

Hardaat Singh Baath

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🌐 LinkedIn

🐙 GitHub

🔗 Website

EDUCATION

B.E. in Computer Science

Birla Institute of Technology and Science, Pilani [🔗](#)

Nov 2021 – present

Sancoale, Goa, India

EXPERIENCE

DG Takano [🔗](#)

AI Engineer

May 2024 – Aug 2024

Remote

- Successfully automated the product testing line to enable remote operation and real time data monitoring.
- Integrated with Cloud Service for data storage and analysis.

CSIR - CEERI, Pilani [🔗](#)

Research Intern

Jun 2023 – Aug 2023

Pilani, Rajasthan, India

- Advisor: Dr. Dhiraj Sangwan [🔗](#)
- Developed a novel pipeline utilizing Deep Learning techniques for the generation, segmentation, and restoration of Rajasthani Wall Murals.

PUBLICATIONS

Damage Segmentation and Restoration of Ancient Wall Paintings for Preserving Cultural Heritage [🔗](#)

Nov 2023

International Conference on Computer Vision and Image Processing, 2023

Hardaat Singh Baath, Soham Shinde, Jinam Keniya, Priyanshu Ranjan Mishra, Anil Saini, Dhiraj Sangwan

PROJECTS

Neuro Chaos Learning for Images

Jun 2024 – present

Supervised Project (ongoing)

- Advisor: Dr. Harikrishnan NB [🔗](#)
- Implementing a **Chaos based Deep Learning model** for Image Classification.

LSTM for Stock Market Prediction

Feb 2024 – present

Supervised Project (ongoing)

- Advisor: Dr. J K Sahoo [🔗](#)
- Exploring and implementing an **LSTM-based time series algorithm** for Stock Market Prediction using features like Signal line, MacD line, EMA etc with feature extraction using **CNN-based Liquid Neural Network**.
- Implementing a trading algorithm with transaction costs and taxation for realistic simulation of stock markets using Nifty 50 dataset.

Project Kratos, A Mars Rover [🔗](#)

May 2023 – May 2024

Club Project

- Worked on a **P-controlled visual servo** algorithm to follow Arrow and ArUco tags detected using **YOLOv3, YOLOv5, OpenCV and Python**.
- Implemented **RTK-GNSS**-based GPS coordinates system and **PID-based** algorithm to navigate to the specified points. Achieved accuracy of 10 cm.
- Implemented **Elevation Terrain Mapping** algorithm using Point Cloud information received from Zed2i stereo camera.
- Implementing **global and local path planning** algorithms for autonomous navigation in unknown environment Jetson Xavier AGX.

Deep Learning Techniques for Damage Restoration

Jun 2023 – Aug 2023

Supervised Project

- Advisor: Dr Dhiraj Sangwan [✉](#)
- Developed a DL-based pipeline for damage generation, segmentation and restoration of Rajasthani Wall Murals.
- Used models like **StyleGAN2-ada-PyTorch** for damage generation, **UNet++** and **DeepLabV3+** for damage segmentation and **AOT-GAN** and **Partial Convolutional Network** for image inpainting.

Distributed Deployment Platform [✉](#)

Jan 2024 – May 2024

Course Project

- Instructor: Dr Arnab K. Paul [✉](#)
- Implemented a distributed deployment platform that deploys Github repositories on web using **AWS S3** and **ECS services**.
- Implemented backend with **API server** and **Reverse Proxy** using NodeJS.
- Logs saved on **PostgreSQL Database**, using **Kafka Server** as an intermediate service.

Haar Wavelets based Path Planning

Sep 2023 – present

Supervised Project (ongoing)

- Advisor: Dr Amit Setia [✉](#)
- Designing and implementing a HAAR wavelets-based computationally efficient path planning algorithm for drones using map generated from point cloud.

SKILLS

Programming Languages

C, C++, Python, Java, NodeJS, MATLAB

Libraries

Numpy, Matplotlib, Pandas, Seaborn, OpenCV, Scikit-learn

Framework

ROS, PyTorch, Tensorflow, Keras

Tools

Gazebo, CoppeliaSim, Docker, AWS, Git and GitHub

Soft Skills

Public Speaking, Canva, Creative Writing

Languages

English, Hindi, Punjabi

RELEVANT COURSES

Computer Programming | Data Structures and Algorithms | Database Management Systems | Operating Systems | Computer Networks | Computer Architecture | Probability and Statistics | Linear Algebra | Differential Equations | Multivariate Calculus | Machine Learning | Brain Inspired Deep Learning

Online Courses

- AMRx: Autonomous Mobile Robotics, ETH Zurich [✉](#)
- CS231n Stanford Computer Vision [✉](#)
- IBM AI Engineering Specialization (ongoing)

AWARDS

Excellence Award (Overall) [✉](#)

Jan 2023

Internation Rover Competition, Bangalore

- Won **Best Overall Rover** award.
- Stood 2nd in the Autonomous Challenge and 4th overall.

MENTORSHIP

Subsystem Lead [✉](#)

May 2023 – present

Autonomous Subsystem, Project Kratos

Sancoale, Goa, India

- Leading a team of 10+ members in the Autonomous System.

- Doing Research and Development of the current system and involved in collaboration with other subsystems.

Project Mentor 

Quark Summer Technical Projects, BITS Goa

- Mentored a summer course on ROS, Robot Automation and Computer Vision for university freshers.
- Conducted instructional sessions hands-on tutorials and evaluated weekly assignments

Jun 2023 – Sep 2023
Sancoale, Goa, India

PMP Mentor 

Peer Mentorship Program, BITS Goa

- Mentored university freshmen throughout the first year via counselling and assistance for academic and non-academic fields

Oct 2022 – Jul 2023
Sancoale, Goa, India