Rohit Hebbar

+49 17626036379 rohit.hebbar.official@gmail.com rohit-hebbar10 rohithebbar28

Professional Summary

M.Sc. candidate in Computer Science with an AI specialization from the University of Freiburg, possessing 3+ years of experience in AI, deep learning and computer vision research. Skilled in designing and implementing advanced Deep learning pipelines, developing model architecture, and optimizing workflows for robotics and industrial applications. Experienced in debugging and improving complex systems, with strong focus on building scalable and robust solutions. Seeking to drive AI innovation in industrial and applied research settings.

Experience

Fraunhofer IPA Mar 2023 – Dec 2024

Student Research Assistant in computer vision *Stuttgart, Germany*

- Designed and implemented the architecture for model-free instances deep learning pipeline, incorporating attention module, probablistic predictor component to enhance spatial feature processing, enabling robotic grasping in bin picking environments.
- Debugged, tested, and initiated training for the model, ensuring robust grasp prediction performance.
- Utilized NVIDIA's issac sim to generate synthetic data for robotic bin picking applications.
- Converted the Model to ONNX format to enable model run in different runtime environment(C++).
- Integrated FastSAM algorithm, reducing object segmentation time to an impressive 40 milliseconds, significantly boosting overall system performance.

University of Freiburg Jul 2023 – Jan 2024

Student Hiwi *Freiburg, Germany*

- Led the successful migration of CRISPRmap scripts from Perl to Python, ensuring codebase modernization and maintainability.
- Implemented Python best practices, resulting in cleaner, more modular, and maintainable code.

Jedox May 2022 – Sept 2022

Student Hiwi *Freiburg, Germany*

- Supported in creating CTO dashboard by Jedox software (cleaned data, applied different extracts, and transforms to normalize the data which helped in creating the dashboard.
- Associated in Telemetry project, took data from telemetry and prepared different reports (data visualization).

Technical Skills

Languages: Python, C++, Perl, HTML, Shell scripting
Technologies:PyTorch, Numpy, NLTK, Nvidia Issac SIM, Hmmprofiler, OpenCV, PyTorch3D, Pandas, Matplotlib, scikit-learn
Dev tools and Environments : Linux, Jupyter, Anaconda, Git (Gitlab), Docker
Concepts:Artificial Intelligence (AI), Deep Learning (DL), Machine Learning (ML), Computer Vision (CV), Machine Learning in Life sciences, Bioinformatics

Education

University of Freiburg Oct 2020 - Mar 2025

Master of Science in Computer Science (AI specialisation) *Freiburg, Germany*

University of Mumbai July 2015 - May 2019

Bachelor of Education : Electronics *Mumbai, India*

Projects

Deep Learning for Local Patch-Based 3D shape reconstruction in cluttered scenes - Master Thesis | *Pytorch, numpy ,Git*

- Designed and implemented a model-free deep learning pipeline for reconstructing 3D object shapes and poses in cluttered scenes using RGB-D inputs, leveraging segmentation, feature fusion, and a pretrained PointNet autoencoder.
- Demonstrated strong generalization with a mean Chamfer Distance of 0.2442 on unseen datasets, successfully predicting both object geometry and spatial relationships in complex environments.
- Integrated two novel pose estimation approaches—absolute and relative positioning—achieving improved spatial coherence and reducing mean position errors, enhancing scene-level understanding for robotics applications.
- **Keywords:** Computer Vision, Point Clouds, Pose Estimation, SAM (segment anything model)

Annotation and detection of Antimicrobial peptides using Deep Learning | *Python, Pytorch, HmmSearch*

- Designed a hybrid statistical and deep learning framework for classifying AMPs as natural or synthetic using advanced sequence analysis and databases like DBAASP, CAMPR4, and DRAMP.
- Achieved enhanced classification accuracy with Long Short-Term Memory (LSTM) and Gated Recurrent Unit (GRU) models through hyperparameter tuning and nested cross-validation, attaining a precision of 82%
- Utilized HMMER for profile alignment and CNNs, LSTMs, and GRUs for sequence annotation, paving the way for accurate AMP discovery and therapeutic advancements.
- **Keywords:** Deep Learning, Bioinformatics, Statistical Analysis, Hyperparameter optimisation, Nested cross-validation

Fine Grained Multi-label classification with text | *Python, PyTorch,NLTK*

- Trained a fine-grained multi-label classification model leveraging CLIP and annotations, complemented with COCO captions to improve prediction accuracy.
- Used image encoder and text encoder and trained them parallelly. Utilized CLIP and Resnet50 architectures for image encoding and for text encoding- spacy, NLTK packages to extract nouns, adjectives ensuring effective representation learning.
- **Keywords:** Computer Vision, Natural language processing (NLP), Multi-label classification