BHANU PRATYUSH MANTHA

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EDUCATION

National Institute of Technology, Tiruchirappalli   **July 2021 – May 2025**
Bachelor of Technology in Electronics and Communication Engineering   *CGPA : 8.64/10.0*

EXPERIENCE

Carnegie Mellon University   **May 2023 - October 2024**
Xu Labs Research Intern | Python, PyTorch, WandB
- Developed **SaSi**, a novel self-augmented **few-shot learning** based framework for Cryo-electron tomography particle detection, achieving significant results with only **5 particles per input class**.
- Implemented techniques such as **Consistency Loss**, **Self-Supervised Learning (SimCLR)**, and **AugMix** to enhance data efficiency, outperforming existing methods in accuracy.

SLB   **May 2024 – July 2024**
Software Engineering Intern | Python, Flask   *Pune, Maharashtra*
- Developed and deployed Flask-based RESTful APIs to fully automate Cognite workflow execution, enabling zero-manual transfer of well production data to OSDU.
- Integrated **Microsoft Azure Blob Storage** for secure retrieval of credentials and configuration files, enabling robust and scalable backend access to cloud-based resources.

SLB   **May 2023 – July 2023**
Data Science Intern | Python, PyTorch, HuggingFace   *Pune, Maharashtra*
- Fine-tuned **SegFormer** and adapted the **Segment Anything Model** for instance segmentation on domain-specific data, improving accuracy and efficiency.
- Developed a **permutation invariant algorithm** reducing raster extraction time from weeks to 2 minutes, cutting compute costs by **$70,000** for 1000 images.

PUBLICATIONS

- Co-Author: **CVPR2024**: Muhammad Nawfal Meeran, Gokul Adethya T[†], Bhanu Pratyush Mantha[†]. SAM-PM: Enhancing Video Camouflaged Object Detection using Spatio-Temporal Attention. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops, 1857–66,2024.

- Co-Author: **IC2E3**: P.V Yeshwanth, Jithin Rajan, Bhanu Pratyush Mantha, Pottabathina Siva, S.Deivalakshmi. Self-Governing Assessment Network (SGAN) Based Super Resolution for CT Chest Images. In 2023 International Conference on Computer, Electronics & Electrical Engineering & their Applications.

PROJECTS

SAM-PM | *Python, PyTorch*   **July 2023 - November 2023**
Spider R&D
- Developed the Segment Anything Model (SAM) Propagation Module to adapt SAM to videos enforcing **temporal consistency** and **domain-specific knowledge**.
- Achieved state-of-the-art performance for video camouflaged object detection task, with the addition of minimal parameters ($< 1M$) keeping the SAM weights frozen. Published as a paper in **CVPR 2024** workshops.

Quark Gluon Reconstruction | *Python, PyTorch*   **April 2023 - June 2023**
Spider R&D
- Conducted a study comparing the results of the **Denoising Diffusion Probabilistic Model (DDPM)** and **Denoising Diffusion Implicit Model (DDIM)** research papers for the reconstruction of quark and gluon events.
- Implemented **Graph Autoencoder** using **Graph Convolution Networks** to learn better representations for reconstructing quark and gluon events.

TECHNICAL SKILLS

Languages: Python, C++
Technologies: PyTorch, Numpy, Pandas, Matplotlib, Scikit-Learn, Tensorflow, Keras, GitHub, Git, Vim, MATLAB, Linux, OpenCV, HuggingFace, Flask, WandB, LaTeX, Docker, SQL

AWARDS AND ACHIEVEMENTS CERTIFICATES

- Achieved **12th position** in **Amazon ML Challenge** among **75000 people** from across the country
- **Runner-up** among **1800+ teams** at Rajasthan Police Hackathon 1.0, conducted by the State Government of Rajasthan.
- **Winner** of Smart India Hackathon 2023, conducted by the Government of India
- **Winner** among 1100+ teams at Schlumberger's New Year Hackathon, Shaastra, IIT Madras.
- **Winner** among 500+ teams at L&T EduTech Hackathon, Shaastra, IIT Madras.