Siddharth Gupta

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EDUCATION

- **Massachusetts Institute of Technology** — Boston, USA
  MS: Interdisciplinary Transportation Engineering — *August 2015 - June 2017*
- **Indian Institute of Technology Madras** — Chennai, India
  B.Tech. & M.Tech.: Civil and Infrastructure Systems Engineering — *July 2010 - May 2015*

RESEARCH WORK

- **Research Assistant at Human Mobility and Networks (HuMNet) Lab** — MIT, Cambridge
  Data driven modeling for high resolution urban mobility — *Sept 2015 - Present*
  - Generating a system model for Greater Boston area which simulates people's movement and estimates building occupancy profiles
  - Using multiple data sources including Cell Phone and Wifi data from Skyhook to develop block level occupancy profiles and improve energy efficiency
- **Occupational Trainee at the University of Queensland** — Brisbane, Australia
  Development of service performance analysis tools for use in South East Queensland — *Dec 2013 - May 2015*
  - Optimization of schedule matching using least cost matching algorithms
  - Use of Machine Learning algorithms for determination to critical flows in transit systems
  - Multinomial Logit modeling for traveler route choice
  - Presented results at the International Smart Card Conference in Gifu, Japan
- **Research Assistant at the ITS Lab** — IIT Madras
  Development of a Advanced Traveler Information System for Chennai — *May 2013 - May 2015*
- **Technical Consultant for MTC-Chennai and CMRL** — Chennai City Connect, Chennai
  CCC which is a leading NGO in urban management and planning — *April 2013-July 2013*
  - Utilization of Electronic Ticketing Machine data for fare redefinition to promote short distance travel
  - Determination of feeder bus routes to best serve the upcoming Chennai Metro

PROGRAMMING SKILLS

- Machine Learning, Python, Matlab, R, SQL, Git, Java, Javascript, C++
- IoT technologies, Raspberry Pi and Arduino programming

PUBLICATIONS

- **Data Mining and Modeling for Smart Transit Management** — CASPT 2015, Rotterdam
  Gupta, S., Hickman, M.D., Srinivasan, K.K.
  - Analysis of real-time and pseudo real time smart card data for optimizing service performance and modeling traveler behavior
- **Evaluation and Selection of Operational Parameters for Travel Time prediction for Real-time Information Systems** — IEEJ- submitted
  Gupta, S., Prakash, A.R. and Srinivasan, K.K.
  - Focuses on fusion techniques for information produced in real time, using forecasting models and those stored historically
- **Development and Evaluation of Advanced Traveller Information Systems for Indian Cities A Case Study in Chennai City** — IEEJ- submitted
  Srinivasan, K.K., Ramadurai, G., Prakash, A.R., Gupta, S., Sivanandan, Vanajakshi, L.D.
  - Evaluates and records the experience of developing the first real time information system for heterogeneous traffic flow

RELEVANT COURSE WORK

- Machine Learning- Gradient descent, Logistic Regression, Neural networks, SVMs, Kernels
- Analyzing Choice- regression models, logit, probit and nested logit modeling and their implementation
- Data Analysis- Organizing an analysis- exploration to modeling and inference using R

- Network Analysis- Shortest path, Minimum Cost, Maximum Flow problems- theory and implementation
- Probability, Optimization, Linear Algebra, Calculus, Differential Equations
- Transportation demand and economics- Theory of the firm, Cost function, Pricing, Uncertainty, Revenue Management
- Media Lab Courses: City Science, Sensor Technologies for interactive environment
- Data Structures and Algorithms, Microeconomics

SELECT PROJECTS

- **Winner at the Disrupting Mobility Hackathon** Media Lab, MIT
  - Built prototype of a sensor mesh network to quickly evaluate damage during earthquakes on a large scale
  - Prioritizing rescue operations and even mobilize robots and autonomous vehicles for immediate relief.
- **Temporal Segmentation of Travelers and Capturing OD Perception** Brisbane, Australia
  - Identification of 'frequent' users of transit services and segmentation based on behavior
  - Relating clusters to social classes such as school students, college students, office goers etc.
- **AVL System data extraction research portal** ITS Lab, IIT Madras, Chennai
  - Realtime tracking of GPS devices from KML files obtained via HTTP requests to vendor's server
  - Realtime processing of extracted runs to analyze speed, travel times, delays and more
- **Evaluating impact of neighboring vehicles on driver behavior** ITS Lab, IIT Madras, Chennai
  - Used vehicle detection from image processing to generate trajectories
  - Classification of neighboring vehicles into groups and quantifying influence of each group
- **Apartment Choice Survey** Concordia University, Montreal
  - Identification of factors that college students consider when deciding where to live
  - Organizing focus groups, Fractional Factorial survey design and Logit modeling
- **Changing Land Use Pattern of Chennai** IIT Madras, Chennai
  - Utilizing a time series of Landsat images to evaluate changes in land use patterns
  - PCA, Supervized and unsupervized classification and other Remote Sensing applications
  - Detection of mineral resources. Top of class for the course

OTHER WORK EXPERIENCE

- **Teaching Assistant, IIT-Madras** *July 2014- Nov 2014*
  Infrastructure Planning and Management
- **Campus Ambassador, CollegeFeed (acquired by AfterCollege), Montain View** *Jan 2013- March 2015*
- **Exchange Semester at Concordia University, Montreal** *Jan 2014- May 2014*

EXTRA CURRICULARS ACTIVITIES

- Member of MIT Club squash team
- Part of IIT-Madras Squash Contingent that won Gold medal at Inter-college sports fest
- Hostel Captain for team that bagged Silver medal at Squash Schroeter
- Silver medalist in Swimming Medlay Schroeter
- Bronze medalist in 50m Free-style swimming relay Schroeter
- 10th Position at MARG Chennai 10km race