

Santhosh Kumar Muruganantham

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EDUCATION

MS in Mechanical Engineering- Mechanics and Design
The University of Toledo, Ohio, GPA: 3.73

May 2023

BS in Mechanical Engineering Technology
The State University Of New York, Farmingdale, GPA: 3.67

May 2019

WORK EXPERIENCE

Schneider Electric
Mechanical Engineer (Trainee)

East Haven, CT
Oct 2019 - March 2020

- Worked in the Engineering department in modeling and drafting parts (using CREO 3D software) for the UL-891 low-voltage switchboards which includes various sheet metal components, copper bus bars and Glastics as per ASME Y14.5.
- Used (Visual Basic-6.0) in creating a calculator GUI in an excel spreadsheet for sizing the breakers for I-line distribution panels.
- Assisted the quality engineers in verifying the measurements of fabricated copper bus bars, sheet metal parts, and the wirings as per the engineering drawings.

The University of Toledo
Graduate Research and Teaching Assistant

Toledo, OH
Jan 2021 - Dec 2022

- Research work concentrated in simulating automated Unmanned Surface Vehicles (USV) movements for cleaning Algae blooms in Lake Erie (Heterogenous Swarm Robotics).
- Worked on developing an algorithm in the Robot Operating System (ROS) platform for swarm navigation and optimization with uncertainty.
- Architected a virtual robot in simulation by assigning velocity controllers and transmission types for the robot description and movement while making use of GPS, compass, and sonar controllers.
- Utilized Python scripts in creating a coordinator for the swarm via publishing and subscribing the coordinates using msg type format (urdf, launch, yaml, rviz).
- Simulated and analyzed the documented technical reports with Gazebo-simulation environment.
- Collaborated with four different professors to plan assignments, prepare solutions, and grade exams ensuring better class performance.
- Conducted lab and teaching sessions to undergraduate students.

The State University of New York
Math Tutor & Building Manager

Farmingdale, NY
Sept 2018 - May 2019

ACADEMIC PROJECTS

Design for Manufacturing and Assembly

Jan 2023 - May 2023

- Designed a Sugarcane machine by modifying it from the existing product by resizing it and eliminating gearbox and by replacing the higher hp motor with a lower powered one.
- DFM and DFA regulations were followed while designing the product. DFMA analysis was performed based on the book by Boothroyd and Dewhurst. Design efficiency was improved from 6% to 12% while reducing the assembly cost from \$12.9 to \$6.07.
- Materials selection for individual parts was done based on the availability, price, environment being used in and corresponding manufacturing process for the part.
- Performed calculations to maintain the same torque output in both the original and new products, and for replacing the 3 hp motor with a 1.5 hp motor.
- Modeled the design in SolidWorks and BOM were produced for the assembly. Produced a comprehensive report for the project.

Additive Manufacturing

Jan 2023 - May 2023

- Designed and manufactured a fully functional downsized Planetary-gear system to meet the project requirements.
- Analyzed gear assembly using SolidWorks simulation and motion which was modeled and sliced according to the tolerance range of the Ultimaker 3D printer using Cura software.
- Fabricated the model using the Fused Deposition Modeling (FDM) method and using PLA as its main and support material.

Advanced MatLab for Engineers

Jan 2023 - May 2023

- Project objective: detect and recognize the face using webcam in real time using Deep Learning and Machine Learning Computer Vision algorithms.
- Used Alexnet-CNN (Convolutional Neural Network) for Deep Learning and trainCascadeObjectDetector (Haar) for Machine Learning.
- Created a GUI to detect and recognize faces in real time by executing the trained models.
- Studied the accuracy and system cost function for both models.

Advanced Mechatronics

Aug 2021 - Dec 2021

- Developed reverse parking assist and vehicle security system using Arduino Uno along with GSM Module. Designed and 3D printed sensor holders and brackets to place the system in the vehicle.
- Tested the system in different environmental conditions and various frequency ranges in order to find the failure conditions of the system.

INTERNSHIP

Ashok Leyland (Automobile Industry), Hosur, India

May 2017 - July 2017

- Assisted in Quality Inspections for various automobile parts including ball bearings, cylinders, and pistons using tools such as gauges, calipers, dial indicators, and other measuring tools.
- Assisted basic operations in CNC machines and demonstrated vital programming skills.

Indian Railway-Southern Division, Erode, India

May 2016 - July 2016

- Assisted in inspecting engine components using Liquid Penetration testing; attaining tolerance specifications of the components using surface finishing operations; and validating them using gauges.

SKILLS

<i>CAD Exam:</i>	Certified Solidworks Professional (CSWP) - <i>May 2023</i>
<i>NPD Training:</i>	New Product Design and Development (PSG TIFAC Core) - <i>Jan 2018 – May 2018</i>
<i>CAD softwares:</i>	Solid Works, Creo, Autodesk Inventor, AutoCAD, CATIA
<i>Programming:</i>	MatLab, Python, C++, Visual Basic programming
<i>Robotics</i>	Arduino, ROS(Robot operating system), Gazebo
<i>MS Office suite</i>	Microsoft Word, Powerpoint, Excel-Macros