GULRAIZ NAZIR

Electrical Engineer (2021-2025)

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PROFESSIONAL SUMMARY

Final-year Electrical Engineering student with hands-on experience in machine learning, computer vision, digital image processing and AI-driven system design. Proficient in Python, MATLAB, TensorFlow and PyTorch, with expertise in developing and optimizing machine learning models. My expertise includes building real-time AI systems for bacterial colony classification and applying advanced neural network techniques to solve classification and clustering problems. My main areas of interest include computer vision, predictive analytics and the integration of AI in healthcare diagnostics. Inspired by the transformative potential of AI, I aim to advance intelligent systems through groundbreaking research in ML/DL, innovative applications in healthcare and the development of AI-driven decision-making technologies.

EDUCATION

Namal University Mianwali, Pakistan
Bachelor of Electrical Engineering (2021- July 2025)
CGPA: 3.09/4.00

Punjab College Okara, Pakistan
Intermediate Level (2018-2020) **Grade:** A

Govt. High School Hujra Shah Muqeem
Matric Level (2016-2018) **Grade:** A+

RELATED COURSES

- Introduction to Machine Learning
- Digital Image Processing
- Probability Methods in Engineering
- Signals and Systems
- Computer Programming
- Data Structures and Algorithms
- Linear Algebra
- Embedded Systems

TECHNICAL SKILLS

- **Programming Languages:** Python, MATLAB, C++
- **Machine Learning Frameworks:** TensorFlow, PyTorch, Scikit-learn
- **Data Processing:** NumPy, Pandas
- **Data Visualization:** Matplotlib, Seaborn
- **AI Techniques:** Neural Networks, Supervised/Unsupervised Learning, Deep Learning
- **Tools:** Jupyter Notebook, Git, OpenCV
- **Mathematical Expertise:** Linear Algebra, Probability, Optimization
- **Cloud Computing:** Google Colab, AWS
- **Algorithms:** K-Means, SVM, Decision Trees

ACADEMIC PROJECTS

- **Final Year Project**

"Development of a Real-Time Smart Bacterial Colony Classification System using Visual Images and AI"
Project Description: Developed a real-time bacterial colony classification system using a 16 MP camera and AI-driven CNN models, automating the identification process with high accuracy. This innovative solution enhances speed and precision in medical diagnostics, research and biotechnology.

- **Semester Projects**

1. Autonomous Obstacle-Sensing Car Robot (Embedded Systems)
Description: Designed an autonomous car robot with obstacle detection, using an ATmega328P microcontroller for safe and efficient navigation.

2. 4-bit ALU Design (Digital Logic Design)
Description: Designed a 4-bit ALU in hardware and Verilog HDL, performing arithmetic and logical operations with outputs displayed on 4 LEDs.

3. Variable Gain Audio Amplifier (Electronic Devices and Circuits)
Description: Designed a variable gain audio amplifier using transistors, with both a simulation and hardware implementation to amplify audio signals to speakers.

4. Speech and Music Analyzer (Digital Signal Processing)
Description: Designed a speech and music analyzer in MATLAB, distinguishes between speech and music, accurately classifying audio inputs as either speech or music.

5. PSK Modulation using GNU Radio (Communication Systems)
Description: Designed Phase Shift Keying (PSK) modulation and demodulation using GNU Radio, implementing a basic transmitter and receiver to understand PSK communication systems.

6. Details Enhancement in Natural Scenes (Digital Image Processing):
Description: In this project, we enhanced the natural scene images using MATLAB by applying smoothing, sharpening, and histogram equalization to improve image clarity and reveal details.

INTERNSHIPS

- RISC-V Embedded Systems for Industrial Application, Summer Workshop, Namal University Mianwali, Pakistan (2024)
- Super-computing and Parallel Programming, Spring School Workshop, Namal University Mianwali, Pakistan (2024)
- Internship at Chashma Hydel Power Station Mianwali, Pakistan (2024)
- Internship at Pakistan Council of Scientific and Industrial Research, Lahore, Pakistan (2023)

REFERENCES

References will be provided if required.

CO-CURRICULAR ACTIVITIES

- I have actively participated in various Co-curricular activities, including IEEE-Namal Student Branch as a Finance Executive (2021-2022), Namal Society for Social Impact as a Head of General Wing (2022-2023), Namal Dramatics Club as a Head of Event Management (2023-2024).
- I have earned Numerous Awards, such as Highest Achievement Award (2018, 2019), Certificate of Distinction (2018), PEEF Award (2018), Students Expo Talent Award (2019).