Abeer Asif

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ABOUT MYSELF

As a **Mechatronics Engineer**, I possess a diverse skill set, including proficiency in C/C++, Python, Autocad, and MS Office. I have hands-on experience in machine learning, data science, Energia, Proteus, and CNC simulator. My knowledge of electronics, embedded systems, and artificial intelligence enables me to work on intelligent and autonomous projects. I have a keen interest in emerging technologies, such as the metaverse, and its applications in virtual reality and augmented reality experiences. My ability to analyze data and draw valuable insights supports informed decision-making and system optimization. Aspiring to secure Job, I am eager to contribute my expertise to advance technology and innovation in a dynamic environment.

EDUCATION AND TRAINING

15/11/2021 – CURRENT Lahore, Pakistan
BACHELOR'S OF MECHATRONICS AND CONTROL ENGINEERING University of Engineering and Technology, Lahore

01/09/2019 – 30/06/2021 Gujranwala, Pakistan
INTERMEDIATE Punjab Group of Colleges

01/03/2017 – 28/02/2019 Gujranwala, Pakistan
MATRICULATION Talent Kids Campus

LANGUAGE SKILLS

Mother tongue(s): **URDU**

Other language(s): **ENGLISH** | **PUNJABI**

DIGITAL SKILLS

C C++ languages | Data structures and Algorithms | Python | Git | Microsoft Office | AutoCad 2D -3D | Autocad and Solidworks | KIEL/PROTEUS | CNC Simulartor | Basics of metaverse | Ansys software basic level | Energia IDE | Databases: Mysql | R-Programming Language | Power Query ,Power BI | Solidworks software | Matlab/ Simulik | Arduino/Arduino IDE | Python, Scikit-Learn, Numpy, Matplotlib | Machine learning | Word, Excel, Power pont intermediate knowledge

PROJECTS

Automatic Street Light

The Automatic Street Light Controller is a system designed using a custom PCB to manage street lighting based on ambient light levels. It utilizes a Light Dependent Resistor (LDR) to sense light intensity and controls a transistor to switch the street lights on or off accordingly. The PCB layout ensures proper component isolation and optimized signal flow. The design may include a Real-Time Clock (RTC) for automatic scheduling. The project offers convenient connectivity options for easy integration with existing street light infrastructure. It provides energy-efficient and eco-friendly lighting by eliminating manual intervention and reducing unnecessary illumination during daylight hours. The Automatic Street Light Controller enhances safety and comfort for pedestrians and drivers while contributing to sustainable urban development.

Motor Control by H-bridge

Motor Control by H-bridge using PCB and MOSFETs is a versatile circuit enabling bidirectional control of a DC motor. The custom-designed PCB hosts H-bridge configuration, using N-channel and P-channel MOSFETs to switch the motor's direction. The MOSFETs are driven by a microcontroller, which processes user input to control the motor's speed and

rotation. The PCB layout ensures proper isolation and efficient signal flow, providing a compact and reliable motor control solution for various applications.

Audio Innovator

Created an exceptional speaker system from scratch, utilizing a custom-designed PCB and transistors, showcasing my expertise in audio engineering and electronics. The project involved precise component placement and circuit configuration, resulting in optimal sound quality and efficiency. Through meticulous tuning and testing, I achieved impressive audio fidelity and wide frequency response. The seamlessly integrated speaker excelled in various audio setups, reflecting my dedication to practical engineering solutions. My problem-solving skills proved vital in troubleshooting and optimizing the speaker's performance. The project exemplifies my passion for audio innovation and my commitment to pushing the boundaries of technology.

Charging Adopter

Developed a versatile charging adapter using a custom PCB, showcasing expertise in electronics and power management. The compact design features multiple charging ports with intelligent charging capabilities for enhanced safety and efficiency. Thoroughly tested for reliability and compatibility, providing fast and convenient charging solutions. This project exemplifies my proficiency in PCB design and power electronics, ready to contribute to cutting-edge charging innovations in the industry.

Robot navigation using C Language

Implemented robot navigation using C language and genetic algorithms, demonstrating expertise in both programming and artificial intelligence. The genetic algorithm enabled the robot to autonomously learn and optimize its pathfinding abilities. Through iterative generations, the algorithm improved the robot's navigation performance in complex environments. This project showcases my skills in algorithm design, optimization, and problem-solving. The C language implementation ensured efficient and reliable execution, making the robot capable of real-world applications. The project highlights my passion for robotics and AI, with a focus on developing intelligent and adaptive systems. Ready to contribute these talents to advance the field of autonomous robotics.

Robot navigation using Python

Implemented robot navigation using Python and genetic algorithms, showcasing expertise in programming and artificial intelligence. Leveraging genetic algorithms, the robot autonomously learns and optimizes its pathfinding abilities in complex environments. This project demonstrates my proficiency in algorithm design, optimization, and problem-solving using Python. The Python implementation ensures a flexible and efficient solution for real-world robot applications. The project exemplifies my passion for robotics and AI, with a focus on developing intelligent and adaptive systems.

Sign Language Converter using Python Machine Learning

Created a Sign Language Converter using Python and Machine Learning, showcasing expertise in computer vision and natural language processing. The system interprets hand gestures in real-time, converting them into corresponding text or speech output. Utilizing convolutional neural networks (CNNs) and recurrent neural networks (RNNs), the model accurately recognizes a wide range of sign language gestures. Thoroughly trained and fine-tuned the ML model on diverse datasets to achieve high accuracy and robust performance. The project demonstrates my skills in data preprocessing, model building, and algorithm optimization.

Automatic AMBU Ventilator for COVID-19 Patients

Developed an Automatic AMBU Ventilator for COVID-19 patients, integrating Tiva microcontroller, embedded system, and advanced mechanical mechanisms. The system provides critical respiratory support to patients, ensuring precise and controlled ventilation. Leveraging Tiva's processing power, the embedded system monitors patient parameters and adjusts ventilation settings accordingly. The sophisticated mechanical design ensures efficient air delivery and patient comfort. The project highlights my expertise in hardware-software integration, control systems, and medical device development. Rigorous testing and safety measures ensure reliability and compliance with medical standards. This life-saving innovation aims to alleviate the strain on healthcare systems during the pandemic, reflecting my dedication to leveraging technology for public welfare.

Plant health monitoring system

Developed an advanced Plant Health Monitoring System using sensors such as humidity, temperature, and moisture sensors integrated with an ESP32 microcontroller. The system continuously captures real-time data from the sensors to assess the plant's need for water and overall health. By analyzing the collected data in MATLAB, the system generates comprehensive graphs to visualize plant health trends and occasionally predicts future health conditions.

This project combines IoT technology and data analytics to provide precise and timely insights into plant care requirements.

Automatic Obstacle Avoidance Rover car (Robotics)

Designed and developed an Automatic Obstacle Avoidance Rover Car utilizing the Tetrix kit and NI myRIO controller. The rover is programmed using LabVIEW software to autonomously navigate its environment while detecting and avoiding obstacles in real-time. This robotics project demonstrates advanced sensor integration and control algorithms, ensuring efficient and safe maneuverability. It highlights the application of robotics, control systems, and software engineering to create intelligent and adaptive robotic solutions.

Ball Balancing Robot

The Ball Balancing Robot project is a control systems project that demonstrates the implementation of a Proportional-Integral-Derivative (PID) controller to maintain the balance of a ball on a flat surface. The primary objective is to develop a robotic platform capable of dynamically adjusting its position to keep a ball centered on its surface, despite external disturbances.

COMMUNICATION AND INTERPERSONAL SKILLS

Soft Skills

1. Excellent communication skills to work effectively with team members and stakeholders
2. Strong problem-solving skills to quickly troubleshoot and resolve issues
3. Detail-oriented with a focus on producing high-quality work

4. Ability to work independently and as part of a team in a fast-paced environment

5. Strong time management skills to prioritize tasks and meet a project deadline
6. Adaptable and willing to learn new technologies and tools

CERTIFICATES & ACHIEVEMENTS

Applications of TinyML(Harvard University)

Successfully completed the Tiny Machine Learning course offered by **Harvard University**, showcasing expertise in the cutting-edge field of edge AI and embedded machine learning. The course provided comprehensive knowledge in deploying machine learning models on resource-constrained devices, enabling real-time data processing at the edge. Hands-on projects and practical exercises equipped me with valuable skills in training and optimizing ML models for edge applications. I gained a deep understanding of TinyML libraries, algorithms, and deployment strategies, empowering me to create efficient and intelligent IoT solutions. The certification demonstrates my commitment to staying at the forefront of AI technology and applying it to address real-world challenges. Eager to leverage my TinyML expertise to contribute to the advancement of AI-driven applications and innovations.

The Ultimate Guide to Metaverse(Udemy)

Successfully completed "The Ultimate Guide to Metaverse" course on Udemy, gaining comprehensive knowledge of the transformative concept of the Metaverse. The course provided a deep dive into virtual reality, augmented reality, and mixed reality technologies, exploring their applications and potential impact on various industries. I gained expertise in creating immersive virtual experiences and interactive 3D environments, utilizing cutting-edge tools and platforms. The certification reflects my passion for exploring emerging technologies and my commitment to staying at the forefront of the digital landscape. Ready to apply my Metaverse skills to shape the future of entertainment, education, and collaboration in a connected and virtual world. Excited to contribute to the ongoing revolution in the way we interact and experience the digital realm.

PROFESSIONAL KNOWLEDGE

Summary of Skills

- Proficient in programming languages: C/C++, Python.
- Skilled in using AutoCAD for precise and efficient drafting and design.
- Proficient in Microsoft Office suite, including Word, Excel, and PowerPoint.
- Experienced in applying machine learning techniques for data analysis and prediction.

- Sound understanding of data structures and algorithms for efficient data manipulation.
- Familiar with Energia, Proteus, and CNC simulator for electronics and hardware development.
- Knowledgeable in designing and implementing electronic devices and circuits.
- Experienced in embedded system development for real-time applications.
- Well-versed in the concepts and applications of the Metaverse and virtual reality.
- Competent in artificial intelligence concepts and their practical applications.
- Familiar with R programming for statistical analysis and data visualization.
- Familiar with Power BI for data visualization and reporting.
- Proficient in using MySQL for database management and queries.
- Proficient in MATLAB and Simulink for data analysis, modeling, and simulation.
- Proficient in SolidWorks for 3D CAD modeling and design.

WORK EXPERIENCE

03/06/2024 – 14/06/2024 Pakistan

INTERNSHIP

Completed a two-week internship at the **Pakistan Aeronautical Complex (PAC) Kamra**. Gained hands-on experience in the Aircraft Manufacturing Factory, where I learned about the construction processes of aircraft such as the JF-17, JF-16, Mirage, and Mashak. This internship provided valuable insights into advanced manufacturing techniques and aerospace engineering practices, enhancing my understanding of the intricacies involved in aircraft production and assembly.

INTERNSHIP

Completed a one-month remote internship at **CodSoft**, where I utilized Python to develop various software applications. Gained practical experience in software development, including coding, debugging, and implementing features. This internship enhanced my programming skills and provided valuable insights into software engineering practices and project management in a professional setting.

01/07/2021 – CURRENT Pakistan

DATA ANALYST BATHALL PVT LTD

As a Data Analyst at Bathall Pvt Ltd, I am responsible for collecting, cleaning, and preprocessing data from various sources such as databases, spreadsheets, and APIs to ensure accuracy and consistency. I analyze large datasets to identify trends, patterns, and insights that inform business decisions. My role also involves developing and maintaining dashboards and reports to visualize data in a user-friendly manner. Additionally, I collaborate with cross-functional teams to understand their data needs, provide actionable insights, and support data-driven decision-making processes across the organization. I also ensure data security and compliance with company policies.