

Amutheezan Sivagnanam

State College, PA | amutheezan.psu@gmail.com | [Scholar](#) | <https://www.linkedin.com/in/amutheezansivagnanam> | [Github](#)

SUMMARY

- **Work Authorization Status:** US Person (US Green Card / Lawful Permanent Resident), Open to Relocation
- **PhD Candidate and Research Assistant** in Computer Science specializing in **machine learning**.
- **Six years of academic research experience building scalable reinforcement learning and deep learning systems for efficient ML training and deployment. Two years of industrial experience in software development, behavioral driven testing and CI/CD while following agile practices.**
- Good **publication record with an h-index of 6 and 97 citations**, featuring in top-tier **AI and ML** conferences.

EDUCATION

August 2025

Pennsylvania State University, University Park, PA, **Computer Science**, Ph.D., Advisor: Dr. Aron Laszka

Dissertation: Application of Deep Reinforcement Learning to Solve Optimization Problems in Transportation Domains

August 2022

University of Houston, Houston, TX, **Computer Science**, M.S., Advisor: Dr. Aron Laszka

RESEARCH EXPERIENCE

Graduate Research Assistant, Pennsylvania State University, (August 2022 - Present)

- Devised and evaluated a **Transformer based multi-agent reinforcement learning algorithm** to solve the **emergency responder reallocation problem** that **reduces decision making time by 3 orders of magnitude**
- Leveraged a **deep reinforcement learning** approach to tackle the challenge of online vehicle routing with advance booking, enabling **prompt confirmation within seconds**.

Graduate Research Assistant, University of Houston, (September 2019 - August 2022)

- Introduced a novel **reinforcement learning** based solution approach to solve the problem of **online booking for offline vehicle routing problem** which resulted in **20 % reduction of operational costs** for the transit agency
- Introduced **novel problem formulation and algorithms** that **lower the energy costs by \$140k** annually for public transit agencies operating mixed fleets of buses.
- **Relevant Skills:** Python, Pytorch, Tensorflow, Scikit Learn, matplotlib, numpy, pandas, CPLEX, Gurobi, Mosek, OR-Tools, Spark, Amazon Web Services, SQL, MySQL, MongoDB, Reinforcement Learning, Bayesian Optimization, Statistical Analysis, Data Mining, DQN, DDPG, Transformers, Deep Learning, Clustering, Linux, MATLAB, Object Oriented Development, Github, Docker, C++, JAVA

SELECT PUBLICATIONS

Total Citations 97 | H-Index 6 | Conference, Journal Publications 10

A. Sivagnanam et al.; Multi-Agent Reinforcement Learning with Hierarchical Coordination for Emergency Responder Stationing. International Conference on Machine Learning. **ICML 2024. Core Ranking A***

A. Sivagnanam et al.; Offline Vehicle Routing Problem with Online Bookings: A Novel Problem Formulation with Applications to Paratransit. International Joint Conference on Artificial Intelligence. **IJCAI 2022. Core Ranking A***, Invited Talk: Vienna Austria

A. Sivagnanam et al.; Minimizing Energy Use of Mixed-Fleet Public Transit for Fixed-Route Service. AAAI Conference on Artificial Intelligence. **AAAI 2021. Core Ranking A***

SOFTWARE ENGINEERING EXPERIENCE

Software Engineer, LSEG Technology (January 2018 - July 2019)

- Introduced **unit testing** for libraries in the Post-Trade C++ codebase. Implemented and validated **database changes** for Post-Trade products for the Singapore Stock Exchange using **Behavior Driven Development (BDD)** testing approaches in **Java**. Contributed to the **CI/CD pipeline** of the Post-Trade product using **Python and Git**.

Software Engineering Intern, WSO2 Lanka PVT Ltd (July 2016 - December 2016)

- Developed an **alert generation system** to monitor disease outbreaks by analyzing descriptive data, triggering email and SMS notifications for widespread incidents using **HL7/FHIR data**. Additionally, implemented a mechanism to assess hospital functionality, such as bed and oxygen cylinder availability, based on admission and discharge messages.
- **Relevant Skills:** Python, C++, JAVA, JS, PHP, SQL, Object Oriented Development, Github, Linux, Agile Practices, Behaviour Driven Testing, CI/CD

REFERENCES

Dr. Aron Laszka (PhD Supervisor): aql5923@psu.edu

Assistant Professor, Pennsylvania State University

<https://aronlaszka.com>

Dr. Abhishek Dubey: abhishek.dubey@vanderbilt.edu

Associate Professor, Vanderbilt University

<https://abhishekdubey.bio>