Khushi Singh

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ABOUT ME

Self-motivated and hardworking fresher seeking an opportunity to work in a challenging environment to prove my skills and utilize my knowledge and intelligence in the growth of the organization.

EDUCATION

B-Tech in Electronics and Communication

Vellore Institute of Technology, Vellore
CGPA:9.63(2019 - 2023)

LANGUAGES

8 / 10
Embedded C

8 / 10
Python (Intermediate)

8/10
C/C++ Programming (Intermediate)

8/10
Java, JavaScript

SKILLS

- Full Stack Development using MERN, Django.
- Artificial Intelligence
- Machine Learning
- IoT
- Embedded System design using 8051, AVR, and Arm Microcontroller
- Communication Protocols: I2C, UART, USB, Analog, Digital, and SPI
- Interfaces: Touch screen, Bluetooth, Wi-Fi, GSM, OLED, Keypad, 7-Segment Sensors

TRAININGS

- MERN Full Stack Development (Excellence Technologies, Mohali-Chandigarh)
- Artificial Intelligence (Datamites, Bangalore)

INTERNSHIP

Industrial Internship in C-DAC, Mohali

1 July 2021 - July 30, 2021

Internship completed by working on Project named "Development of Multi-Modal Analytics framework for Machine-Assisted diagnosis of Pediatric Pneumonia". The project aims to detect Pneumonia in kids using Electronic Stethoscope and Artificial Intelligence. I learned and contributed to Embedded system design (Noise reduction Filter design), embedded coding (Specific frequency detection using FFT), and data pre-processing for AI modeling successfully.

TOOL-IDE-S/W

Software: -
Real-Term, LT-Spice, Proteus, MultiSIM

IDE: -
Atmel-AVR-Studio, Arduino IDE

Tools: -
Anaconda, Jupyter Notebook, Keil, ModelSim, MATLAB, Pycharm

ACTIVITIES

VIT Model United Nations Society
***Position: Director* -Public Relations and Outreach**

The Electronics Club
Position: Management & Operations Head

Badminton Player
State (Pb) Level

ECE Program Representative
PR for ECE branch during 2021-2022

PROJECTS

FULL STACK DEVELOPMENT

1. **Web Application for a NGO for hiring Manpower with suitable skill sets**
   Developed Web Application using Django, HTML and CSS to suggest suitable manpower from applied database.

2. **Web Application for Online Inventory Cart Management System**
   Developed using ReactJS and MangoDB : https://github.com/Khushi-Singh-Git/ActiveBuildings

3. **Online Editable and Exportable Spreadsheet Application:** https://github.com/Khushi-Singh-Git/Fournir-Innovations
   https://gnxqx538t1tgukxbuh6lfq.on.drv.tw/www.fournir-task-khushi/Fournir_Task_Khushi.html

4. **Sample Front End Application using ReactJS:** https://lovely-moxie-5d1880.netlify.app/
   Developed using ReactJS and MangoDB : https://github.com/Khushi-Singh-Git/Lumos-Lab-Task

HARDWARE DEVELOPMENT

5. **IoT Enabled Heart Rate Detection and Monitoring System Using IR Sensors**
   The prototype is developed around NODMCU with an OLED display using an IR Pulse Sensor. Critical data has been uploaded to the Thingspeak Cloud in Real-Time for Monitoring specific Health parameters.

6. **Face Recognition and Detection using Raspberry Pi and Open CV**
   The project is made using a Raspberry Pi model 4b and a Pi camera which helps in face recognition and detection using Open CV software.

7. **Detection of UID of Nanotechnology-Based RFID Tags**
   Developed a working prototype to read UID (Unique Identification Number) stored in Nanotechnology enabled RFID Tags. Developed Prototype can be used in various RFID applications like Access control, Asset Tracking, etc.

8. **Design and Development of Computer Vision Enabled Robotic Gun Control System for Protecting Borders**
   The system consists of a USB camera attached to Gun which is mounted on a movable pan-tilt platform with two degrees of freedom. Real-time video from a USB camera is fed to a laptop\PC, where a computer vision-based face detection Artificial Intelligence (AI) algorithm detects the enemy intrusion, and the position of the target is fed to pan-tilt platform controller to aligned the Gun toward the target and Gun fires to eliminate the target.

9. **Digital image security and steganography using LSB method and LZW compression**
   Message data is compressed using LZW lossless compression and hiding information using LSB steganography in a carrier image file. The method is validated by computing PSNR to evaluate efficiency and quality on reconstructed images. The suggested method contributes more data embedding to the cover image, as the secret message is compressed using LZW before applying the steganography algorithm.

10. **Design and implementation of Ultraviolet C (UVC) irradiation-based sanitizer system for public transport with remote monitoring**
    The sanitization system is developed using a NODEMCU microcontroller, UVC led arrays, switching circuit, PIR sensor, and mobile app.

11. **Design and implementation of low-cost IoT enabled handheld Ultraviolet (UV) irradiation measuring device with remote monitoring**
    The optoelectronics part of the sensor is consisting of Schottky photodiode in photovoltaic function mode and operation amplifier SGM8521. NodeMCU microcontroller along with OLED display is used for computing and displaying ultraviolet radiation in terms of UV Index. Real-time reading is available to Mobile App using the Blynk IoT platform.

H A C K A T H O N S

1. **Winner of Best Market Ready Solution Award in IoT Track - MLH International Kathmandu University Hackfest 2021 : Design and Development of Greenhouse Climate Controller System**
   20-21 February 2021
   The project realized the concept of precision agriculture through a climate control system using various sensors and actuators.

2. **Winner of Embedded Category - Techkriti 21, IIT Kanpur**

   Design and Development of Smart Home Embedded System
   13-Mar-21
   Designed working hardware prototype of IoT Enabled Home Automation System with the use of various actuators and sensors

3. **Winner of Best MLH Hardware Hack - Hack 36 organized by MNIT, Allahabad**

   Development of IoT Enabled Low-Cost SPO2 and Heart Rate Monitor
   9 – 11 April 2021
   Development of IoT Enabled Low-Cost SPO2 and Heart Rate Monitor system. Real-time data and previous values could be monitored through the IoT cloud or Mobile App feature.

4. **Winner of Outstanding Female Team Award - FrostHack21' organizer by IIT, Mandi**

   Development of UVC Sanitizer System for Vehicles for COVID-19
   7-9 May 2021
   Design and Development of hardware prototype of UVC Sanitizer System for vehicles for COVID-19 using UVC LED arrays and controlling them through Mobile App.

RESEARCH PAPERS

1. **Winner of Best Paper Presentation Award in Smart materials, sensors, instrumentation, AI and IoT track,** ***International Conference on Multidisciplinary Aspects of Materials in Engineering 2021 (IC-MAME 2021, UIET PUNJAB). Titled "Design of low cost IoT enabled embedded control system for covid free smart home"***,8-9 October 2021. *https://iopscience.iop.org/article/10.1088/1757-899X/1225/1/012058*

2. **Winner of Best paper** for Research paper entitled **'Design of low cost IoT enabled Greenhouse Control System for Precision Agricultural Research Application'** in **International Conference on Recent Trends in Electrical and Electronics Communication and Instrumentation** -*CVR College of Engineering*, 27-28th Dec 2021

3. Presented **Research paper** entitled **"Design and development of DSP enabled low-cost ECG machine"** in the **IEEE International Conference on Electrical, Electronics, Information and Communication Technologies (ICEEICT 2022)** organized by the Department of Electrical and Electronics Engineering, K. Ramakrishnan College of Engineering, Tiruchirappalli, Tamil Nadu: https://ieeexplore.ieee.org/document/9768423.

4. Presented **Research paper** entitled **"Design and implementation of IoT enabled low-cost SPO2 and Heart rate monitoring system"** in **Delcon 2022, IEEE Delhi section** organized by Netaji Subhas University of Technology, New Delhi, India, 11-13th February 2022: *https://ieeexplore.ieee.org/document/9753167.*