Shreyas Madhav Ambattur Vijayanand

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EDUCATION

Vellore Institute of Technology (VIT), Chennai *July 2018 - May 2022 (Expected)*

B.Tech in Computer Science and Engineering (*Most Recent Semester GPA: 9.09/10)* **CGPA:** 8.42/10

Relevant Coursework: Problem Solving and Programming, Data Structures and Algorithms, Discrete Mathematics and Graph Theory, Theory of Computation and Compiler Design, Operating Systems, Computer Architecture and Organization, Calculus for Engineers, Statistics for Engineers, Applied Linear Algebra, Machine Learning, Image Processing, Robotics and its Applications.

PROFESSIONAL EXPERIENCE

HCL Technologies *September 2021- Present*

Data Analyst Intern - Machine Learning

- Created a web platform powered by predictive models to identify and forecast information technology ticket escalations.
- Evaluated 35000 past ticket escalation issues to visualize trends in the 112 column-based incident information data.

Futurenet Technologies India Private Limited *November 2020- March 2021*

Computer Vision Intern

- Collaborated with a team of 4 developers for designing deep learning modules for exam proctoring.
- Constructed the face recognition network and liveness module and provided 16% improvement over their existing system.
- Deployed the application successfully to 100 virtualized desktops for a group of medical colleges in Chennai

RESEARCH EXPERIENCE

Centre of Advanced Data Science, VIT Chennai *June 2021 - August 2021*

Research Intern - Autonomous Driving and Artificial Intelligence

- Implemented interpretable Convolutional Neural Networks (CNN) for localization and perception of self-driving cars.
- Performed 3-D object recognition of multimodal street visual data from RGB cameras, LiDAR and infrared sensors.

Indian Institute of Technology (IIT), Madras *March 2021 - July 2021*

Research Intern - Visual Deep Learning

- Developed a novel interpretation strategy to explain the decision-making of Convolutional Neural Networks (CNN) and Graph Attention Networks for music genre classification based on their Mel-Spectrogram images.
- Devised a new image filtering method to identify the most influential frequencies in a CNN classified audio file.
- Extracted and isolated most influential frequencies in 1000 audio files belonging to 7 different music genres.

TEACHING EXPERIENCE

VIT Chennai *Fall 2020*

Undergraduate Teaching Assistant- CSE1001- Problem Solving and Programming (Python, C, C++)

- Assisted Dr.Nithyanandam, Professor (Head of Department), School of Computer Science and Engineering.
- Surpassed the minimum teaching hours fourfold with 66 lab hours and 19 session hours

RESEARCH PROJECTS

R-CubeBot (Dr. Kiliroor and Dr.Harini) | *Published in Waste Management and Research Journal (Sage Journals, IF: 3.54)*

- Proposed a visual servoing and tracking robot system with deep learning for the collection of household electronic wastes.
- Tested an articulated arm-based mobile robot powered by computer vision to serve as an attachment to garbage trucks.

Simultaneous Localization and Mapping (Dr. Rajesh Kanna) | Three *international peer-reviewed conferences*

- Explored the effects of parallelism on different processes of 2D LiDAR SLAM for indoor environments.
- Proposed a Parallel Fast Point Feature Histogram (FPFH) descriptor-based 3D outdoor LiDAR SLAM for aerial drones.
- Evaluated the effects of a novel curve-based mapping strategy and deep learning parameterization for its approximation.

DeepRecog - (Dr. Janaki Meena) | *Published in Multimedia Systems Journal (Springer, IF: 1.93)*

- Proposed an integrated underwater ensemble object detection framework for autonomous underwater vehicles.
- Created a new deblurring system using CNNs and adaptive filtering with Laplace pyramid fusion for image combination.

MDA-HSI | (Dr. Ayesha) | *IEEE Madras Section Conference 2021 (IEEE)*

- Constructed a 3D-2D hierarchical network structure with an overlapping 3D CNN for hyperspectral image classification.

PUBLICATIONS

Journal Publications

- **AV, Shreyas Madhav,** Raghav Rajaraman, K., Cinu, S. Harini," "Application of Artificial Intelligence to Enhance Collection of E-Waste: A Potential Solution for Household WEEE Collection and Segregation in India", Waste Management & Research, Nov.2021, doi:10.1177/0734242X211052846. *[Peer Reviewed, Impact Factor(IF): 3.54]*
- M.V., Pranav, **AV, Shreyas Madhav**, M., Janaki," DeepRecog: threefold underwater image deblurring and object recognition framework for AUV vision systems", Multimedia Systems, 2021*[Peer Reviewed, IF:1.935, Published by Springer]*

Conference Presentations

- M.V. Pranav, Koushik, C., **AV, Shreyas Madhav,** S. Ganapathy "Analyzing the Diagnostic Efficacy of Deep Vision Networks for Malignant Skin Lesion Recognition", 2021 IEEE International Conference on Disruptive Technologies for Multi-Disciplinary Research and Applications(CENTCON-2021), 2021*(Accepted)*
- **AV, Shreyas Madhav**, B.Rajesh Kanna," Evaluating the efficiency of B-spline surface mapping for Online Indoor SLAM", Second International Conference on Robotics, Intelligent Automation and Control Technologies (RIACT 2021),2021*(Accepted)*
- **AV, Shreyas Madhav**, M. V. Pranav, S. Vishakhavel, H. Murali and S. K. Ayesha, "A Multi-Dimensional Deep Hierarchical Approach Towards Aerial Hyperspectral Image Classification," 2021 IEEE Madras Section Conference (MASCON), 2021, doi: 10.1109/MASCON51689.2021.9563369.
- **AV, Shreyas Madhav**, and B. Rajesh Kanna. "Parallel FPFH SLAM for Aerial Vehicles." 2021 IEEE Conference on Norbert Wiener in the 21st Century (21CW). IEEE, 2021, doi: 10.1109/21CW48944.2021.9532582
- **AV, Shreyas Madhav,** Deepak Paramashivan, Arun Rajkumar" Towards Explainable Deep Models for Automated Music Genre Classification ", First Conference on Deployable AI, 2021*(Poster Presentation).*
- **AV, Shreyas Madhav**, B. Rajesh Kanna, and L. K. Pavithra. "Parallel Exploitation of 2D LiDAR Simultaneous Localization and Mapping." 2021 5th International Conference on Computer, Communication and Signal Processing (ICCCSP). IEEE, 2021.doi: 10.1109/ICCCSP52374.2021.9465538.
- Koushik, C., **AV, Shreyas Madhav**, and Rabindra Kumar Singh. "An Efficient Approach to Microarray Data Classification using Elastic Net Feature Selection, SVM and RF." International Conference on Innovative Technology for Sustainable Development 2021 (ICITSD 2021). IOP Publishing, 2021.doi:10.1088/1742-6596/1911/1/012010
- **AV, Shreyas Madhav**, Siddarth Singaravel, and A. Karmel. "Memory Utilization and Machine Learning Techniques for Compiler Optimization." International Conference on Innovative Technology for Sustainable Development (ICITSD-2021), ITM Web of Conferences. Vol. 37. EDP Sciences, 2021.https://doi.org/10.1051/itmconf/20213701021.

Book Chapters

- **Shreyas Madhav A.V**., Tyagi A.K. (2022) "The World with Future Technologies (Post-COVID-19): Open Issues, Challenges, and the Road Ahead". In: Tyagi A.K., Abraham A., Kaklauskas A. (eds) Intelligent Interactive Multimedia Systems for e-Healthcare Applications. Springer, Singapore. https://doi.org/10.1007/978-981-16-6542-4_22.

SKILLS

Languages and Softwares: Python, MATLAB, CUDA, ROS, Java, C, C++, HTML, CSS, Javascript, MySQL.
Libraries and Toolboxes: OpenCV, MATLAB toolboxes (Navigation, Image processing, LiDAR), TensorFlow, Keras, Pytorch.
Productivity Tools: Microsoft Word, Powerpoint, Excel, Photoshop, LaTeX.

AWARDS AND HONOURS

INVICTA 2020 - 3rd Place: Achieved 3rd position out of 487 participants Image Processing Hackathon of IIT Guwahati.
IEEE DataHub 2020 - 2nd Runners-Up: Team 'CodeML' in hackathon conducted by IEEE Computer Society, VIT Chennai.

KEY PERSONAL PROJECTS

DermaVision: Deep Vision-Based Information Framework for Diagnosis and Treatment of Skin Diseases

- Created a web portal for preliminary visual self-screening of skin lesions and educating rural India about dermatology.
- Adopted a two-phase transfer learning approach on DenseNet201 and achieved over 97% accuracy on 8000 test images.
- Emerged as a Finalist in the Techno-Care National Hackathon of the National Institute of Technology, Uttarakhand.

SightSetter - Assisting the visually impaired to perceive and navigate their environment *(ongoing project)*

- Designed an assistive application with facial recognition, object detection, person distance detection and path suggestion.
- Created an audio-based output interface to help visually impaired users to comprehend their immediate surroundings.

EXTRACURRICULAR ROLES

President, Fine Arts Club, VIT Chennai *May 2020 - May 2021*
Design Lead, The Capsule - Official Student Magazine of VIT Chennai *July 2020 - April 2021*