Hardaat Singh Baath

hardaatsinghbaath@gmail.com

+91 765 785 2262

LinkedIn

GitHub

Website

EDUCATION

B.E. in Computer Science
Birla Institute of Technology and Science, Pilani
November 2021 – present
Sancoale, Goa, India
- *CGPA: 7.45*

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)
Internation Rover Challenge, Bangalore
January 2023
- Won Best Overall Rover award.
- Stood 2nd in the Autonomous Challenge and 4th overall.

RESEARCH EXPERIENCE

AI Engineer
DG Takano
May 2024 – present | Japan (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.

Research Intern
CSIR - CEERI, Pilani
June 2023 – August 2023 | Pilani, Rajasthan, India
- Advisor: Dr. Dhiraj Sangwan
- Developed a novel pipeline utilizing Deep Learning techniques to **generate, segment, and restore** Rajasthani Wall Murals.

PUBLICATIONS

Damage Segmentation and Restoration of Ancient Wall Paintings for Preserving Cultural Heritage
International Conference on Computer Vision and Image Processing, 2023
Hardaat Singh Baath, Soham Shinde, Jinam Keniya, Priyanshu Ranjan Mishra, Anil Saini, Dhiraj Sangwan

PROJECTS

Project Kratos, A Mars Rover
Club Project
May 2023 – May 2024
- Worked on a **P-controlled visual servo** algorithm to follow Arrow and ArUco tags detected using **YOLOv3, OpenCV** and **Python**.
- Implemented **RTK-GNSS-based GPS** coordinates system and **PID-based** algorithm to navigate to the specified points.
- Implementing **Probabilistic Terrain Mapping** algorithm using Point Clouds, Pose Estimates and Transformations.
- Implementing **global and local path planning algorithms** for autonomous navigation using Zed 2i camera and Jetson Xavier AGX.

Deep Learning Techniques for Damage Restoration
Supervised Project
June 2023 – August 2023
- 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.

LSTM for Stock Market Prediction
Supervised Project (ongoing)
February 2024 – present
- 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.