# SURAJ KUMAR

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## EDUCATION

Indian Institute of Information Technology Design and Manufacturing, Kancheepuram (IIITDMK)
B.Tech in Mechanical Engineering — CGPA: 8.0

## TECHNICAL SKILLS

| | |
|---|---|
| **Programming** | Python, C++, SQL |
| **Machine Learning** | Scikit-learn, TensorFlow, PyTorch, NLP |
| **Data Analytics** | Pandas, NumPy, Matplotlib, Seaborn |
| **MLOps** | Model Deployment, Flask, Docker, CI/CD |
| **Other Tools** | Git, Jupyter Notebook, Power BI |

## EXPERIENCE

**MaRS Research Station, Chennai** Feb 2024 - Present

- Developed ML models for object detection using YOLO for cylindrical and cubic objects.
- Implemented path planning and control algorithms for robotic manipulators using PID.

## PROJECTS

**Student Performance Prediction** GitHub

- Built an ML model to predict student performance based on academic and behavioral factors.
- Utilized regression and classification techniques to achieve high accuracy in predictions.
- Deployed the model using Flask for real-time performance evaluation.

**End-to-End MLOps for Network Security** GitHub

- Developed an ML pipeline for real-time network security threat detection.
- Built an ETL pipeline for large-scale data preprocessing and anomaly detection.
- Integrated CI/CD for automated model deployment and performance monitoring.
- Our model achieved a strong balance between precision (97%) and recall (98%), with an F1-score of 0.976, making it highly effective for real-time cybersecurity by minimizing false alerts while detecting threats

**project with MLOps with MLflow and DagsHub** GitHub

- Developed a production-ready MLOps pipeline incorporating MLflow for tracking experiments and model versions.
- Used DagsHub for data and model versioning to ensure smooth collaboration and reproducibility.
- Implemented continuous training and deployment using CI/CD workflows.

**AI Language Translator Web App using LangChain and Groq** GitHub — Live App

- Developed a web application for translating text between 100+ languages using LangChain and the Gemma2-9b-It model.
- Integrated Groq's ultra-low-latency LPU backend for efficient real-time processing and fast translation performance.

- Designed a user-friendly interface with Streamlit for seamless interaction, enabling users to input text and select target languages easily.
- Ensured accurate and contextually relevant translations using advanced language models and deployed the app publicly on Streamlit for continuous access.
- Deployed the complete system with interactive features like real-time translation and responsive design for users worldwide.

## ACHIEVEMENTS

- MaRS Research Club secured 5th place in IRC ISRO Robotics Challenge.
- MaRS Research Club secured 16th place in IROC Indian Robotics Competition.
- Solved 100+ LeetCode problems, improving algorithmic problem-solving skills.

## ADDITIONAL INFORMATION

- Experience with FEM Simulation and Fusion 360.
- Worked on the simulation and analysis of a flexible silicon-based speculum for cervical imaging.
- Passionate about data-driven problem-solving and AI applications in engineering.