Manasi Rajan Variar

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EDUCATION

Arizona State University, Arizona, USA 05/2026 (Expected)
Master of Science in Robotics & Autonomous Systems (Artificial Intelligence) *4.0/4.0*
University of Mumbai, Maharashtra, IN 05/2022
Bachelor of Engineering in Information Technology *9.14/10*
Relevant Courses: *Linear Algebra, Robotics Systems, Knowledge Representation, Advances in Robot Learning, Artificial Intelligence, Computer Vision*

TECHNICAL SKILLS

Programming & CV Frameworks: Python, OpenCV, MATLAB, PyTorch, TensorFlow, NumPy, Scikit-learn, Keras, ROS
Others: Asynchronous Programming, Version Control, Figma, SQL, CUDA, LangChain, Computer Vision, Deep Learning, Natural Language Processing, Statistical Modeling, Generative Decoding, Model Fine-Tuning, Transfer Learning, MQTT
Deep Learning Models: CNNs, Vision Transformers, GANs, RNNs, YOLOv8, Faster R-CNN
Soft Skills: Strong communication skills, Proactive & eager to learn, Team player, Attendive

PROFESSIONAL EXPERIENCE

Data Engineer - *LTIMindtree Ltd., Navi Mumbai, India* 01/22 – 07/24

- Engineered highly scalable data pipelines with Spark & Hadoop, handling 10M+ daily transactions, reducing batch processing time by 35%.
- Designed executive dashboards and real-time reporting solutions using Tableau, Power BI, and Google Data Studio, improving organizational decision-making speed by 25%.
- Automated ETL processes and data validation with custom Python scripts and optimized Oracle PL/SQL queries, cutting manual reporting tasks by 40%.
- Led complex data analytics initiatives using Python (Pandas, NumPy, Seaborn) to uncover hidden trends, directly increasing operational efficiency by 20%.

Machine Learning Intern - *Clover Continuity, Remote* 06/21 – 09/21

- Developed automated data extraction systems across 20+ financial platforms, saving over 15 weekly hours of manual effort.
- Implemented data cleaning by handling missing data, removing outliers, and standardizing formats using Pandas & NumPy, enhancing dataset accuracy for downstream analysis by 98%.
- Evaluated and fine-tuned predictive models including Random Forest and Gradient Boosting to forecast stock price movements, increasing equity prediction accuracy by 20% compared to previous models.

ACADEMIC/PERSONAL PROJECTS

LLM Based Auto-Aiming and Tracking System

- Developed a lightweight object recognition pipeline that enabled prompt-based target selection, achieving <300ms response latency.
- Calibrated servo response based on pixel-space-to-angle transformation and implemented compensation logic to minimize overshoot under limited 45° camera FOV; achieved sub-2° targeting accuracy.
- Demonstrated in front of a live audience, **receiving critical acclaim** for system precision and object tracking capabilities under motion.
- Built a browser-based UI with live MJPEG streaming and manual trigger override; ensured reliable ESP32 synchronization through custom UART-MQTT bridging and adaptive debounce logic.

Maze Detection & Path Planning – MyCobot Pro 600

- Built a robot navigation solution using OpenCV-based image recognition, BFS path planning, and custom maze-centerline extraction.
- Controlled robotic arms via MATLAB-Python TCP sync, solving inverse kinematics to navigate complex mazes with 100% success in test runs.
- Reduced computing by 20% through efficient path pruning and optimized frame handling.

Vision Transformers for Depth & Segmentation

- Used Hugging Face pretrained models to segment complex scenes and simulate realistic depth-based lens blur using monocular depth estimation.
- Built a Hugging Face Space app for users to experience interactive Gaussian and lens blur effects based on foreground-background separation.
- Integrated segmentation masks with dynamic blur application proportional to distance-from-camera estimation.

Sign Language Translator

- Created a dedicated custom dataset for Indian Sign Language, facilitating model training and advancement.
- Established a robust bidirectional communication framework that achieved seamless translation between sign language and text, enhancing accessibility for over 200 community members with hearing impairments.

RESEARCH/PUBLICATIONS

- Hegde, G., Poojary, A., Radhakrishnan, R., **Variar, M.**, "Indian Sign Language Translation for Hard-of-Hearing and Hard-of-Speaking Community" published to the IRJET, Volume: 09, Issue: 04, 03/2022.
- Bhaskarwar, U., Poojary, A., **Variar, M.** " Machine Learning Approach to Predict the Trends of the COVID-19 Pandemic: A survey" accepted by the IRJET, Volume: 08, Issue: 06, 06/2021.