JAYSTON ARLEN MENEZES

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EDUCATION

Northeastern University **Boston, MA**
Master of Science in Mechanical Engineering, Concentration: Mechatronics *Expected May. 2024*
Relevant Coursework: Mechatronics Systems, Robot Mechanics & Control, Control Systems, Wearable Robotics (Audit)
Mumbai University **Mumbai, India**
Bachelor of Technology in Mechanical Engineering *June 2021*

SKILLS

- **Design and Prototype**: AutoCAD, Autodesk Inventor, Autodesk Fusion 360
- **Programming Skills**: C, MATLAB, GNU Octave, Arduino, Python, HTML, CSS, JavaScript, XML, MySQL
- **Simulation Software**: ANSYS (Mechanical APDL and Workbench), SolidWorks, OpenSim
- **Libraries:** NumPy, SciPy, TensorFlow, Pandas, PyQt5, Matplotlib, OpenCV, Plotly, scikit-learn
- **Machine Learning:** Linear Regression, Polynomial Regression, Classification, Neural Networks, LSTM

EXPERIENCE

Graduate Research Assistant, NeuMove Lab, Northeastern University **May 2022 - Present**
- Developing a Virtual Neuromuscular Controller to command ankle torque on DePhy exoboots, using only ankle angles
- Structured a simulation code for offline testing of exoboots to tune muscle model parameters and controller inputs
- Tuned exoskeleton parameters, including PID gains, for optimal performance across different gait phase and speed
- Engineered a position and current control experiment to validate commanded torque and modify low-level controller
- Collaborated with research associate on implementing a self-pacing treadmill algorithm, with GUI, in MATLAB

Graduate Research Assistant, Shepherd Lab, Northeastern University **May 2022 - Present**
- Innovated scripts to read Qualisys Motion Capture system integrated to Bertec treadmill data at 1.2 KHz frequency
- Applied Low-Pass filters, resampled data to synchronize with exoboot data on Linux at 200 Hz for gait phase labeling
- Created an artificial neural network model for predicting subject walking speed with 0.4% loss on training data
- Established experimental protocol for exoboots data collection sessions with test subjects using treadmill and Mo-cap
- Implemented preferential optimization on exoboots for effective engagement of a Four Point Spline controller

Mechanical Engineering Intern, Bharat Petroleum Corporation Limited, India **June 2019 - July 2019**
- Explored different types of pumps used in oil and gas refinery such as Submersible Pumps and Screw Pumps
- Completed a technical study on maintenance operations of Submersible Sump Pumps
- Performed CNC Lathe and Milling operations on Pump components at the refinery's Engineering Workshop

PROJECTS

Simulation of Stochastic Scheduling in Job Shop **July 2020 - June 2021**
- Designed 4 parametric based scheduling simulation environments to utilize processing time and minimize tardiness
- Developed simulation environments (frontend and backend) in Python; modified each model to suit the requirements of a pipe fittings, flanges, and sockets manufacturing company, providing 96% accuracy and results within a minute
- Mentored teammates on programming in Python and coordinated with project advisor throughout the project period

Application Software for Design of Hoisting Mechanism **May 2021**
- Established software for designing and analyzing stresses of all components in a hoisting mechanism
- Implemented algorithm to remove constraints on the range of material selection, modify dimensions to avoid internal component failure and provide specification of standard available components with GD&T, in Python
- Automated additional application software to design mechanical systems and assist in grading & evaluation process

Temperature Controller Unit for an Insulated Container **March 2020**
- Designed a self-reliant control unit, with heating and cooling components, to maintain temperature inside a container
- Optimized control unit by integrating a PID controller for accuracy in temperature measurement, using MATLAB

PUBLICATIONS

Simulation of Stochastic Scheduling in Job Shop (ORESTA Journal)
Bari, P., Karande, P., & **Menezes, J.** (2022). Simulation of Job Sequencing for Stochastic Scheduling with a Genetic Algorithm. *Operational Research in Engineering Sciences: Theory and Applications*, *5*(3), 17-39

ACTIVITIES

Indian Society of Heating, Refrigerating & Air Conditioning Engg., Institute President **Sept 2019 - March 2020**
- Organized Technical Talk for Students by industrialist professionals providing exposure to industrial challenges
- Assisted in organizing Flagship Event, including technical presentations, for 400+ college students across 12 colleges