ABHISHEK SHARMA

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Skills

- **Programming Languages:** Python, C, C++, HTML, Java, CSS
- **Libraries:** PyTorch, TensorFlow, NumPy, Pandas, ROS, Django
- **Operating Systems:** Windows, Ubuntu, MAC
- **IDE Tools:** Google Colab, Docker, Jupyter Notebook, VS Code, GPU A/H100 Cluster

Work Experience

boAt Lifestyle Research and Development Bangaluru, Karnataka **Sept 2022 – July 2023**
Consult.Embedded Software Engineer
Roles and Responsibility :

- Develop efficient and reliable embedded d software using C and C++ programming language.
- Utilize Python frameworks for building an Automation, testing and improving embedded development workflow.
- Maintain the connectivity stacks including BLE, and Wi-Fi connectivity for seamless communication.
- Collaborate with cross-functional hardware, firmware and QA teams throughout the software build and release cycle.
- Focus on embedded software for hearable devices like TWS earbuds, neckbands, and IoT systems.
- Troubleshoot, debug, and system-level issues using communication protocol debugger and analyzer.

Cobottica Automation Private Limited Mumbai,Maharashtra **July 2021 – Oct 2021**
Robotics Engineer Trainee
Roles and Responsibility :

- Develop robotic system control and automation software using Python and ROS.
- Collaborate with the engineering team to integrate hardware components and deploy software seamlessly.
- Utilize ROS tools like RViz, rqt, and rosbag for navigation, tuning, testing, and data recording.
- Support the development and testing phases with effective use of ROS utilities.
- Ensure robust functionality and performance in robotic system applications.

Education

Indian Institute of Technology Dharwad *Aug 2024 – Present*
MS by Research
Recommended Category - Teaching Assistentship
Department of Computer Science and Engineering
Area of Research Interest: *Computer Vision, Time Series Modeling, Deep Learning and Machine Learning Optimization, Large Language Modeling, Multimodal Learning.*
CGPA: 7.87

G.V.Acharya Institute Of Engineering and Technology *Jul 2018 – Jun 2022*
Affilated To University Of Mumbai
Bachelor's of Engineering
Department of Computer Science and Engineering
CGPA: 8.07

Research Publication

- Sachin Maurya, Abhishek Sharma, Achyut Mani Tripathi, Kedar Khandeparkar. "**MaHaWave-Net: A Lightweight Multi-Scale Model for Fine-Grained Medical Image Segmentation**." *International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2026*. July – Sept 2025. [**Accepted** (Core Rank=A*)].

Projects

Enhanced Spatial Feature Selective Vision State Space Model **Jan 2025 – May 2025**
Team Members : Abhishek Sharma, Sachin Maurya

- Developed **EFSVMNet**, an improved VM-UNet variant with a lightweight **Spatial Feature Selective (SFS)** module to reduce feature redundancy and overfitting in medical image segmentation.
- Introduced a **feature importance mask** and **spatial feature selective loss**, enabling adaptive suppression of uninformative features and robust end-to-end optimization.

- Achieved superior or comparable results to state-of-the-art CNN, Transformer, and state-space models across six benchmark datasets (ISIC 2017/2018, Kvasir-SEG, CVC-ClinicDB, CVC-ColonDB, ETIS).
- Improved **Dice**, **IoU**, and boundary accuracy; ablation studies validated the effectiveness of the SFS module and loss for generalization across heterogeneous medical imaging. Tools: **Python, PyTorch, CUDA**

A Vision-Language Hybrid Framework for Automated Radiology Report Generation **Jul 2025 – Sep 2025**
Team Members : Abhishek Sharma, Sachin Maurya

- Designed a **generalized vision-language hybrid framework** for automated radiology report generation, integrating pretrained **state-space models** for image feature extraction and a **Transformer-based decoder** with an expert mechanism for textual report synthesis.
- Addressed the **computational inefficiency** of traditional Transformer decoders by proposing a lightweight, parameter-efficient architecture with reduced FLOPs and faster inference.
- Combined **dual pretrained visual encoders (ResNet101 and AdaMamba)** with an **MLP-Mixer** encoder to capture both global and local contextual information for enhanced multimodal understanding.
- Achieved improved performance over R2GeN baselines on the **IU X-ray dataset**, with notable gains in **BLEU-1 (0.505)**, **ROUGE-L (0.383)**, and **METEOR (0.190)** scores. Tools: **Python, PyTorch, CUDA, Transformers, Vision-Language Models**

Multi-Stage Deep Learning Model for Astroseismic Parameter Prediction **Sep 2024 – Jan 2025**

- Developed a multi-stage deep learning model to predict stellar seismic parameters ($\Delta\nu$) and ($\Delta\Pi$) from synthetic stellar power spectra.
- Incorporated 1D **CNN** for feature extraction, **GRU** for long-range dependencies, and **Transformer Encoder** for temporal contextualization; applied dropout and L2 regularization to prevent overfitting.
- Preprocessed data via outlier removal (IQR) and PCA; optimized with **Adam** and MSE loss.
- Achieved high prediction accuracy with strong generalization; visualized results using loss curves and actual vs. predicted plots. Tools: **Python, PyTorch, Matplotlib, Seaborn**

Apparel Recommendation System **Sep 2022 – Jan 2023**

- Developed an intelligent system to recommend apparel products based on textual descriptions and images, enhancing user experience and product discovery.
- Applied **collaborative filtering** for user behavior, **NLP preprocessing** for semantic similarity, and **deep learning** for visual similarity detection; handled missing data and inconsistencies through robust cleaning techniques.
- Delivered accurate, relevant recommendations, improving engagement and satisfaction on e-commerce platforms. Tools: **Python, TensorFlow/Keras, Pandas, NumPy, NLP libraries**

Extracurricular Activities / Achievements

- Served as a Volunteer in the 2nd/3rd IEEE Conference on Engineering Informatics 2024/25 (ICEI 2024/25) conducted at Indian Institute Of Technology Dharwad, Karnataka.
- Qualified GATE Computer Science 2024 with 95.64 %tile .
- Attended Advanced Level Robotics Project at S.P ROBOTICS MAKER LAB.
- Attended Drone Manufacturing & Flying Workshop at DRONE-IT Training Institute.

Recommendation

- **Prof. Achyut Mani Tripathi**
  Assistant Professor, Indian Institute of Technology (IIT) Dharwad
  Email: t.achyut@iitdh.ac.in
  Phone: +91-9678440236
- **Prof. Kedar Vithal Khandeparkar**
  Assistant Professor, Indian Institute of Technology (IIT) Dharwad
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