

# Muhammad Mansoor Ur Rehman

Software Engineering Student

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## PROFESSIONAL SUMMARY

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Software Engineering student (6th semester) with hands-on experience in Unity-based game development and strong programming skills in C++, C#, Java, and Python. Developed and published 3D games, with additional experience in web development and software testing. Completed 10+ freelance projects over 3 years, demonstrating strong client communication, problem-solving, and independent project delivery. Keenly interested in AI-enabled full-stack development, specially building practical web applications that combine responsive frontend interfaces, backend logic, databases, APIs, and AI-assisted features.

## TECHNICAL SKILLS

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**Game Dev:** Unity, C# (Gameplay Scripting), 3D Physics, WebGL Builds, itch.io Deployment, Animation Systems

**QA & Testing:** Manual Testing, Unit Testing, Mutation Testing, Test Case Design, Test Oracles, Defect Reporting, Flaky Test Identification, Property-Based Testing (Hypothesis)

**Languages:** C++, C#, C, Python, Java

**Web Dev:** HTML, CSS, Bootstrap, React, jQuery, JavaScript, AngularJS, Node.js, PHP

**Database:** MySQL, Supabase

**Computer Networks:** Cisco Packet Tracer, VLANs, Routing & Switching, DHCP, NAT/PAT, ACLs, Network Segmentation

**Tools:** Visual Studio, VS Code, Git, GitHub, Unity Editor, Figma, Cisco Packet Tracer

**Additional Skills:** Digital Marketing, Social Media Strategy, AI-assisted Development

## RELEVANT COURSEWORK

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Software Quality Assurance · Artificial Intelligence · Data Structures & Algorithms · Object-Oriented Programming · Human-Computer Interaction · Computer Graphics · Database Systems · Web Engineering · Software Design & Construction

## FEATURED PROJECT

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**Zig-Zag Doo Obstacles** | *Unity · C# · WebGL · itch.io* | [mmansoor-ur-rehman.itch.io/zig-zag-doo-obstacles](https://mmansoor-ur-rehman.itch.io/zig-zag-doo-obstacles)

- Designed and developed a fully playable 3D obstacle dodge game, published live on itch.io as an HTML5 WebGL build accessible from any browser.
- Implemented multiple obstacle types including walls, falling blocks, moving obstacles, and projectiles with custom physics and collision logic.
- Engineered a low-poly rabbit character with animation state machine, damage feedback (colour change on hit), and respawn system.
- Owned the full game lifecycle: gameplay mechanics, level design, UI, build configuration, and public deployment.
- Optimized for smooth browser performance using WebGL build settings.

## Hostel Management System

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**Hostel Management System — OOP** | C++ · OOP · File Handling | <https://github.com/imnrx/hostel-management-system>

- Developed a terminal-based hostel management system in C++ with features for student registration, room allocation, fee management, and admin operations.
- Applied OOP concepts including inheritance, polymorphism, abstraction, encapsulation, templates, vectors, and file handling for persistent data storage.

## Campus Hostel LAN Network

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**Campus Hostel LAN Network — Computer Networks** | *Cisco Packet Tracer* | <https://github.com/imnrx/campus-hostel-lan>

- Designed and simulated a secure multi-floor hostel network using VLAN segmentation, inter-VLAN routing, DHCP, NAT/PAT, DNS, and ACLs.
- Configured Cisco IOS devices with Router-on-a-Stick architecture, wireless access points, and IoT-based hostel automation features.

## QA & TESTING

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### Python Inventory Management System — Software Testing | *Python · Pytest · Mutation Testing · Manual QA*

- Conducted structured software testing on a Python-based Inventory Management System as part of SQA coursework.
- Applied mutation testing to evaluate test suite effectiveness and identify gaps in test coverage.
- Designed and executed test cases using test oracle methodology to verify expected vs. actual system behavior.
- Identified flaky tests and produced formal defect reports with reproduction steps, severity ratings, and root cause analysis.

## UX RESEARCH

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### Pakistan Railways RABTA — Usability Redesign | *Figma · HCI · UX Research* | <https://github.com/imnrx/pakistan-railways-ux-redesign>

Audited RABTA ([pakrailways.gov.pk](http://pakrailways.gov.pk)) using Nielsen's 10 Usability Heuristics, uncovering critical failures in signup flow, form fields, and navigation.

- Redesigned 4 core pages end-to-end in Figma (Lo-Fi to Hi-Fi) with high-contrast UI, plain-language labelling, and multi-language support (Urdu, Punjabi, Sindhi, Pashto).

## PROJECTS

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### Tic-Tac-Toe AI | *Python · Minimax Algorithm* · <https://github.com/imnrx/tic-tac-toe-ai-minimax>

- Made an unbeatable Tic-Tac-Toe AI using the Minimax algorithm with Alpha-Beta pruning for optimized decision-making with three difficulty levels.
- Applying game tree search concepts studied in AI coursework to build a practical, interactive implementation.

### Connect Four AI | *Python · Game-Playing Algorithm* · <https://github.com/imnrx/connect-four-ai-minimax>

- Made a Connect Four engine with an AI opponent using adversarial search and heuristic evaluation functions with Alpha-Beta pruning for optimized decision-making with three difficulty levels.
- Designing the scoring heuristic to evaluate board states and priorities winning and blocking moves.

### Game Hosting Website | *React · JavaScript · Web Dev*

- Developed a web platform to host and showcase browser-playable games with a clean, responsive UI. Where users can play games on the web and developers can publish their WebGL, Godot and HTML5 games.
- Building with React component architecture, focusing on performance and cross-device compatibility.

## PROFESSIONAL EXPERIENCE

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### Freelance Digital Marketer | *Fiverr / Self-Employed* | 3 Years

- Delivered digital marketing campaigns for 10+ local and international clients across Fiverr, managing projects end-to-end.
- Developed social media strategies that improved client engagement, reach, and brand visibility.
- Built strong client communication, deadline management, and independent project delivery skills.

## VOLUNTEER EXPERIENCE

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### EldersClub — VIS Virtual Intern | Feb 2026 – Mar 2026 | <https://eldersclub.pk>

- Managed digital coordination and reporting workflows for virtual healthcare consultations involving senior citizens.
- Facilitated Zoom-based consultations and maintained healthcare observation and documentation records.
- Completed training in geriatric care, mental health awareness, and community support systems.

## EDUCATION

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**Bachelor of Software Engineering (BSSE)** | Capital University of Science and Technology (CUST) | 6th Semester

**Intermediate — Pre-Engineering** | Aspire College, Kotli Loharan

**Matriculation — Computer Science** | Army Public School, Head Marala

**Languages:** English (Professional) · Urdu (Native)