PATHWAY TO LEARNING ENGINEERING

Mechatronics and the Internet of Things

Course Overview

Students explore the integration of design, electronics, computer science, manufacturing, automation, AI, and secure Internet of Things (IOT) communication to address Industry 4.0 and Web 4.0 challenges through collaborative problem-solving.

Students will:

- Design, prototype, and automate smart systems using Siemens NX, TIA Portal, and IoT-integrated PLCs, while applying 3D printing, CNC machining, and data analysis to solve real-world industrial challenges

Goals

Develop the technical skills and engineering mindset needed to design, automate, and analyze mechatronic systems using IoT technology, integrating industry-standard tools and documentation techniques:

- Apply fundamental mechatronic principles, integrating mechanical, electrical, and software components to design and optimize automation systems.
- Gain proficiency in Siemens NX, TIA Portal, and PLC programming, utilizing industrial software and hardware to develop automated solutions
- Analyze and interpret IoT sensor data, applying statistical analysis and real-time monitoring techniques to improve system efficiency
- Communicate and document design processes professionally, using Engineering Notebooks, technical reports, and data visualization to present solutions effectively

Major units

- Designing mechatronic systems
- Programming mechatronic systems
- Human Machine Interface (HMI)
- Internet of Things

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