Jobin Binoy George

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EDUCATION

Columbia University, School of Engineering and Applied Sciences   New York, NY
Master of Science in Mechanical Engineering (Concentration: Robotics and Controls) [GPA: 3.8]   Dec 2021
Coursework: Deep Neural Networks, Data Science for Engineering, Advanced Robotics
New York University, Tandon School of Engineering   Brooklyn, NY
Bachelor of Science in Mechanical Engineering [GPA: 3.6] with Cum Laude Honors   May 2020
Minors in Aerospace Engineering, Nuclear Engineering and Computer Science

PROFESSIONAL EXPERIENCE

Columbia University ROAM Lab   New York, NY
Graduate Research Assistant under the supervision of Dr. Matei Ciocarlie   Nov 2020 – Jan 2022

- Led control firmware development for a modular, biomimetic serpent by employing Reinforcement Learning models, Model Predictive Control and PID loops
- Collaborated with members of ROAM lab in diagnosing and debugging bottlenecks
- Formulated ROS nodes for publishing commands and listening to robot state logs
- Developed mechatronic components (IMU's, Magnetic Encoders, Servo Motors, Optical Sensors) in C++ for data logging at 100 Hz via a CAN network linked to ROS nodes and microcontrollers

Evtek   New York, NY
Machine Learning Research Intern   Sep 2021 – Dec 2021

- Deployed deep learning models to implement an identification, masking, and sorting algorithm for efficient recycling with OpenCV and PyTorch
- Improved conveyor-belt object recognition and tracking by 40% using Kalman Filters

Columbia University   New York, NY
Graduate Teaching Assistant – Modelling/Identification of Controlled Dynamic Systems [MEBM E4439]   Sep 2021 – Dec 2021

- Mentored students with coursework by increasing overall retention of course material

Graduate Course Assistant – Machine Learning for Mechanical Systems [MECE E4520]

- Guided students in optimally completing the homework assignments

NYU Mechatronics Lab   Brooklyn, NY
Robotics Research Assistant   Aug 2019 – May 2020

- Simulated multi-nodal robotics navigation on ROS Gazebo with TurtleBot models
- Scripted publisher/listener nodes in C++ for odometry feedback and teleoperation

NYU LaGuardia Studio   New York, NY
Student 3D Specialist   May 2018 – Sep 2019

- Designed intricate, functional mechatronic systems using SolidWorks/ CATIA, microcontrollers and task-specific sensors for professors and students
- Brainstormed with clients regarding modelling (SolidWorks), mesh restructuring (Autodesk, NETFABB and Ansys) and in efficient use of 3D printing technologies (FORTUS, 3DSystems)

ACADEMIC PROJECTS

Robotics/ML Projects - Columbia University   New York, NY
                                                                                                                Sep 2020 – Dec 2021
- Scripted functions in C++ for cartesian control, inverse kinematics, motion planning, state estimation and particle filters
- Implemented neural nets from scratch with PyTorch and TensorFlow/Keras for robot dynamics and robot actuation [CNN, RNN, Model-free RL, MLP, SVM, Logistic Regression]
- Developed evolutionary algorithms from scratch in C++ and Julia to model a walking robot
- Leveraged CUDA and parallel programming to decrease training computation time

Reinforcement Learning Research Project - Columbia University   New York, NY
                                                                                                                Sep 2021 – Dec 2021
- Devised stochastic latent variable models to improve actor critic performance
- Analyzed different RL models with increased exploration to train agents for cube stacking task

Mechanical Wheelchair for Paraplegic Patients - New York University Capstone Project   Brooklyn, NY
                                                                                                                Sep 2019 – May 2020
- Modelled and optimized a mechanical standing wheelchair on SolidWorks and Ansys
- Reduced overall weight of wheelchair by 20% and optimized the gas-spring mechanism

SKILLS

Programming: ROS, MATLAB, Python, C++, JAVA, CUDA, HTML/CSS, R, PyTorch, TensorFlow, JAX
Design and Analysis: SOLIDWORKS, CATIA, ANSYS, Altair Optimization
Prototyping: Additive Manufacturing, Machining, CNC Milling, Acrylic Laser Cutting