Aryan Yadav

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EDUCATION

B.Sc. Mechatronics Engineering, THWS Würzburg-Schweinfurt Oct 2023 – Present
GPA: 2.6

TECHNICAL SKILLS

Python, C++, Node.js • MATLAB/Simulink, ROS • ML: Random Forest, SVM, MobileSAM, YOLOv8, OpenCV • Data: Pandas, NumPy, Scikit-learn, Pydantic v2 • Platforms: MQTT, REST APIs, AWS, Oracle Cloud

PROJECTS

Automated Tube Classification Pipeline Jan 2026 – Present, THWS Industrial Project
https://github.com/Yadav108/Dataset_Pipeline

- Identified annotation bottleneck in manual blood tube classification workflow; engineered 6-stage automated vision pipeline (Intel RealSense D435if + MobileSAM + rembg) targeting 500 images across 16 tube classes with 95%+ accuracy validation.
- Designed robust multi-stage annotation system (geometry constraints, IoU thresholding, manual QA) ensuring dataset rigor; resolved real-world constraints (single-directional lighting, camera calibration, depth-based tube discrimination using Volume Declaration Gate).
- Optimized inference under hardware constraints (NVIDIA RTX 3050, 4GB VRAM); deployed Pydantic v2 config-based versioning enabling reproducible, auditable dataset generation.

Digital Twin & Predictive Modeling for Power Plant Jun 2025 – Sep 2025
https://github.com/Yadav108/EnergiSense

- Built end-to-end digital twin (MATLAB/Simulink physics + Random Forest ML) trained on 24+ months operational CCPP data; achieved 99.1% prediction accuracy while addressing sensor drift (12% channels affected) and missing values through adaptive filtering.
- Quantified model uncertainty via ensemble confidence intervals, enabling predictive maintenance workflows with risk-aware operational insights.

Real-time Energy Management Platform IBM TechXchange Hackathon 2025 (48-hour Sprint)

- Architected full-stack IoT platform (Node.js backend + SwiftUI client + IBM Granite-3-8B-Instruct LLM) with sub-100ms API response latency under concurrent device load using WebSocket + in-memory caching.

Smart Home Automation System Oct 2024 – Dec 2024

- Designed scalable IoT architecture (Raspberry Pi + MQTT + 20+ heterogeneous sensors); implemented event-driven automation engine (Python, rule-based logic, threshold triggers).
- Validated 6+ weeks continuous operation; built Node-RED dashboard for monitoring and remote control.

CERTIFICATIONS

Oracle Cloud Infrastructure Generative AI Professional (2025) • IBM TechXchange Hackathon Finalist (2025) • Ethical Hacking from Scratch (Udemy, 2021)

LANGUAGES

English (Fluent) • German (A2, actively developing)