Santhosh Kumar Muruganantham

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SKILLS

Language:	Python (Pandas, NumPy, SciPy, MatPlotLib), C++, Visual Basic programming
Tools:	TensorFlow-Keras, Excel (VLookup, Conditional Formatting, Pivot Tables, Macros), MATLAB, Tableau.
Database:	SQL (SQL Server)
Robotics:	Arduino, ROS (Robot operating system), Gazebo
CAD:	Certified SolidWorks Professional (CSWP), Creo, Autodesk Inventor, AutoCAD

EDUCATION

MS in Mechanical Engineering- *Mechanics and Design* *May 2023*
The University of Toledo, Ohio, GPA: 3.73

BS in Mechanical Engineering Technology *May 2019*
The State University Of New York, Farmingdale, GPA: 3.67

WORK EXPERIENCE

The University of Toledo **Toledo, OH**
Data Analytics Research Assistant *Sep 2023 - Present*

- Currently involved in projects concerning predictive analysis for parameters in Additive Manufacturing processes, as well as a project centered around Natural Language Processing (NLP) tasks including Sentiment Analysis, Topic Modeling, and Next-Word Prediction.
- Developed a Python-based PDF query chatbot that streamlines information retrieval from documents, enabling efficient data extraction and natural language interaction with textual resources.
- Utilized NLP libraries and techniques including LangChain, Transformers, Chroma for embedding, vector storage, training the model, and data query.
- Designed an intuitive and user-friendly chatbot interface for seamless interaction using Streamlit.

The University of Toledo **Toledo, OH**
Graduate Research and Teaching Assistant *Jan 2021 - Dec 2022*

- Created a virtual robot model in a simulation environment by defining its velocity controllers and transmission types, and using GPS, compass, and sonar controllers for robot description and movement.
- Utilized Python scripts to create a swarm coordinator that publishes and subscribes to coordinates using the msg type format (urdf, launch, yaml, rviz).
- Designed assignments, created solutions, and assessed exams, resulting in improved class performance across courses such as DAMS, Strength of Materials, Vibrations Lab, and Manufacturing Processes.

Schneider Electric **East Haven, CT**
Mechanical Engineer Trainee *Oct 2019 - March 2020*

- Utilized VSA (Visual Basic for Applications) to design a user-friendly calculator GUI within an Excel spreadsheet, facilitating the sizing of breakers for I-line distribution panels.
- 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.
- Collaborated with quality engineers to validate the dimensions of manufactured copper bus bars, sheet metal components, and wiring, ensuring alignment with engineering specifications.

The State University of New York **Farmingdale, NY**
Math Tutor & Building Manager *Sept 2018 - May 2019*

PROJECTS

COVID_19 Data Analysis– SQL – Personal Project *Sep 2023*

- Conducted in-depth Analysis of COVID-19 data from multiple tables using SQL.
- Utilized SQL for Data exploration, Cleaning and analyzing pandemic related data. Explored regional variations and trends, identifying critical insights to aid decision making.
- Transformed and filtered data using aggregating and filtering functions and extracted via Join and View.
- Overcame Data integration challenges by creating custom scripts and optimizing SQL queries.

Airbnb performance analysis Tableau Dashboard- Personal Project *Sep 2023*

- Created a Tableau dashboard for Airbnb, enabling real-time property performance analysis, pricing optimization, and data-driven decision making.
- Utilized advanced data visualization techniques to deliver actionable insights to start a new business under Airbnb resulting in maximized revenue and enhancing the user experience.

Bike Sales Excel Dashboard- Personal Project *Sep 2023*

- Designed and implemented a comprehensive Excel-based Bike Sales Dashboard, providing detailed analysis of sales performance based on marital status, region, education, and occupation.
- Crafted dynamic Excel charts and pivot tables, enabling the visualization of critical sales trends and customer segments, enhancing market targeting and improving sales strategies.
- Performed thorough data cleaning and transformation within Excel to ensure data accuracy.

Machine Learning-MatLab - Academic *Jan 2023 - May 2023*

- Project Goal: Implemented real-time face detection and recognition using Machine Learning Computer Vision algorithms via a webcam.
- Utilized the Alexnet Convolutional Neural Network (CNN) for Deep Learning and trainCascadeObjectDetector with Haar cascades for Machine Learning.
- Designed a GUI to execute the trained models for real-time face detection and recognition.
- Evaluated the accuracy and system cost function for both the Deep Learning and Machine Learning models.

Additive Manufacturing- Academic *Jan 2023 - May 2023*

- Designed and 3D printed a fully functional downsized planetary gear system to meet project requirements.
- Used SolidWorks simulation and motion to analyze and optimize a 3D-printed gear assembly for the Ultimaker 3D printer.
- Fabricated the model using the Fused Deposition Modeling (FDM) method with PLA filament as the main and support material.

Advanced Mechatronics- Academic *Aug 2021 - Dec 2021*

- Developed and deployed a reverse parking assist and vehicle security system using Arduino Uno and GSM module, including 3D-printed sensor holders and brackets.
- Evaluated the reverse parking assist and vehicle security system in various environmental conditions and frequency ranges to identify failure conditions.

INTERNSHIP

Ashok Leyland (Automobile Industry), Hosur, India *May 2017 - July 2017*

- Contributed to quality inspections of a wide range of automotive components, including ball bearings, cylinders, and pistons, employing precision instruments like gauges, calipers, dial indicators, and various measurement tools.

Indian Railway-Southern Division, Erode, India *May 2016 - July 2016*

- Participated in the examination of engine components via Liquid Penetration testing and validating the results with the aid of precision gauges.