KRISHNA MURTHY GURUMURTHY

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EDUCATION

The University of Texas at Austin, USA *expected* May 2021

Doctor of Philosophy in Civil Engineering (*Transportation Engineering*) GPA: 4.00 / 4.00

Courses 'Dynamic Traffic Assignment' and 'Bayesian Statistical Methods'

The University of Texas at Austin, USA December 2017

Master of Science in Civil Engineering (*Transportation Engineering*) GPA: 3.81 / 4.00

Thesis Perceptions and Preferences of Autonomous and Shared Autonomous Vehicles: A Focus on Dynamic Ride-Sharing

Courses 'Statistical Modeling I', 'Advanced Theory of Traffic Flow', 'Optimization 1', 'Design and Evaluation of Ground-based Transportation Systems', 'Sensors and Signal Interpretation', 'Transportation Network Analysis', 'Urban Transportation Planning' and 'Linear Regression and Discrete Choice Methods'

National Institute of Technology Karnataka (NITK), India May 2016

Bachelor of Technology in Civil Engineering GPA: 8.92 / 10.00

Courses 'Highway and Traffic Engineering', 'Railways, Tunnels, Harbors and Airports' and 'Traffic Engineering and Management'.

EXPERIENCE

Graduate Research Assistant Supervisor: Dr. Kara Kockelman Fall 2016 – Present

Responsible for an ANL project focusing on transportation planning/forecasting for autonomous vehicles *UT Austin*

Research Aide – Technical Supervisor: Dr. Joshua Auld Summer 2018

Tasked with developing algorithms for the control of shared-automated vehicle fleets and implementing the control & optimization algorithms in ANL's POLARIS *Argonne National Laboratory*

Graduate Teaching Assistant Course Instructor: Dr. Kara Kockelman & Ms. Heidi Ross* Spring 2017 & 2018*

Responsible for students' performance, grading, lab lectures (on MicroStation and GEOPAK) and final design-project outcome in a capstone course for transportation engineering *UT Austin*

Project Research Intern Supervisors: Drs. Tom V Mathew & Gowri Asaithambi Spring 2016 – Summer 2016

Tasked with devising incorporating traffic models into existing simulation software *IIT Bombay*

Summer Research Intern Supervisor: Dr. Tom V Mathew Summer 2015

Tasked with devising and programming microscopic traffic model and simulation software in MATLAB *IIT Bombay*

PAPERS & PRESENTATIONS (selected)

- **Gurumurthy, K.M.**, Kockelman, K. and Simoni, M.D. 2018. Benefits & Costs of Ride-Sharing in Shared Automated Vehicles Across Austin, Texas: Opportunities for Congestion Pricing. Under review for presentation at the 98th Annual Meeting of the Transportation Research Board.
- Mahmoud, J., Auld, J., and **Gurumurthy, K.M.** 2018. Intra-Household Fully Automated Vehicles Assignment Problem: Model Development and Case Study. Under review for presentation at the 98th Annual Meeting of the Transportation Research Board.
- Simoni, Michele D., Kockelman, K., **Gurumurthy, K.M.** and Bischoff, J. 2018. Congestion Pricing in a World of Self-Driving Vehicles: An Analysis of Different Strategies in Alternative Future Scenarios. Under review in *Transportation Research Part C: Emerging Technologies* and for presentation at the 98th Annual Meeting of the Transportation Research Board.
- Becker, H., Becker, F., Abe, R., Bekhor, S., Belgiawan, P.F., Compostella, J., Frazzoli, E., Fulton, L.M., Garrick, N., Bicuda, D.G., **Gurumurthy, K.M.**, Hensher, D.A., Joubert, J.W., Kockelman, K.M., *et al*. 2018. Impact of Vehicle Automation and Eletric Propulsion on Production Costs for Mobility Services Worldwide. *Working Paper.*
- **Gurumurthy, K.M.** and Kockelman, K. 2018. Modeling Americans' Autonomous Vehicle Preferences: A Focus on Dynamic Ride-Sharing, Privacy & Long-Distance Mode Choices. Accepted for presentation at the 98th Annual Meeting of the Transportation Research Board.
- **Gurumurthy, K.M.** and Kockelman, K. 2018. Analyzing the Dynamic Ride-Sharing Potential for Shared Autonomous Vehicle Fleets using Cellphone Data from Orlando, Florida. *Computers, Environment and Urban Systems* 71: 177-185.

- Invited Speaker, at the Machine Intelligence in Autonomous Vehicles Summit held in San Francisco, presentation titled "Anticipating a World of Shared Fully-Automated Vehicles" on behalf of Dr. Kara Kockelman, 23-24 March, 2017.

SOFTWARE SKILLS

MATLAB • TransCAD • Java • Microsoft Office Suite • R • ArcGIS • C# • C++ • Python

SELECT RESEARCH PROJECTS

Implementing Shared Autonomous Vehicles in POLARIS and Assessing the Impact of Dynamic Ride-Sharing in Chicago Fall 2018 – Present

Supervisor: Dr. Kara Kockelman (Sponsored by Argonne National Laboratory) *UT Austin*

POLARIS, an agent-based discrete event simulator developed by the Argonne National Laboratory, is being enhanced to simulate shared autonomous vehicles with dynamic ride-sharing capabilities. Policies such as geofencing the service, pre-determined pick-up and drop-off spots, and congestion pricing are being analyzed to understand the future of mobility.

Agent-Based Microsimulations of Shared Autonomous Vehicles in Austin using Dynamic Ride-Sharing on MATSim Fall 2016 – Summer 2018

Supervisor: Dr. Kara Kockelman (Sponsored by TxDOT) *UT Austin*

MATSim (Multi-agent Transport Simulation), an agent-based simulation model was studied to include shared autonomous vehicle simulations. Tolling and AVs were incorporated into an existing SAV module. Several scenarios were run based on different congestion-pricing and fare policies with dynamic ride-sharing being an integral part of the analysis.

Analyzing the Dynamic Ride-Sharing Potential for Shared Autonomous Vehicle Fleets Using Cellphone Data from Orlando, Florida Spring 2017 – Spring 2018

Supervisor: Dr. Kara Kockelman (Sponsored by TxDOT) *UT Austin*

Cellphone data obtained for Orlando was spatially and temporally disaggregated to have a resolution of one minute and intersection-level detail. Disaggregated data was used to assess the dynamic ride-sharing potential for the region by comparing origin-destination versus en route dynamic ride-sharing. A simulation of a fleet of autonomous vehicles was used to estimate optimal fleet sizes for the region.

CO-CURRICULARS & VOLUNTEERING

Member & Ex-Officer, Women's Transportation Seminars, UT Austin Student Chapter Fall 2017 – Present

Member & Past President, Institute of Transportation Engineers, UT Austin Student Chapter Fall 2016 – Present

Member & Ex-Officer, Intelligent Transportation Society of America, UT Austin Student Chapter Fall 2016 – Present

Mentor, Graduates Linked with Undergraduates in Engineering (GLUE) Fall 2017

Lead Event Planner, Texas Student Leadership Summit Fall 2017

Core Team Member, UT Austin Traffic Bowl Team Spring 2017 – Summer 2017

PEER REVIEWER - JOURNALS

Transportation Research – Part B, Part C • *Computers, Environment and Urban Systems* • *Transport Policy* • *Transportation* • *Transportation Research Record: Journal of the Transportation Research Board*

AWARDS & ACHIEVEMENTS

- Awarded the Graduate Research Award by the Airport Cooperative Research Program for the period 2018-19
- Awarded the CAS-ITE and ITS Texas scholarships
- Awarded the Texas district ITE fellowship
- Part of the UT Austin Traffic Bowl Team that won the Texas district championship in Spring 2017 and came second in the International championships in Summer 2017

MENTEES

Hyungseung (Jeffrey) Hahm • Evelyn Reyes (GLUE)