Sathyanarayanan N. Aakur

3101P Shelby Center, 345 W Magnolia Way
Department of Computer Science and Software Engineering
Auburn University, Auburn, Alabama 36849

Mail: san0028@auburn.edu
Website:`http://saakur.github.io`

RESEARCH INTERESTS

Open-world learning under limited supervision, focusing on how prior knowledge, structure, and interaction enable robust perception and reasoning. Applications span embodied/active vision, event understanding, and data-scarce domains such as genomics, agriculture, and security.

TEACHING INTERESTS

Machine Learning, Computer Vision, Artificial Intelligence, Pattern Recognition

EDUCATION

University of South Florida, Tampa, FL — Summer 2019
Ph.D., Computer Science and Engineering
Advisor: Dr. Sudeep Sarkar
Thesis: *Beyond Labels and Captions: Contextualizing Grounded Semantics for Explainable Visual Interpretation.*

University of South Florida, Tampa, FL — Fall 2015
Master of Science, Management Information Systems

Anna University, Chennai, India — Spring 2013
Velammal Engineering College
Bachelor of Engineering, Electronics & Communications Engineering
Advisor: Prof. Leena Jasmine
Thesis: *Real-time Data Acquisition for Production Report Generation*

PROFESSIONAL EXPERIENCE

Assistant Professor Aug 2023 - Present	Auburn University Auburn, AL
Assistant Professor Aug 2019 - Aug 2023	Oklahoma State University Stillwater, OK
Applied Scientist Intern May 2018 - Aug 2018	Amazon Go Boston, MA
Programmer Analyst Oct 2012 - November 2015	CTSI-Global Chennai, India
Programmer Analyst Intern Apr 2012 - Oct 2012	CTSI-Global Chennai, India

HONORS AND AWARDS

IEEE Senior Member	**2024**
Ginn Faculty Fellow, Auburn University	**2024 - 2026**
NSF CAREER Award	**2022**
Sigma Xi Full Member	**2021**
Outstanding Reviewer at CVPR 2020 (Top 3.9% of reviewers)	**2020**
Senior Fellow, USF NSF I-Corps	**2019**
Outstanding Contribution to the Company, CTSI-Global	**2015**
Best Student Project Award, Velammal Engineering College	**2010**
Best Student in Foreign Language - French, Leo Matriculation School	**2009**

STUDENTS' HONORS AND AWARDS

Beau Brechtel - *Auburn University SGCoE Outstanding Student Award*	**2025**
John Lieb - *Auburn University Undergraduate Research Fellowship*	**2025**
Carson Bulgin - *Auburn University Undergraduate Research Fellowship*	**2024**
Elijah Parker - *Auburn University SGCoE Outstanding Student Award*	**2024**
Udhav Ramachandran - *Niblack Research Scholarship, OSU*	**2024**
Shubham Trehan and Udhav Ramachandran - *Winner, OSU App Competition.*	**2023**
Sai Narayanan - *J. Lindsay Oaks Best Student Molecular Biology Presentation*	**2022**
Sai Narayanan - *J. Lindsay Oaks Best Student Molecular Biology Presentation*	**2021**
Sanjoy Kundu - *Robberson Summer Dissertation Award, OSU*	**2021**

PEER REVIEWED PUBLICATIONS

*Note: In Computer Science, conferences are the primary publication venue over journal publications. They use double-blind reviewing and are equally or more selective than journals. CVPR, ECCV, MICCAI, ICPR, PAKDD, ICDM, WACV, VLSID, and ISVLSI are the top computer vision, data mining, and IoT research conferences. Mentored student authors are underlined, and undergraduate mentees with *. Publications after Auburn are marked with **.*

Book Chapters

B1 Ramy Mounir, **Sathyanarayanan N. Aakur**, Sudeep Sarkar. Self-supervised Event Segmentation. Book Chapter in *Advanced Methods and Deep Learning in Computer Vision*. Elsevier Series on Computer Vision and Pattern Recognition.

B2 **Sathyanarayanan N. Aakur**, Fillipe DM de Souza, Sudeep Sarkar. On the Inherent Explainability of Pattern Theory-based Video Event Interpretations. Book Chapter, *Explainable and Interpretable Models in Computer Vision and Machine Learning in the Springer Series on Challenges in Machine Learning*.

Journal Papers

J1 Zhou Chen, Sanjoy Kundu, Harsimran Baweja, **Sathyanarayanan Aakur**. EASE: Embodied Active Event Perception via Self-Supervised Free Energy Minimization. IEEE Robotics and Automation Letters (RA-L), 2025. (**Impact Factor:** 4.6)**

J2 Huihui Zhang, Yuting Zhou, Shengfang Ma, **Sathyanarayanan N. Aakur**. Enhancing Corn Yield Prediction: Optimizing Data Quality or Model Complexity?. *Smart Agricultural Technology*, 2024. (**Impact Factor:** 6.2)**

J3 V S S Bala Tripura Sathvika, Nagilla Anmisha, Vada Thanmayi, Suchetha M, Edwin Dhas D, Sehastrajit S*, **Sathyanarayanan N Aakur**. Pipelined Structure in the Classification of Skin Lesions based on Alexnet CNN and SVM Model with Bi-sectional Texture Features. *IEEE Access.* (**Impact Factor:** 3.9) **

J4 **Sathyanarayanan N. Aakur**, Vishalini R. Laguduva, Priyadhsrini Ramamurthy, Akhilesh Ramachandran. TEPI: Taxonomy-aware Embedding and Pseudo-Imaging for Scarcely-labeled Zero-shot Genome Classification. *IEEE Journal of Biomedical and Health Informatics (J-BHI)*, 2024. (**Impact Factor**: 7.7) **

J5 **Sathyanarayanan N. Aakur**, Sudeep Sarkar. Leveraging Symbolic Knowledge Bases for Commonsense Natural Language Inference using Pattern Theory. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2023. (**Impact Factor**: 24.3)

J6 M Suchetha, Snehith Sankineni*, Aanchal Saraswat*, **Sathyanarayanan N Aakur**, S Sehastrajit*, D Edwin Dhas. An Insight on Recent Advancements and Future Perspectives in Detection Techniques of Parkinsons Disease. *Evolutionary Intelligence*, 2023. (**Impact Factor**: 2.3)

J7 **Sathyanarayanan N. Aakur**, Sanjoy Kundu, Nikhil Gunti. Knowledge Guided Learning: Towards Open Domain Egocentric Action Recognition with Zero Supervision. *Pattern Recognition Letters*, 2022. (**Impact Factor**: 5.1)

J8 **Sathyanarayanan N. Aakur**, Fillipe DM de Souza, Sudeep Sarkar. Generating Open World Descriptions of Video using Commonsense Knowledge in a Pattern Theory Framework. *Quarterly of Applied Mathematics*.

Peer-reviewed Conference and Archival Workshop Papers

C1 Thilina Mendis, Farah Kandah, **Sathyanarayanan Aakur**. BAFLE-DCT: Bypassing Adversarial Filters via Frequency-Selective Embedding in the DCT Domain. IEEE/CVF Winter Conference on the Applications of Computer Vision (WACV), 2026. **

C2 Shubham Trehan, Udhav Ramachandran*, Akash Rao, Ruth Scimeca, **Sathyanarayanan Aakur**. FSP-DETR: Few-Shot Prototypical Parasitic Ova Detection. IEEE/CVF Winter Conference on the Applications of Computer Vision (WACV), 2026. **

C3 Yash Mahajan, Matthew Freestone, Naman Bhansal, **Sathyanarayanan Aakur**, Santu Karmaker. Revisiting Word Embeddings in the LLM Era. International Joint Conference on Natural Language Processing and Asia-Pacific Chapter of the Association for Computational Linguistics (IJCNLP-AACL), 2025. **

C4 Chaitanya Gard*, Tanishq Jain*, **Sathyanarayanan N. Aakur**, Raghava Mutharaju. SPARK: Scene Prediction Augmented with Relational-Commonsense Knowledge. International Conference on Data Science (IKDD CODS 2025), 2025. **

C5 Zhou Chen, Joe Lin, **Sathyanarayanan N. Aakur**. CRAFT: A Neuro-Symbolic Reasoning Framework for Visual Functional Affordance Grounding. Conference on Neurosymbolic Learning and Reasoning (NeSy), 2025. **

C6 Sanjoy Kundu, Shanmukha Vellamcheti, **Sathyanarayanan N. Aakur**. ProbRes: Probabilistic Jump Diffusion for Open-World Egocentric Activity Recognition. IEEE/CVF International Conference on Computer Vision, 2025. **

C7 Sercan Aygun, Reeti Pradhananga, Shelby Williams, Li Chen, Yazhou Tu, Whitney Crow, **Sathyanarayanan N. Aakur**, Nian-Feng Tzeng. Digital Twin-Aided Municipal Traffic Control. Simulation of Urban Mobility (SUMO) User Conference, 2025. (**Oral**) **

C8 Shubham Trehan, **Sathyanarayanan N. Aakur**. Self-supervised Multi-actor Social Activity Understanding in Streaming Videos. International Conference on Pattern Recognition (ICPR), 2024. **

C9 Sanjoy Kundu, Shubham Trehan, **Sathyanarayanan N. Aakur**. Discovering Novel Actions in an Open World with Object-Grounded Visual Commonsense Reasoning. European Conference on Computer Vision (ECCV), 2024. **

C10 Venkata Ragavendra Vavilthota, Ranjith Ramanathan, **Sathyanarayanan N. Aakur**. Capturing Temporal Components for Time Series Classification. International Conference on Pattern Recognition (ICPR), 2024. **

C11 Shenyuan Liang, Mauricio Pamplona Segundo, **Sathyanarayanan N. Aakur**, Sudeep Sarkar, Anuj Srivastava. Shape-Graph Matching Network (SGM-net): Registration of Shape Graphs Using Deep Networks. IEEE International Symposium on Biomedical Imaging (ISBI) 2024. **(Oral)****

C12 Shubham Trehan, Udhav Ramachandran*, Ruth Scimeca, **Sathyanarayanan N. Aakur**. ProtoKD: Learning from Extremely Scarce Data for Parasite Ova Recognition. *IEEE International Conference on Machine Learning and Applications (ICMLA), 2023* ***(Oral)*** **

C13 Sanjoy Kundu, **Sathyanarayanan N. Aakur**. Iterative Scene Graph Generation with Generative Transformers. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023.*

C14 Shengfang Ma, Yuting Zhou, K. Colton Flynn, **Sathyanarayanan N. Aakur**. Peanut Seed Germination Detection from Aerial Images. *IEEE Workshop on Applied Imagery and Pattern Recognition, 2022.*

C15 **Sathyanarayanan N. Aakur**, Sudeep Sarkar. Learning Actor-centered Representations for Action Localization in Streaming Videos using Predictive Learning. *European Conference on Computer Vision (ECCV) 2022.*

C16 Aditi Bal Basu, Ramy Mounir, **Sathyanarayanan N. Aakur**, Sudeep Sarkar, Anuj Srivastava. Time-Series Analysis of Video Graphs Using Joint Kalman Smoothing and Registration. *European Conference on Computer Vision (ECCV) 2022.* ***(Oral)***

C17 Priyadharsini Ramamurthy, **Sathyanarayanan N. Aakur**. ISD-QA: Iterative Distillation of Commonsense Knowledge from General Language Models for Unsupervised Question Answering. *International Conference on Pattern Recognition (ICPR 2022)* ***(Oral)***

C18 Vishal Pallagani, Priyadharsini Ramamurthy, Vedant Khandelwal, Revathy Venkataramanan, Kausik Lakkaraju, **Sathyanarayanan N. Aakur**, Biplav Srivastava. A Rich Recipe Representation as Plan to Support Expressive Multi-Modal Queries on Recipe Content and Preparation Process. ICAPS 2022 Workshop on Knowledge Engineering for Planning and Scheduling (KEPS), 2022

C19 Shubham Trehan, **Sathyanarayanan N. Aakur**. Towards Active Vision for Action Localization with Reactive Control and Predictive Learning. *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2022.*

C20 **Sathyanarayanan N. Aakur**, Sai Narayanan, Vineela Indla, Vennela Indla, Arunkumar Bagavathi, Akhilesh Ramachandran, and Vishalini Laguduva Ramnath. Metagenome2Vec: Building Contextualized Representations for Scalable Metagenome Analysis *International Conference on Data Mining (ICDM) Workshops, 2021.* ***(Oral)***

C21 **Sathyanarayanan N. Aakur**, Arunkumar Bagavathi, Sai Narayanan, Vineela Indla, Akhilesh Ramachandran, Vishalini Laguduva Ramnath. MG-NET: Leveraging Pseudo-Imaging for Multi-Modal Metagenome Analysis. *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), 2021.*

C22 Thanh Thieu, Ha Do, Thanh Duong, Shi Pu, **Sathyanarayanan N. Aakur**, Saad Khan. LexDivPara: A measure of paraphrase quality with integrated sentential lexical complexity. *Intelligent Systems Conference (IntelliSys) 2021.*

C23 Vineela Indla, Vennela Indla, Sai Narayanan, Akhilesh Ramachandran, Arunkumar Bagavathi, Vishalini Laguduva Ramnath, **Sathyanarayanan N. Aakur**. Sim2Real for Metagenomes: Accelerating Animal Diagnostics with Adversarial Co-Training. *Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-2021)* ***(Oral)***

C24 **Sathyanarayanan N. Aakur**, Arunkumar Bagavathi. Unsupervised Gaze Prediction in Egocentric Videos by Energy-based Surprise Modeling. *International Conference on Computer Vision Theory and Applications (VISAPP), 2021*

C25 Sai Narayanan, Akhilesh Ramachandran, **Sathyanarayanan N. Aakur**, Arunkumar Bagavathi. GRaDL: A Framework for Animal Genome Sequence Classification with Graph Representations and Deep Learning. *International Conference on Machine Learning Applications (ICMLA'20), 2020* ***(Oral)***

C26 Sanjoy Kundu, Nikhil Gunti, Bailey Hendrickson, Sunil More, **Sathyanarayanan N. Aakur**. Benchmark and Evaluation of Low Resource Object Detection in Biomedical Images. *IEEE Workshop on Applied Imagery and Pattern Recognition, 2020*

C27 **Sathyanarayanan N. Aakur**, Sudeep Sarkar. Action Localization through Continual Predictive Learning. *European Conference on Computer Vision (ECCV) 2020.*

C28 Vishalini R. Laguduva, Shakil Mahmud, **Sathyanarayanan N. Aakur**, Robert Karam, Srinivas Katkoori. Dissecting Convolutional Neural Networks for Efficient Implementation on Constrained Platforms. *IEEE International Conference on VLSI Design (VLSID), 2020.* ***(Oral)***

C29 Vishalini R. Laguduva, **Sathyanarayanan N. Aakur**, Srinivas Katkoori. Latent Space Modeling for Cloning Encrypted PUF-based Authentication. *IFIP International Internet of Things (IoT) Conference, 2019.* ***(Oral)***

C30 Vishalini R. Laguduva, Sheikh Ariful Islam, **Sathyanarayanan N. Aakur**, Srinivas Katkoori and Robert Karam. Machine Learning based IoT Edge Node Security Attack and Countermeasures *IEEE Computer Society Annual Symposium on VLSI (ISVLSI), 2019.* ***(Oral)***.

C31 **Sathyanarayanan N. Aakur**, Sudeep Sarkar. A Perceptual Prediction Framework for Self Supervised Event Segmentation. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019.*

C32 **Sathyanarayanan N. Aakur**, Fillipe DM de Souza, Sudeep Sarkar. Going Deeper with Semantics: Exploiting Semantic Contextualization for Interpretation of Human Activity in Videos. *Winter Conference on Applications of Computer Vision (WACV), 2019.*

C33 **Sathyanarayanan Aakur**, Daniel Sawyer*, Sudeep Sarkar. Fine-grained Action Detection in Untrimmed Surveillance Videos *Winter Conference on Applications of Computer Vision (WACV) Workshops, 2019.*

C34 **Sathyanarayanan N. Aakur**, Fillipe DM de Souza, Sudeep Sarkar. Inherently Explainable Model for Video Activity Recognition *AAAI Workshop On Reasoning and Learning for Human-Machine Dialogues, 2018* ***(Oral)***.

C35 Gilbert Rotich, **Sathyanarayanan Aakur**, Rodrigo Minetto, Mauricio Segundo, Sudeep Sarkar. Using semantic relationships among objects for geospatial land use classification. *IEEE Applied Imagery Pattern Recognition Workshop, 2018.*

C36 **Sathyanarayanan N. Aakur**, Fillipe DM de Souza, Sudeep Sarkar. Towards a Knowledge-based Approach to Video Comprehension. In *Conference on Computer and Robot Vision (CRV), 2017* ***(Oral)***.

PEER REVIEWED ABSTRACTS

A1 Shanmukha Vellamcheti, Sanjoy Kundu, **Sathyanarayanan N. Aakur**. Hallucinate, Ground, Repeat: A Framework for Generalized Visual Relationship Detection. Workshop on Computer Vision in the Wild, IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2025. **

A2 Sanjoy Kundu, Shanmukha Vellamcheti, **Sathyanarayanan N. Aakur**. ProbRes: Probabilistic Jump Diffusion for Open-World Egocentric Activity Recognition. EgoVis Workshop, IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2025. **

A3 Zhou Chen, Sanjoy Kundu, Harsimran Bhaweja, **Sathyanarayanan N. Aakur**. Learning to Perceive and Act: Active Event Understanding via Predictive Free Energy Minimization. Vision-based Assistants in the Real-World Workshop, IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2025. **

A4 Zhou Chen, Sanjoy Kundu, Harsimran Bhaweja, **Sathyanarayanan N. Aakur**. A Self-supervised Framework for Embodied Active Event Perception. How do robots care? Workshop at IEEE International Conference on Robotics and Automation, 2025.**

A5 Zhou Chen, Sanjoy Kundu, Harsimran Bhaweja, **Sathyanarayanan N. Aakur**. A Self-supervised Framework for Embodied Active Event Perception. IEEE International Conference on Robotics and Automation Late Breaking Works, 2025.**

A6 Ranjith Ramanathan, **Sathyanarayanan N. Aakur**, Anjana Suresh. Machine Learning Algorithms To Understand The Relationship Between Metabolite Profiles And Beef Redness. Reciprocal Meat Conference (RMC) 2024. **

A7 Sanjoy Kundu, Shubham Trehan, **Sathyanarayanan N. Aakur**. ALGO: Object-Grounded Visual Commonsense Reasoning for Open-World Egocentric Action Recognition. EgoVis Workshop at the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024. **

A8 Sanjoy Kundu, **Sathyanarayanan N. Aakur**. VOWL: Towards Video Understanding in an Open World. What is Next in Video Understanding? Workshop, IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024. **

A9 Sai Narayanan, **Sathyanarayanan N. Aakur**, Akhilesh Ramachandran. Development and evaluation of MG2Vec: A Transformer Neural network for metagenomic shotgun sequencing-based BRD pathogen detection. AAVLD 2022. (**Best Student Presentation Award**).

A10 Sai Narayanan, **Sathyanarayanan N. Aakur** Narasimhan, Arun Kumar Bagavathi, Akhilesh Ramachandran. Development and evaluation of metagenome2Vec, a machine learning algorithm, for sequencing-based pathogen detection. AAVLD 2021. (**Best Student Presentation Award**).

A11 Ranjith Ramanathan, **Sathyanarayanan N. Aakur**, Anjana Suresh, Frank Kiyimba, and Gretchen Mafi. (2021). Comparison of machine learning algorithms to identify metabolomics features for predictive modeling of beef color. *67th International Congress of Meat Science and Technology, 2021.*

A12 **Sathyanarayanan N. Aakur**, Sudeep Sarkar. Event Segmentation in Streaming Videos without Labels using a Predictive Approach. *Learning from Unlabeled Videos Workshop, IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2019.*

A13 **Sathyanarayanan Aakur**, Mithun Singh. Real-Time Data Acquisition System for Production Report Generation. *International Conference on Computational Intelligence and Advanced Manufacturing Research (ICCIAMR'13), 2013.*

MENTORING

Current

1. Disharee Bhowmick (Ph.D., Spring 2024 - Present)
2. Shanmukha Vellamchetti (Ph.D., Spring 2024 - Present)
3. Zhou Chen (Ph.D., Summer 2024 - Present)
4. Devesh Khandelwal (Ph.D., Summer 2024 - Present)
5. Akash Rao (AU, Ph.D., Spring 2025 - Present)
6. Joe Lin (AU, Ph.D. CS Summer 2025 - Present)
7. Uday Kiran Kothapalli (AU, Ph.D. CS Fall 2025 - Present)
8. Tad Sligar (AU, Ph.D. CS Spring 2026 - Present)
9. John Lieb (AU, B.S. CS Spring 2024 - Present)
10. Jacob Sprouse (AU, B.S. CS Spring 2025 - Present)
11. Dane Miller (AU, B.S. CS Spring 2025 - Present)
12. Udhav Ramachandran (OSU, B.S. Fall 2022 - Present)

Alumni

At Auburn University

1. Yash Mahajan (Ph.D., co-advised with Dr. Karmaker, Summer 2024 - Fall 2025) [*Next: PostDoc, University of Central Florida, Orlando, FL*]**
2. Shubham Trehan (Ph.D., Fall 2020 - Fall 2025) [*Next: Founding Engineer, Stealth Startup, Birmingham, AL*]**
3. Tad Sligar (M.S. AIE, Summer 2025 - Fall 2025) [*Next: Ph.D., Auburn Univ.*]**
4. Cooper Niebuhr (AU, B.S. CS Spring 2025 - Summer 2025)**
5. Sanjoy Kundu (Ph.D., Spring 2020 - Summer 2025) [*Next: Visiting Assistant Professor, Univ. of North Carolina, Greensboro*]**
6. Carson Bulgin (AU, B.S. CS Fall 2023 - Spring 2025) [*Next: Weapons System Entry Engineer, Teleios Defense Solutions, LLC*]**
7. Beau Brechtel (AU, B.S. CS Fall 2024 - Spring 2025)[*Next: MS CS, Auburn Univ.*]**
8. Joe Lin (AU, B.S. CS Spring 2024 - Spring 2025)[*Next: PhD CS, Auburn Univ.*]**
9. Chaitanya Garg (IIIT-Delhi, B.Eng., Spring 2024 - - Spring 2025) [*Next: SWE at Baya Systems, India.*]**
10. Tanishq Jain (IIIT-Delhi, B.Eng., Spring 2024 - Spring 2025)[*Next: SWE at Microsoft India.*]**
11. Sujay Jakka (AU, B.S. CS Fall 2024 - Spring 2025)**

12. Amy Prieto (AU, B.S. CS Fall 2024 - Spring 2025)**
13. Akash Rao (AU, M.S., Summer 2024 - Fall 2024) [*Next: Ph.D., Auburn Univ.*]**
14. Jackson Young (AU, M.S., Summer 2024 - Fall 2024)[*Next: Data Scientist, Kansas City Chiefs*]**
15. Charles Dunn (AU, M.S., Summer 2024 - Fall 2024)**
16. S Sehastrajit (VIT Chennai, B.Eng., Fall 2023 - Summer 2024)**
17. Zhou Chen (AU, M.S. Fall 2023 - Spring 2024) [*Next: Ph.D., Auburn Univ.*]**
18. Chi-Jui Wu (AU, M.S. Spring 2024)**
19. Elijah Parker (AU, B.S. CE Fall 2023 - Spring 2024) [*Next: Engineer, JHU Applied Physics Laboratory.*]**
20. Shengfang Ma (OSU, M.S. Summer 2021 - Spring 2024) [*Next: SDE, OSU.*]**
21. Venkata Ragavendra Vavilthota (OSU, M.S. Fall 2023) [*Next: Data Engineer, Wayfair.*]**
22. Saathvika Ajith (High School Research Intern, Summer 2023)

At Oklahoma State University

1. Sai Narayanan (Ph.D. Molecular Biology, Fall 2019 - Fall 2022) [*Next: Pathology Resident, OADDL OSU.*]
2. Priyadarshini Ramamurthy (Ph.D., Fall 2020 - Summer 2023)[*Next: Ph.D., OSU.*]
3. Devyn Hubbard (B.S. Spring 2022 - Spring 2023; [*Next: B.S. at OSU.*])
4. Udhav Ramachandran (High School Intern Summer 2022), [Next: *B.S. at OSU.*]
5. Daniel Beaver (B.S. REU Summer 2022)
6. Deepthi Mikkilineni (M.S. Fall 2022)
7. Sriram Madepalli (M.S. Summer 2022; [*Next: SDE, Amazon*])
8. Swapna Darsi (M.S. Summer 2022; [*Next: Quality Assurance Analyst, Atlantic Casualty Insurance Co.*])
9. Ramya Mikkilineni (M.S. Summer 2022; [*Next: SDE, Samsung*])
10. Vineela Indla (M.S. Fall 2021; [*Next: SDE, Amazon*])
11. Yashwanth Peddaboina (M.S. Summer 2022; [*Next: SDE, Amazon*])
12. Trae Primm (B.S. REU Summer 2021)
13. Madison Rushing (B.S. REU Summer 2021)
14. Nikhil Gunti (M.S., Spring 2021) [*Next: Data Scientist, Concat Systems*]
15. Makenzie Terrell (B.S., Fall 2020 - Fall 2021)

Before Oklahoma State University

1. Gilbert Rotich (Ph.D. (USF), 2017-2019) [*Next: Ph.D. at USF, Tampa*]
2. Daniel Sawyer (B.S. (USF), 2016 - 2018) [*Next: Ph.D. at USF, Tampa*]
3. Subramanian Viswanathan (M.S. (USF), 2016 - 2017)[*Next: Goldman Sachs*]

TEACHING EXPERIENCE

Instructor — Auburn University
Fall 2023 - Present — Auburn, AL
Fall 2023,2024,2025: COMP 5600/6600 Artificial Intelligence
Spring 2024: COMP 5630/6630 Machine Learning
Spring 2025: COMP 1100 The Power of AI: Fundamentals to Applications.
Fall 2025: COMP 5970/6970 Modern Computer Vision.

Instructor — Oklahoma State University
Fall 2019 - Summer 2023 — Stillwater, OK
Spring 2020-2023: CS 5323 Design and Implementation of Operating Systems II
Fall 2020-2022: CS 4783/5783 Machine Learning

Instructor — University of South Florida
Summer 2017, Summer 2019 — Tampa, FL
Undergraduate Course: IT Programming Fundamentals

Graduate Teaching Assistant — University of South Florida
Summer 2017, Summer 2019 — Tampa, FL
Spring 2019: Computer Vision (Graduate)
Spring 2017 - Summer 2019: USF I-Corps Sessions (NSF Lean Business Canvas Course)
Spring 2017: Biometrics (Graduate), IT Data Structures/Algorithms (Undergraduate)
Fall 2016: IT Data Structures (Undergraduate), Computational Geometry (Undergraduate)
Spring 2016: Automata Theory/Formal Languages (Undergraduate)

PROFESSIONAL SERVICE

Associate Editor: IEEE Robotics and Automation Letters (RA-L, Spring 2021-Spring 2024), Pattern Recognition (Spring 2024-Present), IEEE MultiMedia (Fall 2025-Present), ACM TOIT (Fall 2025-Present)
Demo Chair. IEEE/CVF CVPR 2024.
Area Chair/Senior Program Committee: ACM Multimedia 2021, IEEE/CVF CVPR 2022-2026, NeurIPS 2023-2025, CODS-COMAD 2023-2024, IEEE/CVF WACV 2024-2026, BMVC 2024-2025, ICML 2025
Funding Panels: NSF IIS CHS (2020), NSF IIS RI (2023), NIH EITA (2025)
Track Chair: DEEP-DIAL (AAAI-2021), Machine Learning for Graphs (ICMLA 2020), ICMLA 2020 (Computer Vision), Vision for Robotics (VISAPP 2021)
Organizer: CONSTRAINT (Big Data 2024), DEEP-DIAL Workshop (AAAI-2021), Special Session on Machine Learning for Graphs (ICMLA 2020-2023), CS Colloquium (OK State, 2019-2023), AI Seminar (USF. Fall 2016 - Spring 2019)
Program Committee: AAAI 2020, AAAI 2021, AAAI 2022
Reviewer: IET Computer Vision, IEEE Access, Springer KAIS, WACV 2020, ICCV 2019, CVPR 2019, CVPR 2020, CRV 2020, ECCV 2020, WACV 2021, NeurIPS 2020, ACCV 2020, ICLR2021, CVPR2021, ICML 2021, NeurIPS 2021, ICCV 2021, WACV 2022, ICLR 2022, WACV 2023, WACV 2024, ICLR 2024, IEEE TIP, Pattern Recognition Letters, ICPR 2024, ECCV 2024, ICCV 2025
External Reviewer: PLOS ONE, IROS 2017, CAIP 2017

TALKS

T1 **Invited Talk.** Teaching AI to see the visual world and use it!, Alabama AI Exchange, Fall 2025. **

T2 **Invited Talk.** Active event perception for effective human-robot collaboration, 1st KAMTIC Manufacturing Technology Innovation Workshop. Spring 2025 **

T3 **Invited Talk.** *Towards open world egocentric activity recognition from multimodal videos.* Area Chair Workshop, CVPR 2024. Summer 2024.**

T4 **Invited Talk.** *Towards Multimodal Open World Event Understanding with Neuro Symbolic Reasoning.* DMS Statistics and Data Science Seminar, Auburn University. Spring 2024. **

T5 **Invited Talk**. *Towards Multimodal Open World Event Understanding with Neuro Symbolic Reasoning.* WADLA 3.0, IIT-Sri City. Fall 2023. **

T6 **Invited Talk**. *Towards Multimodal Open World Event Understanding with Neuro Symbolic Reasoning.* 7th Summer School on AI, IIT-Hyderabad. Summer 2023. **

T7 **Invited Talk**. *Representation Learning for Metagenomics: An Explorative Study.* INTERACT Symposium on One Health and One Medicine. Summer 2023. **

T8 **Invited Talk**. *Towards Open World Event Understanding with Neuro Symbolic Reasoning.* The University of Iowa. Spring 2023

T9 **Invited Talk**. *Towards Multimodal Open World Event Understanding with Neuro Symbolic Reasoning.* Auburn University. Spring 2023

T10 **Invited Talk**. *Towards Open World Event Understanding with Neuro Symbolic Reasoning.* The Washington University at St. Louis. Fall 2022

T11 **Invited Talk** *Towards Open World Visual Understanding with Neuro Symbolic Reasoning.* Mega AI series, Pacific Northwest National Lab (PNNL). Fall 2022

T12 **Invited Talk** *Towards Intelligent Agents with Open World Visual Understanding* . Collaborative Assistants for the Society (CASY 2020). Fall 2020

T13 **Invited Talk** *The Role of Commonsense Knowledge in Visual Understanding.* Oklahoma State University. Fall 2018

T14 **Invited Talk** with *Dr. Sudeep Sarkar. Going Deeper with Semantics: Exploiting Semantic Contextualization for Interpretation of Human Activity in Videos.* Technical Seminar Series, Statistical Shape Analysis & Modeling Group, Florida State University. Fall 2018

T15 **Invited Talk** with *Dr. Sudeep Sarkar. Video Event Understanding with Pattern Theory.* Robotics Technical Seminar Series, Department of Mechanical Engineering, University of South Florida. Spring 2018

T16 **Invited Talk** *Leveraging ConceptNet to Reduce Training Requirements for Video Descriptions*, Seminar in AI, University of South Florida, Spring 2017.

FUNDING

Total Funding: $\$3,182,815$ **(External),** $\$187,000$ **(Internal). My share:** $\$1,178,814$

Current

1. *Collaborative Research: RI: Medium: Understanding Events from Streaming Video - Joint Deep and Graph Representations, Commonsense Priors, and Predictive Learning*, NSF CISE Core Program, $\$285,126$, **PI**.
2. *CAREER: Towards Causal Multi-Modal Understanding with Event Partonomy and Active Perception*, National Science Foundation (NSF), $\$514,186$, **PI**
3. *AI-based approach to understand stress in low and high growth rate cattle.* US Department of Agriculture, $\$999,078$, **Co-PI**.
4. *Structured Reasoning for Video LLMs: Hyperbolic Embeddings and Probabilistic Search for Efficient Open-World AI*, $\$96,000$ (in-kind contribution). NSF NAIRR Pilot/Purdue Anvil AI Cluster. **PI.**

Past

1. *The A3 Initiative: Advancing AI Literacy for Alabama's Students.* Alabama Commission on Higher Education, $\$5,000$. **Co-PI**.
2. *Identification of pile-up jets in the ATLAS experiment on an event-by-event basis.* US Department of Energy (DOE), $\$224,547$, **Co-PI**. *Transferred to other co-PI.*
3. *Deep Learning Computational Algorithms for Disease Diagnosis by Genome Sequence*, USDA National Animal Health Laboratory Network, $\$158,136$, **Co-PI**.
4. *REU Supplement: Collaborative Research: RI: Medium: Understanding Events from Streaming Video - Joint Deep and Graph Representations, Commonsense Priors, and Predictive Learning*, NSF CISE Core Program, $\$7,920$, **PI**

5. *GPU Server for Improving AI and Data Science Education*, OSU College of Arts and Sciences (CAS) Student Technology Fee Request, $25,000, **PI**
6. OSU College of Arts and Sciences Research (ASR) Program, $12,000, **PI**
7. *Next Generation User Interfaces for Gateway Autonomous Operations*, NASA X-Hab Project, $30,000, **Co-PI**
8. *Accelerating Research Discoveries with GPU-enabled Computing*, Oklahoma State University Core Facility Support Program, $150,000, **Co-PI**.

PROFESSIONAL REFERENCES Available upon request.