

JOHANAN S. A.

MECHATRONICS | ROBOTICS | AUTOMATION ENGINEERING

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PROFESSIONAL SUMMARY

M.E. Mechatronics student with a Mechanical Engineering foundation and hands-on experience in robotics, embedded systems, IoT, automation, machine learning, and product development. Skilled in building practical systems that combine sensors, microcontrollers, mechanical design, data pipelines, and software dashboards. Interested in robotics engineering, industrial automation, embedded product development, and intelligent manufacturing.

EDUCATION

- **M.E. Mechatronics — Anna University (MIT Campus), Chromepet, Chennai**
Currently pursuing
- **B.E. Mechanical — National Engineering College, Kovilpatti**
2022–2026 | CGPA: 8.06

INTERNSHIP EXPERIENCE

ISRO Propulsion Complex (IPRC), Mahendragiri

In-plant Trainee | 2 weeks | 2025

- Gained hands-on exposure to propulsion systems, testing operations, and high-precision industrial practices in aerospace engineering.
- Observed mechatronics, instrumentation, and sensor systems used across aerospace operations, including rocket umbilical systems and associated monitoring interfaces.

PROJECTS COMPLETED

Multi-Domain Deep Learning Framework for Gear Fault Diagnosis

Python | TensorFlow | BiLSTM | PSO | VMD | CWT

- Developed an intelligent gear fault diagnosis framework combining signal processing, optimization algorithms, and deep learning to identify gear defects from noisy vibration signals.

AI-Based, Realtime Cattle Detection and Risk Mitigation System

Deep learning | Raspberry Pi | RPi GSC module | Firebase | React

- Built a real-time cattle detection system using Raspberry Pi and the RPi GSC module, with Firebase integration and a React dashboard for monitoring and risk mitigation.

CFD Analysis of Toroidal vs DJI Drone Propeller Using ANSYS Fluent

CFD simulation | ANSYS Fluent | Propeller aerodynamics | Noise analysis

- Simulated airflow and noise behavior of a DJI propeller, identified tip vortices as a major noise source, and compared sound pressure levels with toroidal propellers.

5-Axis Robotic Arm for Pick-and-Place Operation

Arduino | Servo control | 3D printing | Robotics

- Built a 3D-printed 5-axis robotic arm using continuous and positional servos, with joystick-based control for precise pick-and-place movement.

ML-Based Prediction and Optimization for Aluminium Wire Rod Production

LSTM | Firefly Algorithm | Process optimization | NALCO | SIH 2024

- Developed a deep learning model using LSTM and the Firefly Algorithm to predict and optimize process parameters for aluminium wire rod production at NALCO, Odisha.

RTC-Based Solar Tracking System for Solar Energy Farms

Dual-axis tracking | Mathematical modelling | Solar azimuth | Geographic coordinates

- Designed a dual-axis solar tracker using mathematical models to calculate solar and azimuth angles from geographic coordinates, eliminating the need for light sensors.

TECHNICAL SKILLS

- **Mechatronics & Automation:**
 - MATLAB
 - Automation Studio
 - Proteus
- **Mechanical Engineering:**
 - NX CAD
 - SolidWorks
 - Fusion 360
 - ANSYS
- **Programming & Software:**
 - Python
 - TypeScript
 - React
 - Linux
 - Git
- **Hardware & Platforms:**
 - Arduino
 - ESP32
 - Raspberry Pi

CERTIFICATIONS & ACHIEVEMENTS

Certified SOLIDWORKS Associate:

- CSWA — Design
- CSWA — Sustainability
- CSWA — Additive Manufacturing

MATLAB On-Ramp Course:

- MATLAB Basics
- Simulink Basics

NPTEL Courses:

- NPTEL Social Innovation in Industry 4.0 — Gold Medal, Top 5% Rank
- NPTEL Product Design & Manufacturing — Silver Medal
- NPTEL Technical English for Engineers — Silver Medal

Udemy Courses:

- Udemy — The Complete Web Development Bootcamp by Angela Yu

LEADERSHIP & ACTIVITIES

- NEC Eco Club — Student Member
- NEC Alumni Automotive Club — Student Coordinator
- NEC Alumni Entrepreneurs Club — Student Coordinator