HAMNA MUGHAL

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OBJECTIVE

To dedicate my engineering skills toward building ethical, efficient, and human-centered technologies that positively impact the humanity.

RESEARCH INTERESTS

- **Wireless Communication Systems:** Li-Fi Technology, 5G/6G technologies, computer networks, low-latency communication, energy-efficiency, and wireless body area networks.
- **Embedded AI:** Edge intelligence and real-time data processing.
- **Applications:** Healthcare and Gaming

EDUCATION

- **COMSATS University Islamabad Attock Campus**   *September 2020 - July 2024*
  Bachelor's of Science in Computer Engineering   Attock, Pakistan
  ○ CGPA: 3.20/4.00

PATENTS AND PUBLICATIONS   C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

[C.1] **Hamna Mughal**, et al. (2024). **Optimizing Data Transfer in Hospitals using Li-Fi Technology**. Presented at the *3rd International Conference on Computational Intelligent Systems (ICCIS 2024)*, Kohat University of Science and Technology (KUST), Kohat, Pakistan, December 2–3, 2024. Accepted for publication in Springer Proceedings (Book Chapter 5). ISBN: 978-981-95-2211-8.

[C.2] Faiza Nawaz, **Hamna Mughal**, et al. (2025). **Terahertz Communication's Future Potential for Impacting Telemedicine: A Visionary Perspective**. Accepted and to be presented at the *4th International Conference on Communication, Computing & Digital Systems (C-CODE 2025)*.

[S.1] Faiza Nawaz, **Hamna Mughal**, et al. (2025). **Li-Fi in the 6G Era: Exploring Opportunities, Challenges, and the Role of Advanced Multiplexing Techniques**. Currently under review at the *2025 6th International Conference on Innovative Computing (ICIC)*.

[S.2] **Hamna Mughal**, et al. (2025). **Integrating Wi-Fi 7 and Edge AI for Intelligent and Performance Optimized Esports Environments**. Submitted and under review in *Entertainment Computing* (Elsevier).

PROJECTS

- **Optimizing Data Transfer in Hospitals using Li-Fi Technology** *2023 –*   *2024*
  Tools: Arduino Uno/Mega, sensors,Arduino IDE, OMNeT++, MATLAB, Tinkercad, LaTeX, Microsoft Project,Draw.io
  ○ Designed and implemented a Li-Fi based healthcare communication system to enhance data transfer speed, system efficiency, and reliability in hospitals.
  ○ Integrated sensors with Arduino microcontrollers (UNO/Mega) using UART protocol for serial monitoring of patient health data.
  ○ Applied SVD precoding technique and OOK keying for improved modulation efficiency and secure communication.
  ○ Simulated and validated system performance in OMNeT++ and MATLAB, ensuring robustness under real-world hospital scenarios.
  ○ Developed prototype circuit designs with Fritzing and Tinkercad, including renewable power support via solar panels.
  ○ Selected for Nigri Ignite Funding 2024–2025 and PEC FYDP Funding, and successfully tested at District Hospital Attock City.

SKILLS

- **Programming Languages:** C/C++ (Basic), Python (Basic), Embedded C (Basic), C# (Basic), MATLAB (Basic)
- **Database Systems:** MySQL (Basic), SQL (Basic)
- **Embedded Systems & Simulation:** Arduino IDE, Arduino, OMNeT++ (Basic), NS-3 (Basic), Cisco Packet Tracer (Basic), Tinkercad
- **Software Development & Tools:** Unity (Basic), LaTeX, Microsoft Project, Microsoft 365, Trello, Jira (Basic), Canva, Draw.io, Fritzing
- **Operating Systems:** Linux (Basic)
- **Research & Analytical Skills:** Observation, Problem Solving, Data Analysis, Simulation, Technical Documentation

EXPERIENCE

· Researcher & Developer *Apr 2025 - Present*
Visyra · Part-time Islamabad, Pakistan · Remote
◦ Working on a Multi-Agent System project involving AI agents and social technologies.

· Research Internship *Sep 2024 - Mar 2025*
AI-Explain You Science · Internship Tunisia · Remote
◦ Conducted literature reviews, technical documentation, and database management.
◦ Supported AI and wireless technology research projects with project management tasks.

· Information Analyst Intern *Sep 2024 - Oct 2024*
MyUpdates24 · Internship Delhi, India · Remote
◦ Analyzed qualitative data and generated actionable insights for decision-making.
◦ Produced comprehensive reports and collaborated with cross-functional teams.

· AI/ML Fellowship *Jul 2024 - Aug 2024*
ACM UET Lahore · Apprenticeship Lahore, Pakistan · Remote
◦ Selected for AI/ML Fellowship, gaining hands-on experience in AI and ML projects.
◦ Enhanced academic and professional skills through mentorship and guided projects.

HONORS AND AWARDS

· Optimizing Data Transfer in Hospitals using Li-Fi Technology – FYDP & IGNITE Funding *2024–2025*
Pakistan Engineering Council / NGIRI - IGNITE Funding
◦ Selected and funded for innovative project; tested successfully at District Hospital Attock City

· Younger Researcher Award *Oct 2024*
2nd International Conference on Emerging Trend and Innovations (ICETI), AIEYS
◦ Recognized for outstanding research contributions in emerging technologies

· Certificate of Appreciation as Presenter *Dec 2024*
ICCIS 2024, Kohat University of Science and Technology (KUST)
◦ Presented research at International Conference on Computational Intelligent Systems

· AI Seekho Season 6 - Swags Winner *Mar 2025*
Google Cloud Pakistan
◦ Achieved recognition for AI-related challenges, awarded prizes for innovation

· Registered Engineer *Nov 2024*
Pakistan Engineering Council
◦ Officially recognized as a registered engineer by PEC

LEADERSHIP EXPERIENCE

· Facilitator Board Member & Ambassador Roles *Aug 2024 - Present*
AWS Cloud Club Pakistan, Web3 Pak · Remote
◦ Guided workshops and initiatives on AWS cloud technologies and Web3 community projects.
◦ Contributed to content creation, outreach, and community engagement to enhance visibility and participation.

· Media and Marketing Team Lead & Ambassador *Jan 2024 - May 2024*
Young Entrepreneurship Society (YES), COMSATS Institute of Information Technology & ACM UET Lahore
◦ Lead media and marketing campaigns for student expos and tech events, coordinating with industry experts and participants.
◦ Supported event organization and participant engagement, ensuring successful execution and high impact.

VOLUNTEER EXPERIENCE

· Video Editor & Executive Team Member *Feb 2024 - Aug 2024*
Tech Hierarchy & Dr Coders
◦ Created and edited videos, collaborating with creative teams to deliver high-quality content.

· Contributor *Oct 2024 - Feb 2025*
GirlScript Summer of Code (GSSoC)
◦ Contributed to open-source projects.

· Volunteer *Sep 2024 - Nov 2024*
Dev Jirga -
◦ Assisted in community tech events, promoting engagement and technology awareness.

PROFESSIONAL MEMBERSHIPS

· International Association of Engineers (IAENG) *Jan 2025 - Present*
· IEEE CTSoc - VAM TC *May 2025 - Present*

CERTIFICATIONS

- **Generative AI Application Developer** Pakistan Engineering Council   *Jun 2025*
- **Introduction to Internet of Things** Stanford Online   *Feb 2025*
- **Foundations of IoT Systems and Industrial Automation** LearnQuest   *Jan 2025*
- **Presenter Certificate - ICCIS 2024** Kohat University of Science & Technology (KUST)   *Dec 2024*
- **Understanding Edge Computing in a Cloud Computing World** LinkedIn Learning Community   *Oct 2024*
- **10 Modules of Roshan Kal Academy** PepsiCo Pakistan   *Sep 2024*
- **Integrating Generative AI in Healthcare Innovations** IEEE EMBS SAC   *Sep 2024*
- **Google Soft Skills Program** PAFLA - Pakistan Freelancers Association   *Jul 2024*
- **Introduction to Technical Writing** Board Infinity   *Feb 2024*
- **Generative AI for Everyone** DeepLearning.AI   *Jan 2024*

ADDITIONAL INFORMATION

Languages: English (Working Proficiency), Urdu (Native), German (Elementary)
Interests: Game Development, Cybersecurity, Social Science × Technology, Generative AI

REFERENCES

References available upon request.