

Sankaran 'Shifu' Vaidyanathan

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Education

- Sep '19–Jun '21 **M.S., Computer Science, University of Massachusetts Amherst** **GPA: 4.0/4.0**
(expected) **Courses:** Machine Learning, Research Methods in Empirical CS, Quantum Information Systems, Probabilistic Graphical Models, Artificial Intelligence
- Aug '13–Jun '17 **B.E., Electrical and Electronics Engineering, SSN College of Engineering, Anna University**
Thesis Project: *Control of Autonomous Quadrotor for Real-Time Object Tracking*
Built an APM2.6 based quadrotor that tracked and followed objects selected from a PC interface. Implemented Lucas-Kanade optical flow and Kalman filter based video stabilization.

Research Experience

- Jan '20–present **Graduate Student Researcher, Knowledge Discovery Lab, UMass Amherst**
 - Working with Prof. David Jensen and Andy Zane on developing causal models of competence for machine learning models used in robot perception. Such models will enable intervention experiments on variables related to the robot's environment, to estimate its competence in counterfactual settings.
- Jul '17–Jun '19 **Project Associate, IIT Madras - Robert Bosch Centre for Data Science and Artificial Intelligence**
 - Worked with Prof. Balaraman Ravindran, IIT Madras and Prof. Srinivasan Parthasarathy, The Ohio State University, on extending modularity maximization methods for clustering on hypergraphs. Developed a method for improving clustering quality by iteratively balancing hyperedge cuts.
 - Set up a Kubernetes-based GPU cluster for the lab (50 GPUs and 70+ users at the time) and served as a system administrator.
 - Courses:** Deep Learning, Probabilistic Graphical Models, Linear Algebra and Random Processes
- Jun '16–Aug '16 **Research Intern, RISE-IIL Lab, Department of Computer Science and Engineering, IIT Madras**
Worked with Prof. Balaraman Ravindran on extending self-organizing maps, to perform end-to-end clustering and representation learning on images.

Teaching Experience

- Jan '19–May '19 **Teaching Assistant, Machine Learning, Certification in Technology and Management, IIT Madras and IIM Bangalore**
An online course run by Prof. Balaraman Ravindran. Developed interactive iPython demos with narration, set programming assignments and exams, and took in-person discussion sessions.

Publications

- Complex Networks '19 **A New Measure of Modularity in Hypergraphs: Theoretical Insights and Implications for Effective Clustering**
Tarun Kumar*, **Sankaran Vaidyanathan***, Harini Ananthapadmanabhan, Srinivasan Parthasarathy, Balaraman Ravindran

Technical Skills

- Programming Languages:** Python, C++, MATLAB
- Frameworks:** PyTorch, TensorFlow, sklearn, numpy, OpenCV, Processing, OpenGL
- Tools and Platforms:** Linux, Kubernetes, LaTeX, Git, Jupyter, Arduino

Extracurricular Activities

- Playwriting:** Produced an original 90-minute show (*Minutes Before Midnight*) and multiple 10-minute plays at Chennai theater festivals. Currently auditing Playwriting classes at UMass.
- Teach-a-School:** An initiative by SSN Lakshya; visited government schools for underprivileged children (grades 6 to 8) to teach basic math and English.