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*)

Current 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 two TxDOT-funded projects focusing on transportation planning for autonomous vehicles *UT Austin*

Graduate Teaching Assistant Course Instructor: Dr. Kara Kockelman Spring 2017& 2018

Responsible for students' performance, grading, lab lectures and final design-project outcome in a capstone course for transportation engineering in the Department of Civil, Architectural and Environmental 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

- **Gurumurthy, K.M.**, Kockelman, K. and Hahm, H. Deeper Understanding of Americans' Autonomous Vehicle Preferences: Questions on Long-Distance Travel, Ride-Sharing, Privacy, & Crash Ethics. Presented at the 2017 Automated Vehicles Symposium in San Francisco, California, 11-13 July, 2017.
- **Gurumurthy, K.M.** and Kockelman, K. 2018. Analyzing the Dynamic Ride-Sharing Potential for Shared Autonomous Vehicle Fleets using Cellphone Data from Orlando, Florida. Accepted for presentation at the 97th Annual Meeting of the Transportation Research Board in January, 2018 and under review for publication in *Computers, Environment and Urban Systems*.
- Kotagi, P., Asaithambi, G. and **Gurumurthy, K.M**. 2018. Development of Microscopic Simulation Model for Bidirectional Mixed Traffic on Urban Roads. Accepted for presentation at the 97th Annual Meeting of the Transportation Research Board in January, 2018 and under review for publication in *Transportation Research Record*.
- 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.
- **Gurumurthy, K.M.**, Munigety, C.R., Peeta, S., Mathew, T.V. and Asaithambi, G. 2017. An Integrated Pedestrian Crossing Behavioural Model Using Spring-mass-damper Dynamics. Proceedings of the 96th Annual Meeting of the Transportation Research Board, Washington, D.C. (No. 17-04270).
- **Gurumurthy, K.M.,** Singh, V. and Asaithambi, G. 2016. Microscopic Analysis of Lateral and Longitudinal Gaps in Mixed Traffic Conditions with Weak Lane Discipline. Proceedings of the 12th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (No. 46).
- Munigety, C.R., Gupta, P.A., **Gurumurthy, K.M**., Peeta, S. and Mathew, T.V. 2016. Vehicle-type Dependent Car following Model Using Spring-mass-damper Dynamics for Heterogeneous Traffic. Proceedings of the 95th Annual Meeting of the Transportation Research Board, Washington, D.C. (No. 16-5025).

SOFTWARE SKILLS

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

SELECT RESEARCH PROJECTS

Nationwide Survey on the Implications of Autonomous Vehicles in the United States Spring 2017 – Present
Supervisor: Dr. Kara Kockelman (Sponsored by TxDOT) *UT Austin*

A survey with around 70 questions was created to address various issues regarding autonomous vehicles. The main topics targeted in this survey were privacy, security and ethics and questions regarding dynamic ride-sharing. 2,588 respondents were acquired using a panel of Americans by Survey Sampling International.

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

Agent-Based Microsimulations of Shared Autonomous Vehicles in Austin using Dynamic Ride-Sharing on MATSim Fall 2016 – Present
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 are being run. Dynamic ride-sharing will be added in the coming months.

Evaluating Traffic Characteristics by Mining IMU Data: An Exploratory Study Spring 2017
Supervisor: Dr. Christian Claudel (In a graduate course: CE 397) *UT Austin*

Inertial Measurement Unit (IMU) fitted with a GPS device was used to collect 3-4 hours' worth of data over a period of 7 days. Data was cleaned and processed to ensure segmented continuity and an unsupervised machine learning model was applied. The predictive power of certain pitch and acceleration variables from the IMU was high. The project concluded that better data collection efforts and data tagging can ensure high prediction of traffic characteristics using an IMU.

CO-CURRICULARS & VOLUNTEERING

Corporate Outreach Coordinator, 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
Volunteer, Clean-up drive organized by Capital Area Section – ITE Spring 2017

PEER REVIEWER - JOURNALS

Transportation Research – Part B • *Computers, Environment and Urban Systems* • *Transport Policy* • *Transportation*

AWARDS & ACHIEVEMENTS

- 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)