

# Manthan Mittal

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## PROFILE

Motivated and adaptable professional with an MSc in Artificial Intelligence and a BE in Information Technology. Skilled in machine learning, deep learning, robotics simulation, and full-stack development. Strong problem-solving ability, teamwork, and adaptability with a passion for applying AI to create impactful solutions.

## EDUCATION

<b>University of Essex</b> <i>MSc in Artificial Intelligence</i>	Oct 2023 – Oct 2024 United Kingdom
<b>Ahmedabad Institute of Technology (AIT)</b> <i>Bachelor of Engineering in Information Technology</i>	2018 – 2022 Gujarat Technological University

## EXPERIENCE

<b>Silver Touch Technologies Ltd.</b> <i>Android Development Intern</i>	Jan 2022 – Apr 2022 Ahmedabad, GJ
<ul style="list-style-type: none"><li>Developed <b>Chat-APP</b>, a real-time Android messaging app.</li><li>Built backend using <b>Firebase + Express.js</b>.</li><li>Implemented real-time sync and user authentication in Java + Android SDK.</li></ul>	

## CAD DESK

<i>Python Programming Intern</i>	June 2021 – July 2021 Jaipur, RJ
<ul style="list-style-type: none"><li>Completed a 30-day intensive internship focused on Python development.</li><li>Worked in structured environment with project deadlines.</li></ul>	

## PROJECTS

### Feedforward Neural Network for Robotic Kinematics | *Python, NumPy, Math*

- Implemented a Multi-Layer Perceptron (MLP) from scratch using NumPy to predict non-linear robotic control parameters.
- Diagnosed and rectified critical architectural errors in the training loop and corrected the RMSE loss function logic to ensure stable model convergence.
- Developed a dynamic output layer architecture to automatically adjust to varying dataset dimensions.

### Rossmann Store Sales Forecasting | *Python, TensorFlow, Scikit-Learn, XGBoost*

- Engineered an end-to-end predictive pipeline for 1,115 drug stores, processing over 1 million historical sales records.
- Conducted a comparative analysis between Tree-based ensemble methods (XGBoost) and Deep Learning architectures (LSTM, RNN) to capture long-term temporal dependencies.
- Optimized model performance using Root Mean Square Percentage Error (RMSPE), effectively handling seasonality.

### Autonomous Robot Navigation System | *ROS2, Gazebo, Python, C++, Fuzzy Logic*

- Developed a PID-based wall-following controller using LIDAR sensor data to maintain precise distance constraints in a TurtleBot simulation.
- Implemented a Fuzzy Logic inference system for dynamic obstacle avoidance, defining membership functions for real-time velocity adjustments.

- Engineered a hybrid control architecture that seamlessly switches between wall-following and obstacle avoidance behaviors based on environmental proximity thresholds.

### **Narrative-to-Clip Generator (Text-to-Video Synthesis) | Python, PyTorch**

- Built a diffusion-based AI system to generate short video clips from text prompts.
- Implemented using Python, PyTorch, Transformers, and diffusion pipelines.

### **Sleep Pattern Analysis | Machine Learning**

- Developed ML models to analyze sleep data and identify abnormalities.

### **DocInsight: Retrieval Q&A Engine (RAG) | LLMs, Vector DB**

- Developed a RAG system to answer questions from unstructured PDFs/documents.
- Included embedding generation, vector search, context filtering, and guardrail evaluator.

### **Web Task Autopilot (Autonomous Agent) | Selenium, LLMs**

- Built an AI-driven autonomous browser agent for navigation, clicking, form-filling, and data extraction.
- Used LLM reasoning loops integrated with Selenium/Playwright automation.

### **E-commerce Platform for Indian Sarees | MERN Stack**

- Live full-stack platform with product browsing, authentication, cart, and order dashboard.

## **SKILLS**

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**Robotics & Simulation:** ROS2, Gazebo, TurtleBot, LIDAR Integration, PID Control, Fuzzy Logic

**AI/ML:** TensorFlow, PyTorch, Scikit-learn, Neural Networks, CNNs, RNNs, GNNs, LLMs

**Programming:** Python (Advanced), C++, JavaScript, Java, React, Node.js, SQL

**Cloud & Databases:** Oracle OCI, AWS, Firebase, MongoDB, SQLite

**Soft Skills:** Problem-solving, Communication, Teamwork, Time-Management

## **CERTIFICATIONS**

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Oracle Cloud Infrastructure 2025 Certified AI Foundations Associate

Programming with Python and IoT Perspective Panjab University (2021)

E-Workshop on Android AIT (2020)

E-Workshop on AWS AIT (2020)