

Alan Jeffsan Alfred

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MECHATRONICS ENGINEER

SUMMARY: Mechatronics Engineer with 5+ patent-pending innovations and hands-on expertise in robotic systems, AI-integrated automation, and embedded controls. Recognized globally by **NASA** and **IEEE** for real-world problem-solving impact.

EDUCATION

VELLORE INSTITUTE OF TECHNOLOGY

Chennai, Tamil Nadu

B.Tech in Mechatronics and Automation / CGPA: 8.0 / Expected Jul 2025

NANYANG TECHNOLOGICAL UNIVERSITY

Nanyang, Singapore

Advanced Robotics Program (2-week intensive course)

WORK EXPERIENCE

DAIMLER INDIA

Chennai, India

TIME OPTIMIZATION INTERN

Aug 2023 - Sep 2023

- **Engineered a twist-tail cable tie mechanism**, reducing individual truck assembly time by **10–15 minutes**.
- **Integrated IIoT sensors** for real-time defect detection, reducing manual inspection by **20%**.
- **Developed an acoustic imaging system** for leak detection, decreasing diagnosis time from 12 to 2 minutes.
- **Conducted time-motion studies**, improving output by **1+ truck/day** via takt time alignment.

ESPERIA

Boston, Massachusetts, United States

NINJA INTERN

Jun 2025 - Present

- **Led a team of 4 interns** to develop and prototype innovative product solutions under rapid sprint cycles, ensuring functional delivery from concept to execution.
- **Co-organized and managed a 70-participant hackathon**, mentoring 14 student teams and orchestrating event logistics to drive creativity and cross-disciplinary collaboration.

AWARDS & RECOGNITION

- Team Lead, Best Presenting Team– NTU Advanced Robotics Program, Singapore (2025, Distinction)
- Best Technical Team Award – TEAM MOVIS VIT (2023)
- Team Lead, 2nd Place, NASA STEM Engagement Program (Global)
- 10th Overall, NASA Human Exploration Rover Challenge (2023) – 62 countries
- Host, Christmas Canticles – Asia Book of Records (2019)
- Guinness World Record – Wheelchair Accessibility Logo (2018)
- Limca Book of Records – Santa Claus Painting (2013)

PUBLICATION

IEEE WAMS 2025 (Accepted)

- **A real-time YOLOv9-based approach for precision weed detection in peanut fields.**
Authors: Alan Jeffsan A, Dr. Shoba S - eCF Paper ID: **WAMS2025-39**

ACADEMIC PROJECTS

DASPINEO Smart Bin

Patent

- AI-powered smart bin capable of segregating waste into multiple categories using sensor integration.

Automated Hybrid Rake-Shovel Tool

Patent

- Developed an ergonomic, dual-function sanitation tool combining raking and shoveling to assist street sanitation workers in waste collection.

Automated Paint Scrubber and Cleaning Robot

Patent

- Prototyped a mobile robotic unit to scrub and clean painted surfaces from tiled floors and wall edges. The system uses motion control and pressure mechanisms to ensure consistent surface cleaning, minimizing manual labor and exposure risk.

Automatic Ironing Wardrobe

Patent

- Created an intelligent wardrobe system that uses Peltier plates and microcontrollers to automatically iron and organize clothes. This innovation automates a traditionally manual task, saving time and improving garment care.

Pneumatic Exoskeleton Robotic Arm

Replicated McKibben Artificial muscle

- Built a wearable robotic arm using pneumatic actuators and pressure control valves to augment human lifting capacity in labor-intensive sectors.

Explore all 15+ projects: [linkedin.com/in/alan-jeffsan-625045216/details/projects](https://www.linkedin.com/in/alan-jeffsan-625045216/details/projects)

SKILLS & INTERESTS

Design & CAD : • SolidWorks • AutoCAD • SketchUp

Programming & AI: • Python • Arduino • MATLAB • OpenCV • Prompt Engineering

Controls & Prototyping: • PLCs • Servo Motors • 3D Printing • Sensor Integration

Soft Skills:

- | | | | |
|---------------------|-------------------|-----------------------|----------------------|
| • Problem Solving | • Communication | • Analytical Thinking | • Time Management |
| • Creativity | • Leadership | • Team Collaboration | • Project Management |
| • Lifelong Learning | • Decision-Making | | |

Hobbies:

- Avid Reader
- Creative Inventor
- Culinary Enthusiast
- Strategic Gamer

LANGUAGES

- English (Fluent)
- Tamil (Native)
- Hindi (Professional)
- German (Beginner – A1)