

SHIVAM SHARMA

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SUMMARY

AI engineering graduate pursuing an MSc in Robotics & Autonomous Systems (AI). Skilled in **ML/DL**, **computer vision**, **IoT**, **gesture interfaces**, and **cloud-scale AI systems**. Seeking roles in **Robotics Software**, **AI/ML Engineering**, **Computer Vision**, or **Data Science**.

EDUCATION

Master of Science in Robotics and Autonomous Systems (AI)	May 2027
Arizona State University, Tempe, AZ	4 GPA
Bachelor of Technology in Artificial Intelligence	Graduated May 2025
Amity University, Noida, Uttar Pradesh, India	4 GPA

PROFESSIONAL EXPERIENCE

AI Engineer	January 2025–June 2025
Saleforces, Gurgaon, Haryana, India	

- Shipped a **real-time multi-attribute face analytics service** (age band, emotion, attire, nationality) by **fine-tuning MobileNetV2**; achieved **94–95% macro-F1** on a held-out set and exported to **ONNX** for **<30 ms** inference at **30 FPS**.
- Built driver drowsiness & distraction detection by combining eye-blink rate, head-pose (PnP), and yawning **CNN**; **0.92 F1** with live alerting; evaluated on 20+ hours of dash-cam video.
- Developed a **multimodal emotion classifier** that fuses facial **CNN** with **BiLSTM** on **MFCC features** for female voice; **91–94% accuracy**; automated labeling/augmentation (**SpecAugment**, **mixup**) and tracked experiments with **MLflow**.

Data Science	April 2024–June 2024
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Tata Consultancy Services, Noida, Uttar Pradesh, India

- Led end-to-end churn modeling on 500K+ customers: **engineered RFM**, tenure, usage, complaint, and contract **features**; compared **XGBoost/LightGBM** versus logistic baseline, improving **ROC-AUC** by **~25%**.
- Built a reusable **scikit-learn** pipeline with **target encoding**, **SMOTE**, **time-aware cross-validation**, and **Optuna hyperparameter search**; produced model card with stability/fairness checks.
- Explained drivers with **SHAP** and delivered a lightweight **Streamlit** dashboard for **Ops**; reduced **false-positives** by **18%** at fixed **recall** in **back-tests**.

ACADEMIC PROJECTS

Agentic Robot Control via LLM/VLM (Prompt-to-Action)	Sep 2025 – Dec 2025
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- Objective:** Designed a control system integrating **LLM/VLM** and **agentic AI** for **robot prompt-to-action** execution.
- Supported prompts (examples): "Pick up the small blue block and place it in the box on the right"; "Pick up a small block and place it on top of the large block"; "Pick up the small blue block, rotate by 90 degrees in z, and place it on large red block".
- Enhanced robot kinematic awareness using monocular depth estimation, facilitating precise pick/place/rotate tasks with **inverse kinematics** and **gripper control** and expanding prompt template handling; trained the agent to handle as many prompt templates as possible

Dobot Magician: Agentic Tic-Tac-Toe (Vision + LLM Planning)	Aug 2025 – Sep 2025
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- Built a **Dobot Magician Tic-Tac-Toe** system: **OpenCV** board-state detection (perspective correction, color/edge segmentation, AprilTag corners), **camera calibration**, and **ROS2 control** for precise X/O placement.
- Integrated an **agentic LLM (Gemini)** to orchestrate perception, planning, actuation via function-calls: `perceive_board`, `choose_move` (**Minimax with alpha-beta**), `execute_move`; added safety limits, IK, and robust recovery for illegal/ambiguous states.
- Architected a **ROS2** stack with **rclcpp** lifecycle nodes (`/perception`, `/planner`, `/arm_control`) and **tf2** frames (`map->board->ee`); added **ros2 launch** pipelines, **roslaunch** logging, and **ros2_tracing** profiling, delivering **~1.4 s p50** turn latency and **<=2 mm** placement error over **200** test games.

ROS2 Gesture-to-Robot: Vision-based Tele-operation for Mobile Robots	Jan 2025 – Apr 2025
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- Built a **real-time hand/pose interface (MediaPipe, OpenCV)** that maps gestures to **ROS2** actions for **TurtleBot** navigation and **gripper control**; end-to-end latency **~55 ms**.
- Achieved ≥95% gesture F1** on a **custom dataset**; **2.8 cm mean path-following error** in **Gazebo**; added safety gestures and low-pass filtering to suppress jitter.
- Implemented a **ROS2** safety supervisor with gesture debouncing, Kalman smoothing, and a dead-man open-palm signal; **BehaviorTree.CPP** gating of `cmd_vel/gripper` plus QoS tuning (reliable, `sensor_data`) delivered **≥97%** gesture-to-action reliability and **≤120 ms** safe-stop on tracking loss.

TECHNICAL SKILLS AND CERTIFICATIONS

Programming Languages: Python, C/C++, SQL, JavaScript.

Machine Learning & Data: scikit-learn, PyTorch, TensorFlow, Keras, XGBoost, LightGBM, CatBoost, Optuna, MLflow, NumPy, Pandas, Matplotlib

Computer Vision & Robotics: OpenCV, MediaPipe, ONNX, ROS2, dlib.

NLP: Transformers (Hugging Face), Sentence-BERT, spaCy, NLTK.

Certifications: Applied AI (IBM/Coursera); Aerial Robotics (University of Pennsylvania); Python for Data Science (NPTEL); Microsoft AI