Balaji Jayaprakash

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SUMMARY

I am a Robotics and Automation Engineer with expertise in machine learning, and IoT integration. Currently pursuing MSc in Robotics at TU Delft with demonstrated experience in developing AI/ML solutions. Proficient in Python and Linux environments with hands-on experience in deploying ML models and cloud-based analytics platforms.

EDUCATION

MSc. Robotics — **Netherlands**
Delft University of Technology — ***Sep 2025 - Present***

- Thesis:
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- Key modules: Deep Learning, Computer Vision, Mobile Robotics, Advanced Control Systems.

B. E. Robotics and Automation — **India**
PSG College of Technology — ***Aug 2022 - May 2025***

- Thesis: Automated PCB Testing System with IoT Integration and Cloud Analytics.
- Key modules: Mobile Robotics, ROS, PLC and SCADA, IoT Systems, Cloud Integration.

EXPERIENCE

Engineering Intern — **Tamil Nadu, India**
Textro Electronics — ***Jan 2025 – April 2025***

- Developed automated PCB testing system reducing test time from 7-8 minutes to under 40 seconds.
- Implemented machine learning algorithms for anomaly detection in voltage readings.
- Integrated IoT gateway with ThingSpeak cloud platform for real-time data analytics.

Engineering Intern — **Tamil Nadu, India**
Roots India Pvt Ltd — ***June 2024 – Dec 2024***

- Contributed to developing design solutions for horn diaphragm punching operations.
- Assisted in designing and implementing a SCARA robot system for automating the conformal coating process.

TECHNICAL SKILLS

- **Programming Languages:** Python, C/C++, MATLAB, Embedded C.
  Machine Learning & AI: TensorFlow, PyTorch, Scikit-learn, OpenCV, Computer Vision, Deep Learning.
- **Operating Systems:** Linux (Ubuntu), Windows.
- **Development Tools:** Docker, Colab, Git, Jupyter Notebook, VS Code, MATLAB Simulink.
  Hardware & Embedded: PIC Microcontrollers, Arduino, Raspberry Pi.
- **Industrial Software:** SIEMENS PLC Programming, CNC Fanuc Programming, SolidWorks, Fusion 360, AutoCAD.
- **Cloud & IoT:** AWS IoT Core, ThingSpeak, MQTT, RESTful APIs, Edge Computing.
- **Databases:** MySQL.

KEY PROJECTS

Machine Learning – Prediction of Outcomes in 2025/26

- Developed ML model to simulate and predict outcomes of Barcelona's 38 La Liga matches for 2025/26 season.
- Implemented predictive algorithms for goals scored, goals conceded, and match outcomes using historical metrics.
- Created data visualizations including bar charts for match-wise performance and pie charts for outcome distribution.
- Technologies: Python, Pandas, Matplotlib, Seaborn, Machine Learning.

Project Head, Full Stack Software Development for Data Acquisition System

- Developed data acquisition system with user-based access to monitor, analyse machine parameters.
- Led workflow management for frontend, backend and data acquisition teams.
- Contributed primarily to backend database creation.
- Technologies: Leadership, Database Management, Full Stack Development.

CERTIFICATIONS & ACHIEVEMENTS

- **3D Printing Programme** | Mahindra Pride Classroom.
- **Best Project Overall** | PSG Polytechnic College (2022) - Automatic Coconut Plant Cultivation Vehicle.
- **Published Review Papers:**
  - "Review on Renewable Energy in India: Current Status and Future Potential" (IJCRT - 2023)
  - " Review on Collision Avoidance and Trajectory Planning in Autonomous Systems" (IJNRD - 2023)

TECHNICAL INTERESTS

Core Expertise: Computer Vision, Deep Learning, Robotics Perception, Industrial Automation, Edge AI.
Emerging Technologies: Reinforcement Learning, MLOps, Autonomous Systems, Industry 4.0, Digital Twins.
Research Areas: Human-Robot Interaction, Predictive Maintenance, IoT Analytics, Embedded ML.

LANGUAGE SKILLS

- Tamil (Native / Bilingual Proficiency)
- English (Full Professional Proficiency)
- Hindi (Professional Working Proficiency)
- Dutch (Elementary Proficiency)

COMMUNITY INVOLVEMENT

Technical Leadership:

- Active member at Global Leaders Forum (GLF) and Entrepreneurship Club.
- Photography lead at Young Leaders Global Conclave (YLGC'23).

Community Service:

- OSAI Environmental Organization: Wildlife habitat awareness campaigns.
- Local Education Initiative: Taught robotics and STEM concepts to underprivileged children.
- Environmental Projects: Tree planting and waste management initiatives.