Debashis Das

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Executive Summary

- 4+ years of experience in developing Intelligent Traffic Signal Control Systems (based on MILP and Dynamic programming model) in a Connected and Autonomous vehicle environment
- 3+ years of experience in utilizing Data Visualization tools to evaluate the performance of the traffic safety and mobility solutions
- 2+ years of experience in developing Traffic Flow prediction model using Machine Learning algorithms

Education

The University of Arizona   Tucson, Arizona

Doctor of Philosophy (PhD) in Systems Engineering, Minor in Statistics   *Aug. 2017 – May 2022(Expected)*

- **Dissertation:** Integrating Deep Learning Approaches to Estimate Traffic State in Real-Time and Develop Intelligent Traffic Signal Control Systems in Connected Vehicle Environment
- **Advisor:** Dr. K. Larry Head

The University of Arizona   Tucson, Arizona

Master of Science in Industrial Engineering   *Aug. 2017 – Dec. 2021(Expected)*

- **Key Courses:** Fundamentals of Data Science, Statistical Machine Learning, Advanced Statistical Regression, Fundamentals of Optimization, Nonlinear Optimization, Stochastic Modelling, Traffic Flow & Capacity Analysis

Bangladesh University of Engineering and Technology   Dhaka, Bangladesh

Bachelor of Science in Industrial and Production Engineering   *May. 2010 – Sep. 2015*

- **Dissertation:** Optimization of Yarn Demand Forecasting of a Garment Industry Using Artificial Neural Network Method

Research Projects

Multi-modal Intelligent Traffic Signal System | *C++, Python, Docker, CyVerse*   Dec 2017 – Present

- MMITSS is sponsored by the Federal Highway Administration's Connected Vehicle Pooled Fund Study group, USA.
- MMITSS focuses on developing traffic signal priority control applications based on connected vehicle technologies
- Developed priority control algorithms: Emergency Vehicle Priority (EVP), Transit Signal Priority (TSP), Freight Signal Priority (FSP), and Priority-based Coordination
- Developed scalable software in loop (SIL) and hardware in loop (HIL) simulation to evaluate the performance of the MMITSS priority control algorithms and the wireless communication devices before implementing in the field
- Conducted field testing, deployment, and validation of MMITSS using connected vehicles in the Maricopa County SMARTDrive Program[SM] test bed in Anthem, Arizona

In-vehicle Work-Zone Notification System for Connected Vehicles | *C++, Python*   Jun 2018 – May 2019

- This project focused on developing an in-vehicle alert system to notify the drivers about the dynamic conditions in work zones.
- Developed software components based on V2I communication technology to improve the situational awareness of freight drivers
- Developed a software in loop (SIL) simulation test platform for deployment testing and validation of the system
- Sponsored by Federal Motor Carrier Safety Administration, USA

IAM Smart RSU Algorithm Development and Evaluation | *Carla, Python*   July 2021 – Present

- This project is focused on developing a Smart RSU that will include powerful edge computing with advanced wireless communications using C-V2X, LTE, and wifi.
- Developing a CARLA-V2X simulator for evaluation of different scenarios where the Smart RSU can improve both safety and efficiency

Experience

Graduate Research Assistant at Transportation Research Institute June 2018 - Present
The University of Arizona *Tucson, Arizona*

Graduate Teaching Assistant Aug 2017 - May 2018
The University of Arizona *Tucson, Arizona*
- Courses: Engineering Economy (SIE-267)

Lecturer March 2017 - July 2017
BGMEA University of Fashion and Technology (BUFT) *Dhaka, Bangladesh*

Adjunct Lecturer Sep 2016 - April 2017
Sonargaon University *Dhaka, Bangladesh*

Technical Management Trainee Jan 2016 - Oct2016
Abul Khair Steel and Melting Limited (AKSML) *Chittagong, Bangladesh*
- Conducted feasibility study and process parameter optimization
- Performed material requirement and maintenance planning

Intern June 2014
Nestle Bangladesh Ltd. *Gazipur, Bangladesh*
- **Project:** Minimize the Rework and Wastage generation of Noodle line.

Skills

Software Development: C++, Python, Unix-Shell Scripting, Docker, Version Control (Git)

Programming and Statistical Languages: Python, R, Microsoft Excel

Simulation Software: VISSIM, CARLA, VISTRO, CORSIM, ARENA

Drawing and Designing Software: SolidWorks, AutoCAD, Catia

Talks and Presentations

Traffic Signal Priority Control Strategy for Connected Emergency Vehicles with Dilemma Zone Protection for Freight Vehicles
- Conference presentation at 100th Annual Meeting of the Transportation Research Board, Washington D.C., USA, Jan 2021
- Poster presentation at GradSlamxSIE,organized by SIE department of University of Arizona,Tucson, AZ, USA, Nov 2020

In-Vehicle Work Zone Notification System for Connected Vehicles
- Conference presentation at 99th Annual Meeting of the Transportation Research Board, Washington D.C., USA, Jan 2020

Priority Control Model for Multi Modal Intelligent Traffic Signal System
- Conference presentation at 2021 IISE Annual Virtual Conference and Expo, Montreal, Canada, May 2021

Intelligent Cooperative-Connected Autonomous Transportation Systems
- Poster presentation at 2019 Global Mining Group Leadership Summit,Tucson, AZ, USA, Jan 2020

Publications

- **Das, D.**, Altekar, N.V., Head, K.L. and Saleem, F., 2021. Traffic Signal Priority Control Strategy for Connected Emergency Vehicles with Dilemma Zone Protection for Freight Vehicles. Transportation Research Record, p.03611981211039157.

- Altekar, N.V., **Das, D.**, Head, L. and Saleem, F., 2021. Safety Assessment of Vehicle Traffic at Signalized Intersections using Vehicle-to-Infrastructure Communication Systems. In IIE Annual Conference. Proceedings (pp. 37-42). Institute of Industrial and Systems Engineers (IISE).

- Rifat, M., Rahman, M.H. and **Das, D.**, 2017, December. A review on application of nanofluid MQL in machining. In AIP Conference Proceedings (Vol. 1919, No. 1, p. 020015). AIP Publishing LLC

- **Das, D.**, Altekar, N.V. and Head, 2022. Priority Based Traffic Signal Coordination Systems with Multi-Modal Priority and Vehicle Actuation in a Connected Vehicle Environment. Transportation Research Record (under review)