

VIGNESH SUBRAMANIAN

Georgia Tech, Atlanta, GA

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[LinkedIn](#)

[GitHub](#)

[Google Scholar](#)

[Personal Website](#)

RESEARCH INTERESTS

I am a Ph.D. student at Georgia Institute of Technology working on reinforcement learning for reliable LLM-based agents. My research focuses on scalable RL methods, formal reasoning, and verification-inspired techniques for building agents that generalize, plan, and act safely.

EDUCATION

Georgia Institute of Technology

Ph.D. in Computer Science | 4th Year | GPA: 3.9

Advisor – Prof. Suguman Bansal | *Anticipated Graduation: December 2027*

Aug 2023 – Present

Georgia, USA

National Institute of Technology, Tiruchirappalli

B.Tech. - Electrical and Electronics Engineering

Minor - Computer Science Engineering

Aug 2019 – April 2023

Tiruchirappalli, Tamil Nadu

Relevant Coursework: Logic in Computer Science, SAT/SMT solvers, Machine Learning and Deep Learning, Software Analysis and Testing, Artificial Intelligence, Data Structures and Algorithms

SELECTED PUBLICATIONS

Decoupled Behavioral Cloning for Scalable Inductive Generalization in RL from Specifications

arXiv (under submission)

[\[Link\]](#)

Vignesh Subramanian, Subhajit Roy, Suguman Bansal

Certificate-Guided Evaluation of Reinforcement Learning Generalization

arXiv (under submission)

[\[Link\]](#)

Vignesh Subramanian, Djordje Zikelic, Suguman Bansal

Inductive Generalization in Reinforcement Learning from Specifications

Automated Technology for Verification and Analysis, 2025

[\[Link\]](#)

Vignesh Subramanian, Rohit Kushwah, Subhajit Roy, Suguman Bansal

Reinforcement Learning for Stochastic Max-Plus Linear Systems

IEEE Conference on Decision and Control, IEEE 2023

[\[Link\]](#)

Vignesh Subramanian, Farzaneh Farhadi, Sadegh Soudjani

A Novel Facial Emotion Recognition Model Using Segmentation VGG-19 Architecture

International Journal of Information Technology, Springer, 2023

[\[Link\]](#)

Vignesh Subramanian, Savithadevi, M. Sridevi, Rajeswari Sridhar

SIHeDA-Net Sensor to Image Heterogeneous Domain Adaptation Network

Medical Imaging with Deep Learning, 2022

[\[Link\]](#)

Ishikaa Lunawat, **Vignesh Subramanian**, S. P. Sharan

TEACHING EXPERIENCE

Graduate Teaching Assistant – CS 3600: Artificial Intelligence

Georgia Institute of Technology

Spring 2026

Georgia, USA

Graduate Teaching Assistant – CS 8803: Formal Methods in Reinforcement Learning

Georgia Institute of Technology

Fall 2025

Georgia, USA

Graduate Teaching Assistant – CS 8803: SAT/SMT Solvers

Georgia Institute of Technology

Fall 2024

Georgia, USA

INTERNSHIPS

Newcastle University, United Kingdom | Paper link

Jan 2022 – Nov 2022

Research Intern - Mentor: Prof. Sadegh Soudjani

Newcastle, England

- Proposed a novel optimization strategy using Deep Q-Learning for Stochastic Max-Plus-Linear Discrete Event Systems under uncertainty, achieving a 2.5x speedup over Model Predictive Control for minimizing stochastic delays in railway systems, published at **IEEE Conference on Decision and Control**, 2023.

Samsung R&D Institute, Bangalore | Report link

Aug 2021 – Feb 2022

Research Intern - Mentor: Mr. Sujoy Saha, Mr. Rajat Kumar Jain

Karnataka, India

- Developed a Tri-Stage Occlusion Handling Normal Map Estimation Algorithm to enhance 3D human normal map estimation on blurred, noisy, low-res 2D images, achieving 92.78% IoU (vs. 71.26% baseline) by effectively addressing artifacts from occlusions, shadows, blur, and complex backgrounds.

National Institute of Technology, Tiruchirappalli | Paper link | GitHub link

Feb 2021 – Dec 2021

Research Intern - Mentor: Prof. M. Sridevi

Tamil Nadu, India

- Designed a novel CNN architecture integrating U-Net and VGG layers for Facial Emotion Recognition, achieving 75.97% accuracy on the FER-2013 dataset, ranking in the **Top 5** on the global leaderboard. Findings were published in the **International Journal of Information Technology, Springer**.

TECHNICAL SKILLS

- Languages:** C/C++, Python, Java, JavaScript, Lean
- Packages/Frameworks:** PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, OpenAI Gym, Stable Baselines
- Reinforcement Learning:** Behavioral Cloning, Policy Gradient Methods, Generalization Algorithms, Specification-Guided RL, Safety Certificates for RL, Reachability and Safety Analysis
- LLM Agents and Reasoning:** LLM-assisted planning and decision-making, prompt-based reasoning over logical tasks, tool-using agents, fine-tuning, automated proof assistance
- Formal Verification:** Formal Methods for Safety Verification, Model Checking, Logical Specifications, SAT/SMT Solvers

AWARDS AND TALKS

Research Talk — Decoupled Behavioral Cloning for Scalable Inductive Generalization in RL

2026

PLSEFM + AI Workshop, Georgia Institute of Technology

Georgia, USA

Research Talk — Inductive Generalization from Logical Specifications

2026

Indian Institute of Technology Kanpur

Kanpur, India

Graduate Poster Symposium – Third Place

2024

Junior Student Category, Georgia Institute of Technology

Georgia, USA

NeurIPS Travel Grant Award

2023

Neural Information Processing Systems

Louisiana, USA

POSITIONS OF RESPONSIBILITY

Reviewer

2025

AAAI Workshop on Generalization in Planning.

Student Research Mentor, Machine Learning and AI

2020 – 2023

Spider R&D, NIT Trichy — Led ML/AI projects; built SIHeDA-NET (Paper) and GISiL.

Coordinator, Workshops and Publicity

2020 – 2021

Currents Symposium, NIT Trichy — Managed workshops, publicity; hosted 600+ participants.