Faizan Beigh

Research Scholar || Indian Institute of Technology Delhi

Seamlessly integrating technology and innovation for a smarter tomorrow - Pursuing wearable electronics with machine learning

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EDUCATION

P.HD Electrical Engineering
Indian Institute of Technical Delhi ,India

12/2021 - Present *CGPA of 8.5*

Courses

- **Introduction Machine Learning**
- **Introduction to Mems Design**
- **Sensors and Transducers**
- **Fabrication Techniques For RF & Microwave Devices**
- **Selected Topics in IEC-II**
- **I.C. Technology**

M.Tech Embedded System
University of Kashmir, Jammu & Kashmir, India

10/2018 - 03/2021 *CGPA of 8.84*

Thesis

- Project titled as Optimized MEMS Circular Membrane Resonators for Mechanical Energy Harvesting and Sensing for IoT Application

B.Tech Electronic & Communication
Islamic University of Science and Technology, Jammu & Kashmir, India

06/2014 - 07/2018 *CGPA of 7.84.*

Thesis

- Design of Brain Wave Control Home Automation

Higher Secondary
Green Valley Educational Institute, Srinagar, Jammu & Kashmir, India

01/2012 - 12/2012 *75%*

Courses

- Non-Medical Sciences

Matriculation
Green Valley Educational Institute, Srinagar, Jammu & Kashmir, India

01/2010 - 10/2010 *83.60%*

Courses

- General Science with Math

PERSONAL PROJECTS

1. Intelligent Workplace Activity Montoring Using Self powered Piezo/Tribo Sensor (05/2023 - 8/2023)

- Developed low cost hybrid sensor based on piezoelectric-triboelectric mechanisms for human activity montoring using 2D CNN model

SKILLS

Machine Learning | Micro Fabrication | Python | Mask Aligner | Origin | COMSOL Multiphysics

2. Machine Learning Enabled Hind Foot Deformity Detection Using Individually Addressable Hybrid Pressure Sensor Matrix (05/2022 - 3/2023)

- Demonstrate a scalable, cost-effective hybrid sensor based on piezoelectric-triboelectric mechanisms for pressure mapping of 36 regions of the hindfoot and precise detection of any deformity. The matrix sensor comprises of individually addressable 6×6 sensors, which prevent pressure cell crosstalk and enhance the detection limit of the sensor up to 170kPa.

3. Design of NEMS based Gas Sensor for detection of different types of Gases (07/2021 - 12/2021)

- We executed several tests at various temperatures and pressures and effectively established the relationship between the Frequency Shift of our device at different temperature and pressure. We also investigated the influence of rate of absorption and rate of desorption at various temperatures.

4. Design of Low power novel bi-stable RF-MEMS based energy harvester for Industrial Internet of Things (IIOT) (10/2020 - 04/2021)

- In this project, we have carried through analysis and presented a practical solution to the practical energy harvester in the real time environment. We have presented a novel RF- MEMS-based Bi-morph clamped switch by combing features of RF and MEMS technology

5. Optimized MEMS Circular Membrane Resonators for Mechanical Energy Harvesting and Sensing for IoT Application (07/2020 - 10/2020)

- We have presented variants of circular membrane type energy harvester and sensing solutions and their possibility of powering standalone condition monitoring IoT nodes. Three different structures were analyzed for resonant frequency, frequency response amplitude, stress distribution, and output power.

6. Design of Brain Wave Control Home Automation (01/2018 - 06/2018)

- Successfully Designed a Thermal torch that could run using Human Body Heat. The project was sponsored by the device innovation Center at the Islamic University of Science & Technology.

7. Design of Thermal Torch (01/2016 - 03/2016) (01/2016 - 03/2016)

- Successfully Designed a Thermal torch that could run using Human Body Heat. The project was sponsored by the device innovation Centre at the Islamic University of Science & Technology.

Current Project

Optimization Strategies for Laser Induced Graphene on Various substrate for Flexible Strain Sensing.

07/2023 - Present

optimization of Laser induced graphene parameteries

INTERNSHIP

Networking Intern
NIELIT, Srinagar.
01/2017 - 02/2017

Courses
- Industrial training in computer networks and security.

Research Associate
DIC-IUST
01/2016 - 05/2016

Courses
- Worked on the design of a battery less thermally

WORK EXPERIENCE

Project Associate
Indian Institute of Science, Bangalore || Center of Nano Science & Engineering (CeNse)||
07/2021 - 12-2021

Tasks
- To design and analysis an a Nems Based Cantilever for gas sensing application.

Research Intern
Department of Electronics & Instrumentation Technology,University of Kashmir
08/2019 - 03/2021 *Srinagar,J&K*

Achievements
- Project Assitance on ongoing student projects along with research assistance in some Industry projects

Embedded Project Assistant
Intellects Engineering Guidance Classes
05/2018 - 11/2018 *Srinagar,J&K*

Achievements
- Assisted on final year student projects in the fields of energy generation, distribution, management and metering.

Guest Lecture
MSME Ministry of Micro Small Scale.
02/2020 - 03/2020 *Srinagar,J&K*

Achievements/Tasks
- Guest Lecturer a for networking and security in IoT

LANGUAGES

English
Full Professional Proficiency

Urdu
Professional Working Proficiency

Arabic
Elementary Proficiency

TOEFL-IBT SCORE 77
Full Professional Proficiency

Kashmiri
Native or Bilingual Proficiency

Hindi
Full Professional Proficiency

RESEARCH PAPER PUBLISHED

1. Machine learning Enabled Hind foot Deformity Detection Using Individually Addrressable Hybride Pressure Sensor
2. Intelligent Workplace Activity Monitoring and Detection using Self-powered Triboelectric/Piezoelectric Sensor Augmented Machine Learning.
3. Localized Biomchanical Strain Sensing with Graphene /SU-8 Nanocomposite based Highly Flexible piezorestivite Sensor.
4. Optimization Strategies for Laser-Induced Graphene on Various Substrates for Flexible Strain Sensing
5. A New Low Power Bi-Stable RF-MEMS Based Energy Harvester for NOMA Driven Industrial Internet of Things
6. Optimized MEMS Circular Membrane Resonators for Mechanical Energy Harvesting and Sensing for IoT Application
7. Sigma Delta Modulators: A Review
8. OTA Based Inductor less Oscillator Design
9. MOS Based Fuzzy Logic Multiplexer Design and Simulation
10. NOVEL OTA-C VOLTAGE MODE-CURRENT MOD BIQUAD FILTER
11. 2nd Order Sigma Delta Modulator Design using Delta Sigma Toolbox
12. A Review on Brain Wave Signal Appliance Control

ACHIEVEMENTS

- IOT Foundation: Telemetry by Amazon Web Service.
- Analysis of Solar Photovoltaic Device by Alison.
- Introduction to Amazon Elastic Compute Cloud (EC2) by Amazon Web Service.
- Telemetry by Amazon Web Service.
- Neural Machine translation with Sockeye.
- How to Write & Publish a Scientific paper (project – centered course) by Ecole Polytechnique
- Element of AI by University of Helsinki.
- Cloud computing basics (cloud 101) by Learn Quest.
- Data science math skills by Duke University.
- Getting started with AWS Machine learning by Amazon Web Service.