Anjali Devi Sivakumar

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Education

University of Michigan — **Ann Arbor, MI**
Ph.D in Electrical and Computer Engineering, GPA:4.0 — *Sept 2022 - May 2025*

University of Michigan — **Ann Arbor, MI**
Master of Science in Electrical and Computer Engineering, GPA:4.0 — *Jan 2021 – May 2023*

SASTRA Deemed to be University — **Tamil Nadu, India**
Bachelor of Technology in Electronics and Instrumentation Engineering, GPA:9.31/10.0 — *Jun 2015 - Jun 2019*

Research Experience

University of Michigan — **Ann Arbor, MI**
Graduate Research Assistant, Department of Biomedical Engineering — *Jan 2021- Present*

- Designed and prototyped a portable 1D Gas Chromatography (GC) based breath analyzers to analyze volatile organic compounds (VOC) in breath for non-invasive diagnosis of severity of COVID-19 infection from the exhaled breath of patients.
- Designed and prototyped low power micro multi-dimensional Gas Chromatography system to analyze wide range of VOCs in the atmosphere.

Harvard Medical School — **Cambridge, MA**
Engineering Research Assistant, Department of Medicine — *Jan 2019 - Dec 2020*

- Designed and tested a microfluidics and deep learning based self-testing rapid and accurate point of care diagnostic device adaptive to emerging infectious pathogens (COVID-19, HIV, HCV, and HBV).
- Developed a colorimetric detection assay for rapid detection and monitoring of COVID-19 aerosols in air.
- Developed a portable economical smartphone-based diagnostic system for IVF applications.
- Collaborated with Harvard School of Public health to study the effects of environmental exposures on semen quality and the sperm epigenome using smartphone-based diagnostic device.
- Performed histological analysis of different cells to train machine learning models to effectively learn the morphology of different cells at different image resolutions.
- Conducted psychophysical study for analyzing the perception capability of human skin for prototyping a robust haptic glove to further enhance human skin perception.

Indian Institute of Space Science and Technology — **Trivandrum, India**
Winter Research Fellow, Department of Avionics — *Nov 2018 - Dec 2018*

- Designed and tested lead wire compensation circuits for digital front ends for low-valued Resistive sensor using varied configurations of triple slope ADC with diodes to design the front-end.

Indian Institute of Space Science and Technology — **Trivandrum, India**
Summer Research Fellow, Department of Avionics — *May 2018 - Jul 2018*

- Designed and tested analog and direct-digital front ends for Palladium-based hydrogen Gas Sensors (LowValued Resistive Sensors) using modified dual slope ADC architecture for implementing direct-digital front ends and simple two stage-amplifier configuration for analog front-end.

SP Robotics Pvt. Ltd. **Chennai, India**
Project Collaborator *Jun 2017 - Nov 2017*

- Developed a software interface to control and automate the operations of Customer Assistant robot for EA Mall, Chennai using ROS (Robotics Operating System) and SIFT algorithm.

Skills

Programming Languages: C, C++, Python, Embedded C, MATLAB
Simulation Software: V-REP, LT-Spice, Multisim, Simulink, KeilUC, Cadence Virtuoso, Labview
Rapid Prototyping Hardware: Laser cutting, 3 D Printing
Operating Systems: Windows, Linux (Ubuntu), Mac OSX
Robot Platforms: ROS
Design Software: Blender, AutoCAD fusion, KiCAD
Wet Lab: Histology, Cell culture, Biosafety Level 2+