Research Intent

Name: Arushi Kumari
Program Applied For: Bachelor's in Artificial Intelligence Engineering
Current Qualification: Diploma in Mechanical Engineering
Email: arushi109876@gmail.com
Portfolio: https://arushi-kri.github.io
Date: 13 November 2025

Research Area: Merging Artificial Intelligence and Mechanical Engineering for Smart Automation

My research area encompasses collaborating Artificial Intelligence (AI) in conjunction with mechanical engineering and smart automation. I am interested in developing an AI-based mechanical system that can learn from performance data to improve its performance, efficiency, precision, and energy use.

While working towards my diploma, I participated in Computer-Aided Design (CAD)/Computer-Aided Manufacture (CAM) modeling and simulations with AutoCAD and Fusion 360, and AI-based projects including developing a chatbot assistant and robotic arm control system. These projects made me realize that while developing mechanical systems can improve accuracy, they often lack adaptability — the ability to learn and optimize. This gap can be filled with AI..

In my future research, I plan to research the following:

1. Adaptive Robotic Systems: Robots that are able to learn task optimization from within a dynamic environment using reinforcement learning.

2. AI in Manufacturing: Predictive maintenance and process automation implementing data-driven AI models.

3. Sustainable Smart Design: Using existing AI algorithms to minimize waste materials and efficiencies in energy used in Computer-Aided Design-based manufacturing.

I also want to cover the human-centered design aspect too - putting the associated skills with automation to complement humans, instead of replacing them. My ultimate goal is to develop scalable and cost-efficient AI-integrated systems for small and medium scale industries in the developing world.

By pursuing my Bachelor's at your prestigious university, I will have access to better research environments, advanced AI technology, and mentorship across disciplines. I hope to contribute through practical innovation and later have a research-based innovation center in India that prepares future engineers to create technologies that are socially conscious.

Sincerely,
Arushi Kumari