SRIRAM YENAMANDRA

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EDUCATION

MS in Computer Science 2021-2023
Georgia Institute of Technology GPA: 4.0/4.0
Specialization in *Machine Learning* *Thesis Advisor:* Prof. Dhruv Batra

B.Tech. in Computer Science & Engineering with Honors 2016-2020
Indian Institute of Technology Bombay, Mumbai GPA: 9.47/10.0
Minor in *Applied Statistics & Informatics* *Thesis Advisor:* Prof. Suyash Awate

PUBLICATIONS

· **GOAT: Go To Any Thing**
Under submission
M. Chang*, T. Gervet*, M. Khanna*, **Sriram Yenamandra***, D. Shah, S.Y. Min, K. Shah, C. Paxton, S. Gupta, D. Batra, R. Mottaghi, J. Malik, D. Chaplot

· **LANCE: Stress-testing Visual Models by Generating Language-guided Counterfactual Images**
Neural Information Processing Systems (NeurIPS) 2023
V. Prabhu, **Sriram Yenamandra**, P. Chattopadhyay and J. Hoffman

· **HomeRobot: Open-Vocabulary Mobile Manipulation**
Conference on Robot Learning (CoRL) 2023
Sriram Yenamandra*, A. Ramachandran*, K. Yadav*, A. Wang, M. Khanna, T. Gervet, T.Y. Yang, V. Jain, A. Clegg, J. Turner, Z. Kira, M. Savva, A. Chang, D.S. Chaplot, D. Batra, R. Mottaghi, Y. Bisk, C. Paxton

· **FACTS: First Amplify Correlations and Then Slice to Discover Bias**
International Conference on Computer Vision (ICCV) 2023
Sriram Yenamandra, P. Ramesh, V. Prabhu and J. Hoffman

· **Adapting Self-Supervised ViTs by Probing Attention-Conditioned Masking Consistency**
Neural Information Processing Systems (NeurIPS) 2022
V. Prabhu*, **Sriram Yenamandra***, A. Singh and J. Hoffman

· **Housekeep: Tidying Virtual Households using Commonsense Reasoning**
European Conference on Computer Vision (ECCV) 2022
Y. Kant, A. Ramachandran, **Sriram Yenamandra**, I. Gilitschenski, D. Batra, A. Szot*, and H. Agrawal*

· **Semi-Supervised Deep Expectation-Maximization for Low-Dose PET-CT**
International Symposium on Biomedical Imaging (ISBI) 2022 (Received best paper award)
V. Sharma, A. Khurana, **Sriram Yenamandra**, S.P. Awate

· **Learning Image Inpainting from Incomplete Images using Self-Supervision**
International Conference on Pattern Recognition (ICPR) 2020
Sriram Yenamandra, A. Khurana, R. Jena, S.P. Awate

· **FaaSter: Accelerated Functions-as-a-Service with Heterogeneous GPUs**
short paper at *IEEE High Performance Computing, Data and Analytics (HiPC) 2021*
A. Garg, P. Kulkarni, U. Bellur, **Sriram Yenamandra** * *equal contribution*

ACHIEVEMENTS

· Secured **third position** on the easy version of Habitat Rearrangement Challenge organized at NeurIPS [2022]
· Awarded **Advanced Performer's** grade for performance in top 3% in UG *Linear Algebra* course [2017]
· Awarded **Branch Change** to CSE department for exceptional academic performance in UG first year [2017]
· Secured **All India Rank 69** in **JEE (Main)** entrance exam among over 1.2 million candidates [2016]
· Secured **All India Rank 387** in **JEE (Advanced)** entrance exam among over 140,000 candidates [2016]
· Secured **State Rank 23** among 250 thousand candidates in Maharashtra's engineering entrance exam [2016]
· Among **National Top 1%** out of 44032 candidates in National Standard Examination in **Physics**, India [2016]
· Awarded **INSPIRE Scholarship for Higher Education** for performance in top 1% in Class XII exam [2016]
· Awarded **KVPY fellowship** for pursuing higher studies in Basic Sciences by Government of India [2015]

ML/AI EXPERIENCE

HomeRobot: Open-Vocabulary Mobile Manipulation *August 2022 - July 2023*
CVMLP Lab *Georgia Tech*
- Developed a **Sim2Real** robotics benchmark for evaluating agent's ability to rearrange objects using their names
- Built a baseline by chaining manipulation and navigation skills trained via **reinforcement learning**
- The proposed baseline achieves 20% success rate on real robot outperforming a simple SensePlanAct baseline

Generating Counterfactuals for Stress-Testing Vision Models *April 2023 - June 2023*
Hoffman Lab *Georgia Tech*
- Worked on developing a method that can automatically generate image edits for testing model sensitivity
- Finetuned **LLaMA-7B** model using **LoRA** approximation to generate diverse perturbations of image captions
- Images generated from these captions caused top-1 accuracy drops (4-8%) in all standard vision classifiers

Identifying spurious correlations via bias amplification *August 2022 - March 2023*
Hoffman Lab *Georgia Tech*
- Proposed an approach that amplifies **spurious correlations** before clustering to isolate underrepresented slices
- The proposed approach outperforms prior work by at most 35% Precision@10 across a diverse evaluation settings

Adapting Self-Supervised Vision Transformers *January 2022 - May 2022*
Hoffman Lab *Georgia Tech*
- Worked on adapting ViTs pretrained using self-supervised methods (eg. MAE, DINO) to new domains
- Developed a selective self-training strategy that uses ViT's attention consistency across masked versions of image
- Achieved SOTA performance on standard UDA benchmarks for adapting MAE and DINO initialisations of ViTs

GOAT: Go To Any Thing in Real Environments *July 2023 - November 2023*
CVMLP Lab *Georgia Tech*
- Worked on a navigation system that can reach a series of goals specified via language, image or object category
- Built an agent memory that keeps track of object instances as the agent explores for matching with goals

Tidying Virtual Households using Commonsense Reasoning *October 2021 - March 2022*
CVMLP Lab *Georgia Tech*
- Worked on developing a benchmark for evaluating an agent's ability to tidy-up dirty households
- Led a data collection effort (1500+ human hours) for collecting human preferences of correct object placements
- Developed a baseline that uses large language models for reasoning about the valid placements of objects

Learning Image Inpainting from Incomplete Images *August 2019 - July 2020*
Bachelor's Thesis Project *IIT Bombay*
- Worked on the problem of inpainting images having holes using an incomplete and corrupted training data set
- Achieved better performance than state-of-the-art inpainting algorithms on CelebA face and Stanford car datasets

Virtual Cloth Try-On *July 2020 - August 2021*
Machine Learning Team (worked remotely) *Uplara*
- Contributed at an e-commerce startup; worked on the task of providing cloth try-on experience to customers
- Worked on DNN-based cloth warping and inpainting modules within the virtual try-on pipeline

OTHER RESEARCH EXPERIENCE

Graph planning with expected finite horizon and fixed variance *May-July 2018*
*Guide: Dr. Laurent Doyen | Summer Internship in **Theoretical CS*** *LSV, ENS Paris-Saclay, France*
- Worked on the problem of finding optimal plans in a graph that maximize the worst-case expected utility under adversarial stopping-time distribution with expected finite horizon and fixed variance
- Proved that distributions with at most three points in support are sufficient for optimal value of a plan
- Constructed a problem instance to show that memory-less plans are not sufficient for optimality

FaaSter: Accelerated Functions-as-a-Service with Heterogeneous GPUs *Aug 2019 - July 2020*
*Guide: Prof. Purushottam Kulkarni | Research project in **Computer Systems*** *IIT Bombay*
- Worked on a cloud framework for scheduling tasks on heterogeneous GPUs having different compute capabilities
- Demonstrated the performance benefits of slicing a given task heterogeneously on multiple GPUs
- Implemented a simulated version of the framework and the proposed scheduling heuristic using SimPy package

TECHNICAL SKILLS

Programming Languages	Python, C++, C, Java, Racket (Scheme), Bash
Web and app Development	HTML, CSS, JavaScript, PHP, Android, SQL
Data Analysis	PyTorch, Pandas, TensorFlow, Keras, MATLAB, Numpy, OpenCV
Other Softwares	LaTeX, Git, AutoCAD, Doxygen, Lex, Yacc

OTHER UNDERGRAD PROJECTS

Offside Detection System for Football games *May-July 2017*
Institute Technical Summer Projects *IIT Bombay*

· Implemented a program that detects offside occurrence in a football game in Python

Chinese Checkers Game *Spring 2018*
Guide: Prof. Amitabha Sanyal *Abstractions & Paradigms for Programming course*

· Developed a Chinese Checkers game playing engine using functional programming in DrRacket
· Implemented minimax algorithm along with alpha-beta pruning to find the best AI move

Vector-valued Image Regularization with PDEs *Autumn 2018*
Guides: Prof. Suyash Awate and Prof. Ajit Rajwade *Digital Image Processing course*

· Implemented techniques for image regularization based on partial differential equations (PDEs) in Matlab
· Used different regularization PDEs for different smoothing applications like image denoising and inpainting

Temporal Data Support for PostgreSQL *Autumn 2018*
Guide: Prof. S Sudarshan *Database & Information Systems course*

· Extended open-source PostgreSQL code base to support relations having records with temporal validity
· Supported syntax for relations to be declared temporal on declaration of an attribute as valid time attribute

TEACHING EXPERIENCE

Undergraduate Teaching Assistant

· *Computer Architecture* course under Prof. Bhaskaran Raman *Autumn 2019*
· *Abstractions & Paradigms for Programming* course under Prof. Amitabha Sanyal *Spring 2019*
Responsible for conducting tutorials and lab sessions, setting assignments and grading examinations

SERVICE

· Serving as the organizer for HomeRobot: Open Vocabulary Mobile Manipulation challenge at NeurIPS 2023
· Served as the reviewer for ICLR 2024, NeurIPS2023, ISBI 2022 and ICPR 2022 peer-reviewed conferences
· Completed 80 hours of social service under NSS (National Service Scheme), IIT Bombay