Abhilash Chandra Singh

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EDUCATION

Ph.D., Transportation Engineering *2019 - present*
Imperial College London, UK

M.S., Civil and Environmental Engineering *2016 - 2018*
The University of Texas at Austin, USA

B.Tech., Civil Engineering *2012 - 2016*
Indian Institute of Technology Bombay, India &
The Cooper Union for the Advancement of Science and Art, USA

ACHIEVEMENTS & AWARDS

Department Dixon Scholarship *UK, 2019 - 2023*

Wellcome Trust Pathways Scholarship *UK, 2019 - 2023*

Professional Development Award *Texas, 2018*

Texas District Student Fellowship *Texas, 2017*

Graduate fellowship to study at UT Austin *Texas, 2016*

University of Alberta Research Experience (UARE) fellowship *Canada, 2015*

Inaugural IITBAA-NY Chapter exchange scholarship *New York, 2014*

All India Rank 1,321 (amongst 500,000), IIT Joint Entrance Exam *India, 2012*

All State Rank 19 in Mathematics Olympiad (amongst 100,000) *India, 2010*

WORK EXPERIENCE

Senior Data Scientist **ASDA Business Services**
Leeds, UK 2021 - present
Working within the ASDA Business Services Digital Transformation group to provide machine learning and data products expertise to support activities of the business. Build products in Microsoft Azure with extensive use of Apache Spark and Delta within Databricks. Use cases supported includes commercial forecasting and supply chain forecasting. Participating in best practice in ML and Data Science such monitoring, MLOps as well as technologies such as Databricks.

Data Science Researcher **Alan Turing Institute**
Leeds Institute of Data Analytics, UK Summer 2021
Developed novel statistical and Machine Learning solutions to predict sales for ASDA sales data of over 93 million data points, for 150 selected Product Profile Groups (PPGs), at over 600 ASDA stores over a three year period. Performed extensive exploratory analysis of the data, applied linear models, generalised linear models, multilevel regression and random forest methods to unravel weather-sales relationship and increase forecasting accuracy.

Research Assistant **Pathways to Equitable Healthy Cities**
Imperial College London, UK 2019 - present
Co-developed a GIS-database to integrate both opportunity information and transport data, thereby leveraging this unique database to develop novel accessibility measures for London. Developed the first ever London specific accessibility-tool which includes the impacts of air pollutants, exposure to crime and quality of destinations by transport modes. Novel research studies based on this research

are detailed in publications.

Research Assistant **Center for Transportation Research**
Austin, Texas Spring 2019
Established transit performance and reliability metrics to develop an evaluation tool for arterial corridors in Austin, Texas. Evaluation tool performed at intersection of regional and state-wide big data source to provide a transit system assessment. Visualization and algorithm development for the metrics suitable for Austin arterial corridors were developed with a team of three researchers.

Research Assistant **ItalConsult & MOTC Qatar**
Austin (remote) 2017 - 2018
In this project in collaboration with University of California - Santa Barbara and Arizona State University, a new version of an activity-based travel demand forecasting model is created for the Ministry of Transport and Communication (MOTC) Qatar. This simulator includes population synthesis that recreates the entire resident population of this region, provides locations for residences, workplaces, and schools for each person, estimates car ownership and type as well as main driver for each vehicle, and provides other key personal and household characteristics. Then, a synthetic schedule generator recreates for each resident person in the simulated region a schedule of activities and travel that reflects intra-household activity coordination for a day. These synthetic schedules are then converted to multiple Origin Destination (OD) matrices at different times in a day and used in other modeling tasks developed by ItalConsult.

Research Assistant **New York Metropolitan Transportation Council**
Austin (remote) 2016 - 2018
In this project in collaboration with Cambridge Systematics and Arizona State University, the activity-based travel demand forecasting model is updated for New York Metropolitan Transportation Council (NYMTC). This simulator includes population synthesis that recreates the entire resident population of this region, provides locations for residences, workplaces, and schools for each person, estimates car ownership and type as well as main driver for each vehicle, and provides other key personal and household characteristics. Then, a synthetic schedule generator recreates for each resident person in the simulated region a schedule of activities and travel that reflects intra-household activity coordination for a day. These synthetic schedules are then converted to multiple Origin Destination (OD) matrices at different times in a day and used in other modeling tasks developed by Cambridge Systematics.

Research Assistant **Texas Department of Transportation**
Austin 2016 - 2017
Identified potential options for coordinating state-wide and regional models, based on the chosen definition of consistency. Conducted zone and link-based aggregation on a toy network to evaluate the implications on traffic assignment. Updated state-of-the-art four-step transportation planning model using SAM framework.

Hindustan Construction Company, India *Fall 2015*

Research Intern **Hindustan Construction Company**
Mumbai, India Fall 2015
Designed and analysed pre-stressed concrete bridges using STADD Pro, AutoCAD, MS-Excel in accordance with Indian standard codes (IRC 112, 18, 21, 456, 1343).

Research Intern **University of Alberta, Canada**
Landmark Group of Builders Summer 2015
Examined the capacity of Solar Photo-Voltaic (PV) systems to facilitate development of net zero homes. Established vital input variables to estimate the total energy output of Solar PV systems. Investigated simulation software - PVWatts and RetScreen, and compared their results with real-time data. Achieved a prediction accuracy of 95 percent in MATLAB and R using feed-forward neural network.

Research Intern **Indian Institute of Management**
Lucknow, India Summer 2014
Reviewed literature and analysed the dynamic pricing strategies on low-cost passenger aircrafts. Concluded 'Leisure pricing to be higher than business pricing' by implementing Ordinary Least Squares, Mixed Model and General Method of Moments regression on the effect of destination on price

ACADEMIC SERVICE

Steering Committee Member: Imperial Network of Excellence in Sustainability through Life Cycle Approaches *2021 - present*
Department Academic Mentorship Program (DAMP): Provided one-on-one counseling and teaching to sophomore students at Indian Institute of Technology Bombay *2015 - 2016*
Techlabs London: Volunteer mentor to two groups of total 25 participants providing support on data science and machine learning *2021 - present*
Urban Systems Lab, Imperial College London: Organized bi-weekly seminar series with over 12 national and international guest presentations *2021 - present*