Nikhil Reddy Billa

github linkedin email scholar

Education

National Institute of Technology (NIT), Rourkela July 2018 - June 2022
Bachelor of Technology in Electrical Engineering

Research Interest

I am deeply interested in theoretical machine learning, and computer vision. My focus lies in autonomous navigation, domain adaptation, Generative AI, 3D vision and their applications in the medical field. I am eager to explore emerging areas like Large Language Models (LLMs).

Research Experience:

Research Assistant | *ML Lab, International Institute of Information Technology (IIIT) Hyderabad, India* Oct 2022 – Dec 2023
Advisor :Dr.Girish Varma

- Working on deploying fully autonomous navigation systems on the road to detect objects under adverse weather conditions and in unstructured traffic.
- Introduced a new dataset, which provides 5,000 pairs of high-quality paired RGB, NIR images with pixel-level annotations, captured under fog, rain, snow, and low light in unstructured driving conditions.
- Working on the safety and robustness of semantic segmentation models.
- As a part of IIIT Hyderabad, I developed simulation-based Labs for Discrete Mathematics course, using JS, jQuery and Cytoscape.js. This work is part of Virtual Labs, an initiative by the Ministry of Education, India.

Research Assistant | *School of Psychology and Vision Sciences, University of Leicester, UK* May 2022 – Sept 2022
Advisor :Dr.Mervyn Thomas

- I developed an AI-based system utilizing OCT scans to grade arrested retinal development accurately.
- Used data from different centres and OCT manufacturers and ensured the system's robustness to device variations through the implementation of unsupervised domain adaptation techniques.

Undergraduate Research Assistant | *Intelligent Systems Lab, NIT - Rourkela, India* Mar 2021 - Jan 2022
Advisor :Dr.Manish Okade

- Introduced a fully end-to-end CNN architecture featuring a preprocessing layer with high-pass filters to suppress image content effectively.
- This innovative approach significantly enhanced the estimation of resize factors for double-compressed resized images.
- The proposed network is fully end-to-end and does not rely on any hand-crafting.

Work Experience

Software Engineer 1 | *NCR Corporation - Hyderabad, India* July 2022 – Present

- Leveraged C# expertise to diagnose and resolve issues at Grocery and Fuel POS, ensuring optimal system functionality and a positive user experience.Additionally, developed new features to address evolving business requirements.
- Currently working on development of Selfcheckout and smartstore prototype.
- Developed a Python automation tool that streamlined data collection from logs, slashing time and effort by 98%. This eliminated manual processes and enhanced data accuracy

Computer Vision Intern | *KoiReader Technologies - Bengaluru, India* Mar 2021 - June 2021

- Developed a deep learning model for document classification, utilizing text embeddings and text positional embeddings.
- Leveraged advanced deep learning and natural language processing techniques to accurately classify documents based on their content and positional information. This internship allowed me to expand my skills in deep learning.

Publications

Accepted

- F. Shaik, A. Reddy, N.R. Billa, G. Varma, et al.."IDDAW: A Benchmark for Safe and Robust Segmentation of Drive Scenes in Unstructured Traffic and Adverse Weather", IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2024.
- N.R. Billa, B.P. Das, M. Biswal, M. Okade, "CNN based Image Resizing Forensics for Double Compressed JPEG Images", Journal of Information Security and Applications.

Under Review

- Nikhil Reddy, Zanhan Tu, Mervyn Thomas, Girish Varma et al. "International Multi-centre Validation of Unsupervised Domain Adaptation for Precise Discrimination between Normal and Abnormal Retinal Development", The Lancet Digital Health.

Skills

Languages: Python, Matlab, C, C++, C#, JavaScript
Tools: Git, VS Code, Jupyter, TFS
Frameworks: Pytorch, fastai, Streamlit
Other: Machine Learning, Computer Vision, DBMS, Data Structures and Algorithms, Object Oriented Programming.

Activities and Awards

- Rewarded USD 500 for developing a tool, "Performance Metric Analyzer," showcasing my skills and innovation in the NCR Global Hackathon 2023.
- Attended the 3D VISION SUMMER SCHOOL 2022, focused on 3-dimensional objects/scenes with applications in animation, AR/VR platforms, autonomous driving, and medical imaging, IIIT Hyderabad 2022.
- Received the People's Choice Award from NCR London Center for a smart store prototype at the NCR Global Hackathon 2022.

References

Dr.Girish Varma : Assistant Professor
International Institute of Information Technology Hyderabad, India
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Dr.Mervyn Thomas : NIHR Clinical Lecturer and Senior Clinical Research Fellow
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Dr.Manish Okade : Associate Professor
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