# FERDOUS AL RAFI

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## **EDUCATION**

# Bangladesh University of Engineering and Technology

Feb. 2020 - Mar. 2025

Bachelor of Science, Civil Engineering Major in Transportation Engineering

#### RESEARCH INTERESTS

Multi-agent Reinforcement Learning, Artificial Intelligence, Intelligent Transportation Systems

# **PUBLICATIONS**

## **Accepted Papers**

1. J. Turnau, L. Da, K. Vo, F. A. Rafi, S. Bachiraju, T. Chen, and H. Wei, "Joint-Local Grounded Action Transformation for Sim-to-Real Transfer in Multi-Agent Traffic Control," arXiv.org, Jul. 21, 2025. https://arxiv.org/abs/2507.15174

## **Published Papers**

- 1. F. A. Rafi, "Analyzing the Robustness of Adaptive Traffic Control System Using Reinforcement Learning for Urban Traffic Flow" in 7th International Conference on Advances in Civil Engineering (ICACE), 2024
- 2. T. Ahmed, F. A. Rafi, and S. Mahmud, "A comparative analysis of different algorithms for optimizing cutting force components in turning stainless steel" in Lecture notes in mechanical engineering, 2022, pp. 1255–1264

## RESEARCH EXPERIENCE

Enhancing Urban Traffic Flow using Multi-Agent Reinforcement Learning in Adaptive Traffic Control System Nov. 2023 - Mar. 2025 Supervisor: Dr. Md. Shamsul Hoque

Undergraduate Thesis

· Utilized a simulation model to evaluate reinforcement learning(RL) algorithms for adaptive

- traffic control systems
- · Analyzed the robustness of RL based traffic control by examining 14 traffic conditions across 3 RL and 2 non-RL models

#### PROJECT EXPERIENCE

# LibSignal

Jan. 2024 – Present

 $GitHub\ Contributor$ 

DaRL Group, Arizona State University

- · Library developed by DaRL for applying reinforcement learning for traffic control
- · Committed 13 bug fixes to the repository that improved functionality
- $\cdot$  Modified a graph neural network based reinforcement learning model to manage heterogeneous networks

#### **SKILLS**

**Programming Languages** 

General Libraries Specialized Libraries

Simulation Others

Python, JavaScript, C++, C

NumPy, Pandas, TensorFlow, PyTorch Gymnasium, CleanRL, Stable Baselines3

SUMO, CityFlow

Git, LaTeX

#### **SCHOLARSHIPS**

## University Merit Scholarship

Jan. 2024

 $\cdot$  Obtained scholarships for placing in the top 10% in the 2019 batch of students during first year, second year and fourth year of university

Dean's List Jan. 2022

- · Placed on the Dean's List for exceptional results in January 2022
- · Placed on the Dean's List for exceptional results in January 2021

## WORK EXPERIENCE

Upwork

Dec. 2021 – Present

Freelancing Programmer

- · Worked independently with clients to gather a large amount of information from the internet using the Python programming language
- · Developed custom automation tools for data mining from multiple sources