Deepak Thondapu

Mechatronics / Robotics Engineer

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EXPERIENCE

Intelligent Haptronic Solutions, Vancouver
Senior Product Design Engineer - Mechatronics

SEP 2019 - DEC 2021: Coop, Junior, Product Design Engineer-II
JAN 2022 - Now: Senior product design engineer - Mechatronics

Product: 6DOF surgical endoscopy simulator. (HMI)

- Layout high-level mechanical and electrical design of the products. Feature definition, design requirements, key component identification.

- Led mechatronic product development through POC, prototyping, validation, and NPI stages.

- Bare Metal embedded programming in C, worked with STM32, Arduino, TI M3, C28, and Teensy (NXP M3) cores. Knowledge of TI-RTOS and Free-RTOS.

- Worked on designing and developing several novel sensing and actuation systems.

- Evaluated IMUs, encoders, photo interrupters, and other analog and digital sensors to be integrated into motion systems and worked with several communication protocols such as SPI, UART, I2C and UDP.

- Developed algorithms to achieve friction compensation, gravity compensation, passivity control and other actuation controls.

- Worked closely with manufacturers, suppliers, and partners to test and validate the product at all stages of manufacturing.

- Worked with hardware design tools such as Solidworks, Altium, and OrCAD.

Cyient Ltd, Hyderabad
Design Engineer - Mechanical - Aerospace

SEP 2015 - JUL 2018

Client: Pratt & Whitney-Canada
Product: Aero Engines.

- Worked on generating manufacturing operation sheets used by operators on the shop floor for aero engine stator and rotor parts.
- Analyzed production data using Minitab to generate six-pack reports which help in quality certifications of different manufacturing processes.
- Developed Excel VBA macros to automate various repetitive tasks usually involved with analyzing large production data - ProCert.
- Optimized designs and functional integration of parts and performed a feasibility study for metal additive manufacturing.
- Managed the internal orders on plastic 3D printing machines.
- Developed and applied Machine learning models to identify faulty processes and production anomalies - Pilot project.

SKILLS

Control systems,
MATLAB, PyBullet.
C, Python, Git. Solidworks
DFMA, FEA. Robotics,
Altium, OrCAD.
Agile development.

Profile

Github
https://github.com/7Spartan
Portfolio
https://7spartan.github.io/
LinkedIn
https://www.linkedin.com/in/deepak-thondapu

EDUCATION

Simon Fraser University, Vancouver
Masters in Engineering - Mechatronics
SEP 2018 - JAN 2020

VJIT, Hyderabad
Bachelor of Technology - Mechanical
JUN 2011 - JUN 2015

OTHER PROJECTS

6 DOF Racing simulator

Developing a mechatronic system based on the Stewart platform to manipulate an off-the-shelf racing seat.
A passion project of mine that includes the following:

- Developing an STM32-based control board to communicate with the PC and control 6 stepper motors. - DONE
- Firmware for the control board - WIP
- Mechanical design - WIP

1 DOF Ankle exoskeleton

Developing an exoskeleton to address a medical condition called AFO (Ankle Foot Drop). A simple slider crank mechanism that uses a ball screw actuator to help with the movement of the ankle.

- Design, manufacturing and iterations of the design - WIP
- Trying out different open source algorithms that can predict the gait state using an onboard IMU - WIP

Other applications

- Video analysis software (uses an ML model to identify structural defects in concrete inspection footages)
- ML agent that drives a car in a simulation environment (Udacity self driving car)
- UART data analysis and visualization tool
- Web Scraping tool to collect data from Craigslist
- Web App to identify images and make an inventory of things
- Http based server used for onboarding and authentication of users