Paarth Iyer

Curriculum Vitae

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WORK EXPERIENCE

Consultant / Research Assistant July 24 - Ongoing
AlgoLabs / CMI
Description : Working at AlgoLabs as a Research Assistant under Asst. Prof. Pranabendu Misra from Chennai Mathematical Institute, on topics relating to machine learning and large language models.

Research Intern Aug 24 - Ongoing
Jio AICoE
Description : Researching and exploring Image-to-3D pipelines using diffusion models, gaussian splatting and other CV techniques.

EDUCATION

Master of Science (Computer Science) Aug 2022 - June 2024
Chennai Mathematical Institute CGPA : 9.66
Master's thesis : Speeding up diffusion models
Advisor : Asst. Prof. Pranabendu Misra

Bachelor of Mathematics (Hons.) July 2019 - May 2022
Indian statistical Institute, Bangalore 87.2%

RELEVANT COURSES

Computer Science
Advanced ML, Computer Vision, Foundations of ML, Data Mining and ML, Natural Language Processing, Information Retrieval

Mathematics
Statistics, Probability Theory, Linear Algebra, Multivariate Calculus

PROJECTS and RESEARCH EXPERIENCE

LLM speedup and compression techniques Jul 2024 - Ongoing
– Developing novel methods to compress inputs and accelerate evaluation for pre-trained large language models (LLMs).

Generative techniques for Image to 3D pipelines Sept 2024 - Ongoing
– Reviewing and experimenting with different image-to-multiview diffusion models and implentations to evaluate their efficacy in pipeline construction.
– Investigating Gaussian Splatting methods for multiview-to-point-cloud conversion.

Diffusion and Flow Matching Models Summer 2023 - June 2024
– Conducted research on and surveyed diffusion and flow matching generative processes for my Master's thesis.
– Explored advancements in model architecture and techniques for speeding up models, such as samplers and distillation.
– Studied control mechanisms, including Classifier-Free Guidance (CFG) and ControlNet, for output regulation.

StyleGAN3 and DragGAN Summer 2023

– Analyzed improvements in StyleGAN3 architecture over earlier versions.

– Conducted experiments with style vectors to observe their effect on outputs, with varying types of style mixing.

– Compared DragGAN's structural manipulation capabilities on StyleGAN3 against on StyleGAN2.

Instructor : Asst. Prof. Pranabendu Misra

Testing Robustness of NNs against adversarial attacks Sept 2023

– Applied FGSM adversarial attacks on pretrained classification networks to subtly alter input images and deceive models.

– Evaluated and compared the robustness of various architectures.

As a part of the Advanced Machine Learning course

Word game on the blockchain Nov - Dec 2022

– Designed and deployed a word game on a local blockchain (Ganache) as a proof of concept.

– Developed a browser-based frontend connected to the blockchain via MetaMask.

As a part of the Intro to Blockchain course

Retrieval system using NER tagging Fall 2022

– Built a retrieval system that utilized Named Entity Recognition (NER) tagging during indexing to improve query results.

– Integrated Solr for backend indexing and retrieval, with Python for tagging and automation.

As a part of the Information Retrieval course

OTHER EXPERIENCE

- TA for course : Advanced ML Aug - Dec 2024
- TA for course : Data Mining and ML Jan - June 2024

ACHIEVEMENTS

- Recipient of Sriram Scholarship (for Master's) Aug 2022 - June 2024
- IIT-JAM 2022 Mathematics All India Rank 45
- IIT-JAM 2022 Statistics All India Rank 66

TECHNICAL SKILLS

Programming Languages
Python (ML framework : Pytorch), C++, R, Julia
Web : SvelteKit, Tailwind, CSS

NON-ACADEMIC

Tessellate 2024, 2025 website and backend
Developed the website and backend for Tessellate and STEMS, managing event registrations.

Tessellate 2023, 2024 design
Contributed to the design for Tessellate, the annual CMI college fest, and STEMS, its associated online Olympiad.

LIMIT 2021 design
Designed materials for LIMIT, an annual online Olympiad organized by ISI Bangalore.