Siddharth Jain

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Education

Master of Science, Robotics and Autonomous Systems **Expected May 2024**
Arizona State University, Tempe, AZ
Relevant Coursework: Reinforcement Learning, Deep Learning, Embedded Machine Learning, Optimal Control, Modelling and Control of Robots

Bachelor of Engineering, Mechanical **May 2022**
D. J. Sanghvi College of Engineering, Mumbai, India *GPA: **8.74/10***
Relevant Coursework: Structured Programming Approach, Industrial Electronics, Robotics, Machine Design

Technical Skills

Languages:	Python, C++, MATLAB & Simulink, Embedded C, SQL, PowerShell
Software:	Docker, ROS2, Solidworks, Autodesk Fusion 360, Arduino IDE, Altium, Microsoft Office
Hardware:	Semtech SX12xx, NRF BLE, ESP32, SAMD21, Arm Cortex-M microcontrollers, ATmega, Raspberry Pi
Technologies:	FreeRTOS, Gazebo, React Native, MQTT, Ubuntu, Tensorflow, Scikit-Learn, PyTorch
Protocols:	SPI, I2C, CAN Bus, UART, RF integration (ZigBee, LoRa, Wi-Fi, BLE)
AWS:	IoT Core, Lambda, Timestream, DynamoDB, S3 Buckets

Professional Experience

Embedded Systems Engineer **Oct 2022 – Current**
Mobile Systems Engineering and IoT *Tempe, Arizona*

- Engineered a self-sustained proprietary UHF off-grid full mesh protocol for ASU cart tracking and smart campus IoT initiative.
- Developed a Bluetooth Low Energy mesh network using ESP32s for SOS signals via a self-developed React-Native application.
- Wrote Lambda Functions with API Gateways and Timestream to obtain real-time location data as well as information about active nodes around campus.
- Programmed mpu9250 for deep sleep acceleration-based interrupt and achieved 3 years of battery life for the cart tracker.

Graduate Student Researcher **Dec 2022 – Current**
Bio-Inspired Robotics, Technology and Healthcare Lab *Tempe, Arizona*

- Designed an articulated 3-axis linear cartesian robot attached to a 6-axis load cell with a closed-loop controller to perform tests that were used to determine the frictional characteristics of the gripper pads fabricated for the Lizard Inspired Tube Inspection (LTI) robot.
- Designed and fabricated gripper pads with curved textured surfaces using a Polydimethylsiloxane (PDMS) polymer to enable the LTI robot to perform friction-based mobility on curved surfaces irrespective of the material and surface texture.

Vice Captain **Mar 2019 – May 2021**
DJS Kronos India *Mumbai, India*

- Headed and Co-founded the electric ATV team powered by a 8kWh BLDC Motor and a custom 48V Li-ion Battery pack.
- Incorporated 15+ sensors based on I2C and SPI communication protocol to collect data in real time.
- Simulated the vehicle's performance on MATLAB and Simulink resulting in a 17% more efficient design.

Academic Projects

Dexterous Manipulation with a Robotic Hand | ***Reinforcement Learning, Actor Critic*** **Aug 2022 – Oct 2022**

- Compared various on-policy methods like DAPG, Monte-Carlo return methods like AWR to Advantage Weighted Actor Critic giving 20% higher success rate.
- Reduced the time required to learn a range of robotic skills to practical time-scales by incorporating prior offline data along with online tuning.

Self Balancing Platform | ***MATLAB & Simulink*** **Sep 2022 – Dec 2022**

- Designed a closed-loop PID controller for linear actuators that controlled the position of every individual linkage of a Stewart platform to balance the motion of the ball placed on the platform. Reduced Steady State Error by changing the integral value.

Data Acquisition System | ***Raspberry Pi, ThingSpeak, Arduino*** **Jun 2019 – Dec 2019**

- Developed a DAQ System to collect data from 12 sensors for data telemetry in real time using Arduino microcontroller.
- Integrated a GSM SIM 900 Module to Raspberry Pi Zero and transmitted sensor data using ThingSpeak Communication Library.

Extracurricular

Robotics and Autonomous Society **Jan 2020 – Dec 2020**
Co-Committee *Dwarkadas J. Sanghvi College of Engineering*

- Managed a 3D Printing, PLC Automation Seminar and invited guests speakers from industry.