

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, EC2

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.
- Using C60 monocrystalline solar cells, IMUs, Semtech LoRa RF chips, and Arm Cortex-M, built a system from the ground up. The system underwent rigorous LAB testing and real-world RF immunity tests, resulting in optimal performance and reliability.
- 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

- Developed a 3 axis friction setup to validate the gripping strength of a lizard-inspired claw for autonomous tube inspection.
- Designed a continuous controller for fluid movement of the lizard-inspired robot using Pixhawk.

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 self balancing Stewart platform to balance a ball placed on it using PID. 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.