

Abhinav Sharma

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Interests

Computer Vision, Deep Learning, Reinforcement Learning, Graph Neural Network

Education

Indian Institute of Information Technology Guwahati
Bachelor of Technology in Computer Science and Engineering

G.P.A: 8.93/10
2019–2023 (Expected)

Publications

[1] **PreAxC: Error Distribution Prediction for Approximate Computing Quality Control using Graph Neural Networks¹** - Under review at [ASPDAC 2023](#). Our approach with baselines, [\(Li et al., 2015\)](#) and [\(Traiola et al., 2019\)](#) demonstrate superior performance in Relative Error Mean by 11.5% and 19.51% respectively.

Experience

Research Specialist at AISys Lab
University of South Carolina

South Carolina, US

Supervised by: Dr. Pooyan Jamshidi & Dr. Devashree Tripathy

May 2022– Present

- Working on [Facebook's Augmented Reality System Investigator \(FARSI\)](#) to enhance its Search Heuristic in Domain-Specific Design Space Exploration.
- Created Fault-Injection Module for the [NASA Raspberry-SI Project](#) to enhance the robustness of Causal Models used in [Europa Lander](#) for the uncertain environmental changes.
- Created Policy Extractor Module for PRISM commands in [NASA OceanWorlds Simulator](#) for [OWLAT](#) platform of Jet Propulsion Laboratory.

Research Intern at Web Information Systems (WIS) group
Delft University of Technology

Delft, Netherlands(Remote)

Supervised by: Dr. Ujwal Gadiraju

Aug 2022 - Present

- Currently working on synthetic prediction task to study the algorithm's performance vs. skill-correlation between human and algorithm.
- Created an empirical setup to systemically study the influence of different errors in human decision making and reliance on AI systems.

Research Intern at Sharc lab
Georgia Institute of Technology
Supervised by: Dr. Cong (Callie) Hao

Atlanta, US(Remote)

May 2021–Jan 2022

- Created data-sets for data flow graph with approximate adder and multiplier and computed the relative error curves.
- Trained Graph Convolutional Network to predict the probability distribution functions and its parameters for different kind of Relative Errors.
- Proposed a State of art research to predict the best place for approximate components in DFGs to optimize the hardware implementation.
- Related Publication: [1].

Research Intern at Xu Lab
Manager: Dr. Min Xu & Dr. Sima Behpour

Pittsburgh, US(Remote)

Dec 2021– Jan 2022

- Worked on Unsupervised Continual Learning to acquire informative representations from unlabeled data that can be used for more effective learning of downstream tasks from the lowest amounts of labeled data.

Technical Skills

- **Programming Languages:** Python, C, C++, Matlab, SQL
- **Software and tools:** OpenCV in Python, Numpy, Scipy, Matplotlib, DGL, Git, Linux
- **Machine Learning Frameworks:** Pytorch, Tensorflow.
- **Web Development and Scripting :** HTML, PHP, CSS, JavaScript, Bash.

Projects

Feature Engineering and Dimensionality Reduction using Neural Architectural Search

- Trained a Convolutional Neural Network using a Hyperband tuner for quick convergence and adaptive resource allocation to arrive at the optimal set of hyperparameters. Resulted in reduced model size and compute resources while still having same accuracy (Number of units in 1st Dense layer reduced from 512 to 160) .

Employee Management System

- Developed a Database management system to facilitate storage of all the employee's information in MySQL database with Java GUI to ease the retrieval, storage and viewing for administrators.

Linux command shell

- Made a linux command-line interface and implemented Piping to allow the stdins and stdouts of a list of programs to be concatenated in a chain to recognize the internal commands like cat, pwd, mkdir, exit.

Achievements

- **NTSE Scholar, MHRD(2016)** - Awarded with the prestigious NTSE Scholarship by Government of India which is given to only 1000 meritorious students across the country in science stream to promote research and higher studies.
- **Matriculation Exam(2016)** - Secured All State Rank 2 among 1 million candidates appearing for the Exam.

Voluntary Experience

- Sub-reviewer of Design Automation Conference 2022
- Poster Presentation at UofSC Symposium 2022.
- Member of [Hugging-Face-Supporter Organization](#)
- Project Manager of [Shikdum Learning](#) as a member of Millennium Campus Network
- Community Development Intern at [Progate](#)

Relevant Courses

Computer Science : Machine learning, Artificial Intelligence, Parallel Computer Architecture, Cloud Computing, Operating System, Computer Security, Software Engineering.

Electronics and Communication Engineering : Digital Design and Lab, Electrical Circuit Analysis, Basic Electronic Circuits and Lab.

Mathematics : Linear Algebra, Multivariate Calculus, Stochastic Processes and Statistics, Discrete Mathematics, Finite Automata and Theory of Computation.

Humanities and Social Sciences : Linguistics, Film Studies, Indian Writing in English, Economic Policy.

References

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