Saail Narvekar

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About

I am an **AI enthusiast** with interest in **Computer Vision, Deep learning, and Generative AI**, nurtured over **5 years** at e-Yantra, IIT Bombay. I thrive on turning innovative ideas into **impactful solutions** and prepared to embark on new challenges.

Education

Indian Institute of Technology Bombay — Mumbai, Maharashtra, India
Master of Technology in Geoinformatics — *CPI = 9.59/10* — *Aug 2021 – June 2024*

Vidyankar Institute of Technology — Mumbai, Maharashtra, India
Bachelor of Engineering in Electronics — *CPI = 8.53/10* — *Aug 2014 – May 2018*

Experience

Sr. AI/ML Specialist — Aug 2024 - Present
Tech Startup — *Pune*

- **Led client-focused computer vision projects**, leveraging **AI** to deliver innovative and effective solutions.
- Led **RnD** efforts on **edge computing** solutions for **computer vision**, optimizing deployment on edge devices.
- Assisted a **Fortune 500** company in identifying key manufacturing data parameters through **Exploratory Data Analysis (EDA)**, leading to the prevention of potential losses worth millions.

Project Engineer — Feb 2019 – Jul 2024
e-Yantra, IIT Bombay — *Mumbai*

- Led and contributed to **AI and robotics Research and Development projects involving software and hardware.**
- **Instructor for robotics competition**(eYRC) and provided mentorship to student projects impacting 5000+ students.
- **Gamified Real World Problems** to facilitate comprehension and application of technologies and concepts from multiple disciplines for Patrol Fish, Sahayak Bot, Agri Bot, Sentinel Drone and Geo-Guide theme of eYRC.
- **Instructor** for teacher training workshop on Embedded systems and robotics for professors across the country.

Open Source Contributor, Google Summer of Code — May 2023 – Aug 2023
istSOS, OSGeo — *Remote*

- Contributed to first implementation of **OGC standard Sensor Things API** enabling **geospatial** IoT interconnectivity
- Used **PostgreSQL** for data management, **FastAPI** and **postgREST** for streamlined request-response.

Summer Intern — Jun 2018 – Aug 2018
Acuradyne Medical Systems Pvt. Ltd.

- Executed diverse projects focusing on embedded systems, image processing, and Internet of Things applications.
- Applied technical knowledge for **innovative solutions**, contributing to project ideation and implementation.

Projects

Ground view synthesis using Generative AI based stable diffusion model — *MTech. Thesis* — Aug'23-May'24

- Created **SAT-GND dataset** by web-scraping images and fetching through API for both **satellite** and ground image.
- **Generated ground view** from *satellite* image by controlling **Stable Diffusion model** to create dense feature map.

Multi-Modal Generative AI for robotics application — *e-Yantra, IIT Bombay* — May'24-Jul'24

- Using **Large Language Model** and **Visual Language model** for robotics using few shot learning, **RAG** and vector Db.
- Simulated the autonomous mobile manipulator by using multimodal and then implementing in real hardware.

Deep learning for GIS and remote sensing applications — *e-Yantra, IIT Bombay* — Jun'23-Sep'23

- Implemented fusion of **HED** and **DexiNed** model on **satellite images** to delineate farmland boundaries.
- **Object classification** using **YOLOv8** model from an **drone camera** on a real satellite image for guidance of robot.

Deep learning based 3D Reconstruction from Remotely Sensed Images *Mtech. Seminar* Jan'23 - Apr'23

- Explored **3D reconstruction techniques**, encompassing both **classical** and **deep learning** methodologies.
- Investigated various deep learning models like **GANs, VAE, NeRF** for 3D reconstruction in **remote sensing**.

Data Mining, Integration, and Upgradation of Brain Disease Proteome Map *KCDH, IIT Bombay* Jan'23–Apr'23

- Integrated proteomics datasets from diverse sources into Brain Disease Proteome Map using **web scraping and APIs**.
- Developed **Django models** and **REST APIs** to enable researchers to **visualize** data, advancing early diagnosis.

Agri Bot - Autonomous robot for indoor greenhouse automation *e-Yantra, IIT Bombay* Jul'21 - Feb'22

- Created a greenhouse evironment in Gazebo simulator and **simulated** an autonomous mobile manipulator robot.
- Created a **pipeline** for **navigation** using **LiDAR**, tomato **detection** using depth camera and robotic **manipulation**.
- Implemented **algorithm** on robot and created a **remote control architecture** to access hardware over the internet.

Smart Library - Robotic Book Issuing and Retrieval System *BE Final year project* Aug'17 - Mar'18

- Designed and implemented a **robotic automation** system to solve the library book issuing and returning problems.
- Created a **system design** for smart library and developed a robot for autonomously picking and placing the books.

Technical Skills

Languages	:	Python, C
Libraries	:	Pytorch, Tensorflow, OpenCV, Langchain, Huggingface, Numpy, Matplotlib, FastAPI, Django
Software/Tools	:	Linux, Docker, Github, Azure, QGIS, SNAP, ROS, Gazebo, Fusion360
Hardware	:	Nvidia Jetson, Intel depth camera, Raspberry pi, Arduino, Atmega2560, Drone, UR5 arm, UGV

Certifications

- Generative AI with Large Language Models by AWS
- Generative AI for everyone by DeepLearning.Ai
- Machine Learning Operations (MLOps) with Vertex AI by Google Cloud

ACHIEVEMENTS

- Achieved a **gold medal** in **weightlifting** and a **bronze medal** in **powerlifting** at IIT Bombay Sports event.
- Achieved **1st Prize** in an inter-college **project competition** for project Smart Library.

Position of Responsibility

Web Secretary Jun 2022 – June 2023
CSRE Department, IIT Bombay

- Handled **technical enhancements and updates for departmental website**, optimizing digital presence, and methodically managed **ISRO-IITB** Space technology cell **meeting portal**.

Teaching Assistant Jan 2024 – April 2024
CSRE Department, IIT Bombay

- Supported professor in **grading** for **Machine Learning in Remote Sensing II course**.

Publications

- Learning Efficacy and Effect of Scaffolding in Online Engineering Education during COVID-19 Pandemic.
- Learn, Build and Compete: An Aquatic Robot-Fish Challenge.
- AgriFrame: Agricultural framework to remotely control a robot inside a greenhouse environment (under review)
- Multimodal Generative AI for Robotic applications (under review)

Hobbies and Interests

- **Drone videography**: Constructed a personalized drone for **drone piloting** and capturing aerial videography.
- **Marathon Runner**: Completed **10 km** marathons twice and **5** km runs thrice.