Kedar More

Robotics and Controls Engineer

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SKILLS

PLC and HMI programming — Omron Sysmac Studio | Beckhoff Twincat 3 | SAIA PLC and HMI

IEC 61131 Programming — Structured Text | Ladder Logic | Instruction List | Function Blocks

Robot Intergration — Staubli 6-axis Arm programming and Safety | Omron Autonomous Mobile Robot

Software Development — Python (numpy matplotlib, pandas, openCV, tensorflow, keras) | C++ | Git Version Control

Robotics — Robot Operating System (rospy, roscpp) | PID control | Computer Vision | Kinematics and Dynamics | MATLAB

Mechanical — Solidworks | Catia | Autodesk Inventor | Autodesk Fusion 360

PROJECTS

Visualize and Control a virtual Inverted Pendulum with a single Motor Input
Jun 2023

- Utilized Robot Operating Syatem (roscpp) to simulate the motion of an Inverted Pendulum
- Tuned the controller with a PID control to best suit the physical pendulum and its perturbations

Path Planning Algorithms in python3
Nov 2020

- Bug Algorithms: Bug1, Bug2, Tangent Bug
- Continuous: Potential Functions
- Discrete: Wavefront
- Sampling Based: Probabilistic Roadmaps, Rapidly exploring Random Tree, A*, Dijkstra's

Stabilize a Single Rotor at an input angle
Mar 2020

- Programmed and studied the effects of different controllers such as P, PI, PID on the stability of the constructed device
- Created a model-based controller called variable PD and tested it to get a decrease in percent overshoot and settling time

PROFESSIONAL EXPERIENCE

PTI- Packaging Technologies & Inspection
Controls Engineer R&D
Feb 2024 – present | Hawthorne, NY

- Developed and implemented control systems utilizing SAIA PLC and HMI in Instruction List and Beckhoff TwinCAT in Structured Text and Object-Oriented Programming principles
- Contributed to the development of table-top machines for testing syringes, integrating HVLD technology and vacuum/pressure decay methods
- Initiated the integration of 6-axis robots into the testing system to convert them from manual to fully autonomous and increasing the testing rate by 80%
- Defined research criteria and devised test methodologies to assess the performance and reliability of the testing systems by setting recipes to align with the products to be tested and the severity of its defect
- Enhanced machine functionality and optimized existing programs to reduce the number components by 10% and subsequently the cost resulting in improved efficiency and effectiveness

Muller Technology
Controls Enginner
Jun 2021 – Nov 2023 | Fort Collins, CO

- Designed and implemented custom end-to-end solutions for autonomous plastic packaging utilizing Omron PLC and HMI, programming in Ladder Logic and Structured Text, achieving an average throughput of 40 products per minute
- Innovated a user-friendly HMI interface with intuitive navigation, enhancing the efficiency of technicians by enabling quick access to machine parts and facilitating necessary adjustments
- Programmed Staubli 6-axis robots and Omron Autonomous Mobile Robots (AMRs), seamlessly integrating them with the PLC to optimize cycle times and achieve a 20% reduction in overall cycle time
- Integrated a variety of sensors (time-of-flight, proximity, pressure) and actuators (drives, conveyors) from different manufacturers into the PLC, utilizing EtherCAT, Ethernet, and serial communication protocols for seamless operation and efficient data exchange
- Attained certification in Staubli CS9 Programming Level 1, specializing in Staubli Robotic Suite and safety protocols and in OMRON Mobile Robot Programming and Fleet Management, demonstrating proficiency in managing and programming mobile robot systems

EDUCATION

University of Colorado, Boulder
Master of Science
Aug 2019 – Apr 2021 | Boulder, USA
Feedback Control | Linear Systems | Nueral Networks and Deep Learning | Advanced Robotics | Algorithmic Motion Planning | Computer Vision | Industrial Automation | Bio-Inspired Robotics

Mumbai University
Bachelor of Engineering
Sep 2015 – May 2019 | Mumbai, India