroza S., Patil P., Smith K., and Bhat C., Transportation planning to accommodate needs of wind energy projects. *96th Annual Meeting of the Transportation Research Board - Washington, DC*

## Technical Report

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2. Boyles S., Patil P., Pandey V., and Yahia C., Beyond political boundaries: Constructing network models for megaregion planning. *USDOT Tier 1 Center: Cooperative Mobility for Competitive Megaregions, CM2-11.*
1. Astroza S., Patil, P., Smith K., Kumar V, Bhat C., Zhang Z., Texas transportation planning for future renewable energy projects, *Texas Department of Transportation, FHWA/TX-16/0-6850-1*

## Awards

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6. **Professional Development Award, 2020** - Awarded by the Graduate School at UT Austin for presentations at the 2020 INFORMS annual meeting and 2021 TRB annual meeting
5. **Winner, fORged by Machines competition, 2019** - Awarded by INFORMS computing society cluster and AWS for the best demand prediction/inventory control model
4. **Professional Development Award, 2019** - Awarded by the Graduate School at UT Austin for presentations at the 2019 INFORMS annual meeting
3. **Scholarship for Graduate Study in ITS, 2018** - Awarded by Intelligent Transportation Society Texas chapter for academic achievements
2. **Professional Development Award, 2018** - Awarded by the Graduate School at UT Austin for presentations at the 2018 INFORMS annual meeting
1. **Ryuichi Kitamura paper award, 2017** - Best Paper award for a professor- student pair awarded by Travel analysis methods section (ADB00) of the Transportation Research Board

## Coursework Highlights

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**UT Austin (PhD)** - Data Science Lab, Public Transportation Engineering, Network Optimization, Linear Programming, Integer Programming, Applied Engg. Data Analysis/Visualization/Optimization, Applied Stochastic Processes, Markov Decision Processes, Queueing Theory, Production/Inventory Control, Decision Analysis

**UT Austin (MS)** - Transportation Network Analysis, Transportation Systems Management, Logistic Regression/Discrete Choice, Dynamic Traffic Assignment, TransCAD GIS, Logistics Analytics

**IIT Madras** - Transportation Network Analysis, Computer Applications in Traffic & Highway Engineering, Probability-Statistics and Stochastic Processes, Calculus I & II

## Relevant Technical Skills

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**Languages:** C, C++, Python, MATLAB, R, AMPL

**Tools/Packages:** SPSS, Stata, TransCAD, OpenCV, Vissim, ArcGIS

**Python libraries:** Pandas, Numpy, Scipy, Matplotlib, Seaborn, Sklearn, NLTK, Catboost/XGBoost, Tensorflow

## Academic Employment

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**Graduate Teaching Assistant:** Probability and statistics (Spring 2019, Spring 2020), Civil engineering systems (Fall 2018), Transportation Systems (Fall 2016)

- **Probability and Statistics:** Assisted course design, evaluation design and handled grading (Overall Rating: 4.33/5)

- **Civil Engineering Systems:** Created new modules on data analysis and linear regression, in addition to conducting regular lab sessions and grading (Overall Rating: 4.46/5)

**Graduate Research Assistant:** Boyles research group (Fall 2017-current), Bhat research group (Fall 2015-Fall 2016)

## Research

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**Masters Thesis : Simulation Evaluation of Emerging Estimation Techniques for**

**Multinomial Probit Models**

Jan' 16 - Dec' 16

Advisor: Dr. Chandra Bhat, UT Austin

Evaluated computational performance of MACML, GHK-ML, GHK-CML, GHK-SGI and Bayesian MCMC for multinomial probit models across different simulation settings

**Bachelors Thesis : Network Algorithms for Sustainability Objective**

Aug' 14 - May' 15

Advisor: Dr. Karthik K Srinivasan, IIT Madras

Formulated a multi-objective multiple user class gradient projection algorithm for the traffic assignment problem (TAP) and implemented on the Chennai road network

## Major Projects

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1. Simulation of liver transplant systems for multiple liver quality thresholds
  - Designed and simulated liver transplant systems for heterogeneous patient groups under various liver allocation policies.
2. Intersection redesign study for West Lake Hills City
  - Conducted a traffic count study and traveller satisfaction survey for intersection traffic configurations
  - Presented results of the study to the city council and general public and made recommendations for changing intersection configuration
3. Modeling inequity through dynamic traffic assignment (DTA)
  - Designed a parking search problem with departure time choice to model inequity
  - Derived analytical solutions for the parking search problem with PQ model integration
4. Planning for environmental effect of pollutants by Visualization in TransCAD
  - Performed 4-step planning process, linked trip distribution to emission density and prepared visualizations to pinpoint areas of maximum impact for easy remedial measures

## Mentoring Experience

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- Graduates Linked with Undergraduates in Engineering (GLUE) mentor, Fall 2018 - Spring 2019
  - Undergraduates supervised: Katherine Ross, Bradley Gladdens

## Professional Involvement

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- Member, Institute for Operations Research and Management Sciences (INFORMS)
- Friend of ADB40 committee, Transportation Research Board (TRB)
- Member, Institute of Transportation Engineers (ITE) and Intelligent Transportation Society of America (ITS America)
- Secretary, ITE/ITS student chapter at the University of Texas at Austin (*Best TX student chapter award, 2019*)
- Secretary, INFORMS student chapter at the University of Texas at Austin
- ORIE Representative, Women's Transportation Seminar (WTS) student chapter (*Teamwork excellence award, 2019; Support excellence award, 2019*)

## Research Service

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- Paper Referee, Transportation Research Board (TRB) annual meeting (2018-current)
- Paper Referee, Transportation Research Record (TRR) (2018-2019)
- Paper Referee, American Society for Engineering Education (ASEE) annual conference (2021)

## Miscellaneous

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- National Intercollegiate Racquetball Player, UT Austin.
- Intramural Racquetball Champion, Fall 2018, UT Austin
- 99.99 %ile in CAT 2014 (conducted by IIMs), ranked among top 25 among over 1,70,000 candidates.
- KVPY fellowship granted by the Dept. of Science and Technology, Govt. of India.