Anusha Srikanthan

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Research interests

Multiagent systems, Learning Theory, Optimization, Control Theory, Robotics

Education

University of Pennsylvania — Philadelphia, Pennsylvania
PhD in Electrical and Systems Engineering — August 2021 – Present
Mentors: Dr. Nikolai Matni, Dr. Vijay Kumar.

Georgia Institute of Technology — Atlanta, Georgia
M.S. Thesis in Electrical and Computer Engineering — August 2019 – July 2021
Mentors: Dr. Harish Ravichandar, Dr. Sonia Chernova *GPA: 3.90.*

National Institute of Technology, Trichy — Tamilnadu, India
B. Tech (Hons) in ECE, Minor in Computer Science — July 2015 – May 2019
Mentors: Dr. P. Palanisamy, Dr. Varun Gopi. *GPA: 9.15/10.*

Honors and scholarships

Dean's Fellowship (University of Pennsylvania) 2021
Graduate Research Assistantship (Georgia Institute of Technology) 2020
Won Second Place in Sangam (Technical Competition) held at Pragyan (NIT Trichy, India) 2017

Publications

Resource-Aware Adaptation of Heterogeneous Strategies for Coalition Formation
Anusha Srikanthan, Harish Ravichandar.
Autonomous Agents and Multiagent Systems, 2022.

Learning task requirements for coalition formation in heterogeneous multi-agent systems
Anusha Srikanthan.
Masters Thesis, Georgia Institute of Technology, 2021.

Research experience

Formalizing Synergy in Heterogeneous Teams
Nikolai Matni (University of Pennsylvania) — Oct 2021 – Present
Studying the compatibility among teammates of multi-robot teams beyond the sum of capabilities.

Resilient Coalition Formation in Heterogeneous Teams via Imitation Learning
Vijay Kumar (University of Pennsylvania) — Aug 2021 – Present

Learning-based approach to coalition formation for robots operating under environmental disturbances. Summary of findings available here.

Learning from suboptimal demonstrations for Task Allocation
Harish Ravichandar (Georgia Tech) Oct 2020 – Aug 2021
Interactive bandit-based approach to learn to form coalitions, given suboptimal demonstrations from users with respect to their performance on tasks

Learning Task Requirements for Coalition Formation from experts
Harish Ravichandar, Sonia Chernova (Georgia Tech) Jan 2020 – Aug 2021
Established the research problem for using expert demonstrations to learn different strategies for complex tasks and perform multi-robot task assignment (ST-MR-IA) with heterogeneous agents. Formulated and simulated a discrete optimization algorithm using CPLEX and Python to tackle multi-modality in task requirements, verified by designing battle scenarios on the latest release of StarCraft II Editor and with tasks on the Robotarium Simulator. Summary of findings available here.

Performance Optimization of UNet
Eva Dyer (Georgia Tech) Aug 2019 – Jan 2020
Developed novel evaluation metrics to test the performance of UNet architecture, a Deep CNN used for segmentation and 3D reconstruction of MRI images from Striatum and Cortex using PyTorch, Scikit-learn and Python. Improved the blood vessel prediction accuracy in Striatum from 0.69 to 0.95 and reduced noise to produce cleaner outputs for 3D Visualization after reconstruction using ITK-SNAP. Report summary.

Industry experience

NVIDIA Graphics Pvt Ltd , Hardware Engineering Bengaluru, India
Tegra SOC Design internship Summer 2018
Designed and implemented a Safety Duplication Plugin for multiple error detection using concepts of redundancy and clock domains and integrated it on Perforce using Perl scripts with Viva embedded code programmed on a UNIX based OS. Formalized hierarchical changes in the internal architecture of the IP module for making it plugin compatible which increases the safety compliance at the hardware level to prevent failure when the chip is used in self-driving cars. Report summary.

Software Projects

Visual Object Detection System (Brain Corp) Feb 2020
Ideated and implemented an object detection system to locate a phone in each image of a dataset using Template Matching.
Transfer Learning for Damage Detection using VGG16 Spring 2020
Engineered a solution using state-of-the-art CNN to study transfer learning by using VGG16 architecture pre-trained on ImageNet dataset to classify levels of damage in our dataset containing damaged buildings.

Multi-sensor Fusion for the Detection of Exit Lanes Spring 2019
Undergraduate thesis on traffic sign and lane detection from videos using OpenCV and Unity.

Coding Projects using MATLAB, C, C++, Python and OpenCV
Visual Aid Kit using OpenCV [GitHub], Algorithm optimization in Wireless Networks, and Snake Game using OOP concepts.

Talks and tutorials

Resilient Coalition Formation in Heterogeneous Teams via Imitation Learning Sep 2021
IROS Workshop: Cognitive and Social Aspects of Human Multi-Robot Interaction, Prague and Remote

Resource-Aware Generalization of Heterogeneous Strategies for Task Assignment Mar 2021
Poster Presentation at the Symposium of School of Interactive Computing, Georgia Institute of Technology

Learning Task Requirements for Coalition Formation from expert demonstrations Apr 2021
3 Minute-Thesis (3MT) competition at Georgia Institute of Technology

Skills

Programming
Proficient in: C/C++, Python, Perl, Viva, PyTorch, TensorFlow, OpenCV, Scipy.
Familiar with: MATLAB.

Service and outreach

2021 K-12 InVenture Prize State Finals, Atlanta Jul 2016 – Mar 2021
As a graduate student at Georgia Tech, I participated as a judge in the K-12 InVenture State Finals to evaluate the science exhibition presentations from middle school and high school kids. The event was conducted remotely due to COVID19 and judging was carried out on the RocketJudge app on live stream.

Dance Troupe of NIT Trichy, India Jul 2016 – May 2019
As the President of NIT Trichy's Dance Troupe, I led 50 students across two troupes (Indian Classical and Western) in various inter-collegiate dance competitions across the country.

Illuminate – Non-profit Educational Organization Jul 2016 – May 2019
As a volunteer at Illuminate (NGO), I handled Math and English classes for underprivileged kids from Grade 6 and 7.