YASH MEHAN

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EDUCATION

B.Tech. + MS by Research in Computer Science: 8.48/10
International Institute of Information Technology, Hyderabad
2020 – May 2025 expected | Hyderabad, India

RESARCH AND INDUSTRY EXPERIENCE

Robotics Research Center: Undergraduate Researcher
Aug 2022 – Present | IIIT Hyderabad
Deep Learning | Computer Vision | Robotics

- Working on **Transformation Equivariant Deep Polynomial Networks** for 3D object representations.
- Currently Working under **Prof. Madhava Krishna** on 3D scene understanding and topological segmentation of indoor environments in collaboration with **MIT CSAIL**.
- Worked on **Local and Global Feature Matching for SLAM**: VLAD Clustering for Visual Place Recognition in images with diverse viewpoints differences for identifying loop closure edges and rotation robust feature matching, with **University of Adelaide**.

Indian Institute of Science: Summer Research Intern
May 2022 – Aug 2022 | Bengaluru
Medical Imaging | Deep Learning | GANs

- Worked under **Prof. Prathosh AP** on deep generative modelling and Generative Domain adaptation on medical imaging using GANs and Energy Based Models.

Center for Development of Telematics: Winter R&D intern
Nov 2021 – Dec 2021 | Govt. of India, New Delhi
Embedded C | PSoC | Optical Networking

- Developed and successfully tested a low-level algorithm to facilitate autodiscovery of ports; and unsupervised Lambda Provisioning in fronthaul DWDM optical networks. Patent Pending.

AWARDS AND ACHIEVEMENTS

- Finalist, Conrad Spirit of Innovation Challenge 2018, pitched at **Kennedy Space Center**, Cape Canaveral, USA. Received **NASA Goddard Technology Award**.
- Worldwide Ranked 1054, 1104 in Google Kickstart Round B and E.
- **ACM ICPC** 2021 Gwalior-Pune Regionalist.
- **Dean's Merit List** Awardee for Monsoon '22 and Spring '21.
- **All India Rank 1400** in JEE Advanced 2020 (**Top 0.9%** nationwide)
- **All India Rank 2545** in JEE Main 2020 (**Top 0.2%** nationwide)
- Awarded National Research Fellowship Kishore Vaigyanik Protsahan Yojana (KVPY) by Indian Institute of Science. **All India Rank 115**, in 2018 and **All India Rank 567** in 2019 among 50,000 candidates.

RELEVANT COURSEWORK

- **CS** C Programming, Data Structures and Algorithms, Operating Systems, Databases, Object Oriented Programming, Computer Systems Organisation, High Performance Computing
- **Math** Real Analysis, Discrete Algebra, Linear Algebra, Probability and Statistics, Automata Theory, Algorithms Engineering, Algorithm Design, Applied Optimisation
- **AI & Robotics** Data Analytics Theory, Statistical Methods in AI, Computer Vision, Mobile Robotics, Photogrammetry
- **Misc** IoT, Embedded Systems, Digital Signal Processing

PUBLICATIONS

- Sharma A*., **Mehan Y***., Dasu P., Garg S., Krishna M., **Hierarchical Unsupervised Topological SLAM**, IEEE Intelligent Trasnportation Systems Conference (ITSC) 2023. arXiv

SELECTED PROJECTS

Analysis of Representations of 3D Objects for Robotic Grasping: Computer Vision and Robotics
Pytorch | ROS | Gazebo | Deep learning

- Exploring and analysing different 3D representations (NeRFs, point cloud, depthmaps, etc) for different tasks (Registration, Grasping, Collision Avoidance etc.)
- Analysing Grasp Quality prediction on various representations

Bottom Up Cubing: Data Analytics
C++ | Python

- Implemented the Bottom-Up Cube algorithm to efficiently process and analyze large datasets in an OLAP environment, ensuring optimal memory utilization and query performance.
- Designed and integrated a paging mechanism to manage memory resources effectively, allowing the algorithm to handle massive datasets without exhausting available memory, thus enhancing scalability.

GrabCut++ 🔗: Computer Vision
Python | Graph Cuts

- Implemented the full functionality of GrabCut for interactive Image Segmentation specified in Rother et al. SIGGRAPH 2004 paper.
- Proposed an extension to incorporate saliency maps as to augment user interaction

Enriching Sismics Music Player 🔗: Full Stack
Java | Angular | Sonarqube | PMD

- Extended the Sismics Music player by adding a secure user management and access controlled library management.
- Integrated LastFM and Spotify to enable users to search for songs, get recommendations, and stream music online.
- Applied Sonarqube & PMD code evaluation tools to improve the design & quality of the application, identified & refactored design smells, and measured code metrics.

xv6 enriched 🔗: Low level, Operating Systems
kernel C

- Enriched MIT xv6-riscv kernel by adding new tracing syscalls, and gathering metadata of running processes
- Implemented FCFS, PBS, MLFQ Task scheduling algorithms

TECHNICAL SKILLS

- **Languages**: C/C++ | Python | MERN | Bash | x86asm
- **Tools**: Git | Docker | SLURM | MATLAB | valgrind
- **Deep Learning**: PyTorch | PyTorch Lighning | OpenCV | Pytorch Geometric | Jax
- **Data**: Numpy | Pandas | SQL
- **Misc**: AWS | Cypress PSoC | Arduino | Jupyter | Linux