Project Statement

Independent Humanoid Robotics Research

Michael J. Caruana | Maxwell, TX | March 2026

Statement of Intent

I am an independent robotics engineer and researcher currently engaged in the design and construction of a full-scale humanoid robot as a long-term personal research and engineering project. This work is conducted entirely on my own time, using my own resources, and is fully independent of any employment or contractual obligations.

The goal of this project is to develop my skills, deepen my understanding of advanced robotic systems, and contribute to the broader community of independent robotics builders and researchers. It is not affiliated with any commercial venture, research institution, or employer.

Project Scope

The project involves the design, fabrication, and integration of a full-scale humanoid robot platform. Work spans multiple engineering disciplines including:

- Mechanical design and structural engineering — custom frame and joint architecture using 3D-printed polymer structures with metal reinforcement
- Embedded systems and electronics — distributed motor control, power management, and sensor integration
- Artificial intelligence and software — perception, motion planning, and human-robot interaction
- PCB design — custom circuit boards designed to support the unique integration requirements of the platform

The platform is designed to be a long-term research vehicle — a testbed for exploring robotic locomotion, manipulation, AI-driven behavior, and human-robot interaction in a real-world context.

Motivation & Vision

My long-term professional aspiration is to contribute to the field of space robotics — specifically the design of robotic systems capable of operating in remote and extreme environments. This personal project is a direct investment in that ambition: building hands-on expertise with the full stack of hardware, software, and systems integration that defines advanced robotics work.

I believe that the most important learning happens through building. This project pushes me to solve real engineering problems — structural trade-offs, real-time control, power architecture, and machine perception — not in simulation, but in physical hardware.

Community & Openness

Where appropriate and without revealing implementation details that are specific to my design, I intend to document my journey and share general lessons learned with the robotics community. I believe in the value of open knowledge and the power of independent builders to advance the field.

If you are a fellow robotics enthusiast, researcher, or engineer and would like to connect or collaborate, I welcome the conversation.

Contact

For inquiries related to this project or my broader work in robotics and AI, please reach out through this website.
www.mjcaruana.com

— Michael J. Caruana

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