

Amutheezan Sivagnanam

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U.S. Permanent Resident | [Scholar](#) | <https://www.linkedin.com/in/amutheezansivagnanam> | [Github](#) | Open to relocation

SUMMARY

- **PhD Candidate and Machine Learning Researcher** specializing in **Deep Reinforcement 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**, **testing** and **CI/CD** while following **agile practices**
 - Good **publication** record with an **h-index of 6** and **100+ citations**, featuring in top-tier **AI and ML** conferences
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EDUCATION

Ph.D. Computer Science, (August 2025): **Pennsylvania State University**, University Park, PA, Advisor: Dr. Aron Laszka

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

M.S. Computer Science, (August 2022): **University of Houston**, Houston, TX, Advisor: Dr. Aron Laszka

B.S. Computer Science and Engineering, (January 2018): **University of Moratuwa**, Moratuwa, Sri Lanka

RESEARCH EXPERIENCE

Graduate Research Assistant, *Pennsylvania State University*, (August 2022 - May 2025)

- 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
- **Skills**: Python, C++, Java, C, SQL, MySQL, MongoDB, SQLite, PyTorch, TensorFlow, Scikit-learn, Transformers, Machine Learning, Deep Learning, Computer Vision, **Reinforcement Learning**, DQN, DDPG, TRPO, PPO, GRPO, LLM, RLHF, RAG, Prompt Engineering, LangChain, Bayesian Optimization, Data Science, Data Visualization, Clustering, Statistical Analysis, Data Mining, SLURM, Ray, RLLib, OpenAI Gym, NumPy, pandas, matplotlib, Linear Programming, Integer Programming, CPLEX, Gurobi, Mosek, OR-Tools, Spark, **Amazon Web Services (Sage Maker, S3, Lambda)**, Git, Docker, Linux, Bash, Object-Oriented Development, MATLAB

SELECT PUBLICATIONS

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***, Invited Talk: Virtual Conference

SOFTWARE ENGINEERING EXPERIENCE

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

- Introduced **unit testing** for libraries in the Post-Trade C++ codebase, improving system performance and reliability
- Implemented and validated **Oracle database changes** for Post-Trade products for the Singapore Stock Exchange using **Behavior Driven Development (BDD)** testing approaches in **Java**, ensuring data integrity and system functionality
- Contributed to the **CI/CD pipeline** of the Post-Trade product using **Python and Git** ensuring seamless software updates

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

- Engineered an **alert generation system** to monitor disease outbreaks by analyzing descriptive **HL7/FHIR data**, automating email and SMS notifications, and supporting rapid decision-making through prompt data processing
- Developed a mechanism to evaluate hospital functionality by assessing bed and oxygen cylinder availability from admission and discharge messages, with **effective requirements gathering** and integration of **structured data processing**
- **Skills**: Python, C++, JAVA, JS, PHP, SQL, Oracle DB, Object Oriented Development, Github, Linux, Agile Practices, **Behaviour Driven Development (BDD)**, JIRA, Selenium, Vaadin, **Natural Language Processing (NLP)**, Data Analytics, HL7, FHIR, **CI/CD**

REFERENCES

Dr. Aron Laszka (PhD Supervisor)

Position: **Assistant Professor**

Affiliation: **Pennsylvania State University**

Email: aql5923@psu.edu

Phone: **814-865-1551**

Website: <https://aronlaszka.com>

Dr. Abhishek Dubey

Position: **Associate Professor**

Affiliation: **Vanderbilt University**

Email: abhishek.dubey@vanderbilt.edu

Phone: **615-322-8775**

Website: <https://abhishekdubey.bio>

Dr. Weidong Shi

Position: **Associate Professor**

Affiliation: **University of Houston**

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