Aatmaj Amol Salunke

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Available: **May 2025 – Dec 2025**

EDUCATION

Northeastern University, Boston, MA Sept 2024 - Dec 2026

Master of Science in Artificial Intelligence ***(Khoury College of Computer Sciences)***

Courses: *Reinforcement Learning and Sequential Decision Making, Foundations of Artificial Intelligence, Algorithms, NLP*

Manipal University Jaipur, India Oct 2020 – May 2024

Bachelor of Technology in Computer Science and Engineering ***CGPA***: 8.92/10

Courses: *Natural Language Processing, Deep Learning, Design and Analysis of Algorithms, Database Management Systems, Computer Vision*

EXPERIENCE

Scientific Researcher **| ISRO - Indian Space Research Organization (SAC) |** Ahmedabad, Gujarat, India Jan 2024 – May 2024

- Conducted in-depth research in Signal and Image Processing, developing robust Land Surface Temperature (LST) and Emissivity models using satellite imagery from **seven** global regions under varied weather conditions.
- Leveraged GANs, particularly **Pix2Pix**, for automated atmospheric predictions, achieving high performance with a MAE of **0.00483** and SSIM of **0.9453** for the **LST** model, and a MAE of **0.0136** and SSIM of **0.9171** for the **Emissivity** model on unseen data.

Machine Learning Intern **| WictroniX |** Vadodara, Gujarat, India June 2023 – Aug 2023

- Contributed to a **Government of Gujarat** project by analyzing traffic patterns through precise annotation of over **2,000** drone images from **100** key junctions in **Surat**, classifying vehicles into **seven** categories: Bus, Cars, LCV, M2W, MAV, Rickshaw, and Truck.
- Provided insights for transportation infrastructure and forwarded the annotated data—split in a **70-20-10** ratio—to the machine learning development team for model training.

Artificial Intelligence Mentee **| IBM (AICTE and Edunet Foundation) |** Jaipur, Rajasthan, India June 2023 – Jul 2023

- Developed a Mental Fitness Tracker using machine learning that analyses **8** mental health indicators across countries, achieving **99.6%** prediction accuracy through **Random Forest Regression** to provide personalized mental health insights.
- Implemented comprehensive data preprocessing techniques using **Python** to analyze **6,840** mental health records across multiple countries, comparing **4** different ML models and techniques to identify optimal prediction performance for mental fitness assessment.

SKILLS

Languages:	Python, C++, Java, C, C#, HTML/CSS, JavaScript, MySQL, React, Next.js
Libraries/Frameworks:	TensorFlow, PyTorch, Transformers, Sklearn, Huggingface, NLTK, Gym, Django
ML and DL:	CNNs and RNNs, Computer Vision, Natural Language Processing, Reinforcement Learning
Data Science:	Exploratory Data Analysis, Data Preprocessing, Data Augmentation, Feature Engineering, Statistics
Backend/API:	Django, Flask, Express, SQL, MongoDB, Unity (RL), Web scraping, BeautifulSoup, REST APIs

ACADEMIC PROJECTS

Autonomous Car Parking in Unity using TD3 and Options Critic Algorithm *Unity, ML agents, Deep RL*

- Engineered an **autonomous** car parking system with **TD3** and **Option-Critic** algorithms in a custom **Unity** environment featuring randomized parking spots, achieving **70%** faster training compared to baselines.
- Developed advanced reward-shaping methods alongside **ray perception sensors** using **Python** and **C#** to drive an **85%** decrease in collisions while performing complex autonomous parking maneuvers within varied training environments.

Automatic Soccer Video Highlight Generation using ResNet50 and GRU with Advanced CV *CNNs, RNNs, Computer Vision*

- Pioneered an automated sports highlight generation system using **ResNet50** and **GRU** neural networks, achieving **65%** accuracy in detecting key soccer events across **25** full-length soccer matches.
- Architected an end-to-end video processing pipeline that extracts and ranks match highlights based on **event significance**, seamlessly stitching them into customizable **3 or 5-minute** highlight reels based on the user's preference.

Food Calorie Estimator *YOLO v4, OpenCV, Deep Learning*

- Developed an image-based calorie estimation system utilizing **YOLO v4** for food classification and **OpenCV** for image segmentation, achieving an accuracy of over **97%** in estimating food calories.
- The system enables **real-time** calorie detection by analyzing images and leveraging pre-registered reference objects for precise volume calculations.

PUBLICATIONS

- Deep Learning-Based Satellite Image Analysis for Predicting Land Surface Temperature and Emissivity from Multi-Region Landsat 8 OLI/TIRS Imagery
- Enhancing Urban Traffic Management through Predictive Modelling and Drone-Captured Image Analysis for Smart Traffic Lights
- OTPLM: An Ontology-Driven Approach for Tagging Plants of Medicinal and Ornamental Value using Hybrid Semantics and Strategic Learning Models