

# MOHAMMAD HAMMAD

## Software Developer

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🔗 <https://github.com/PigeonOfPrison>   📍 India



## PROJECTS

### Rager - Microservice Based Quiz Application

🔗 <https://github.com/PigeonOfPrison/Quiz-Application>

Built a production-style distributed quiz platform using a microservices architecture with Spring Boot.

(Tech : Java, Spring Boot, Kafka, Redis, PostgreSQL, Docker, Consul)

- Designed and implemented 10 independent microservices for authentication, quiz management, analytics, notifications, and content delivery with clear service boundaries.
- Implemented service discovery with Consul and an API Gateway with Resilience4j patterns (circuit breaker, retry, time limiter, bulkhead) to ensure system fault tolerance.
- Built event-driven communication using Apache Kafka to handle asynchronous notifications and decouple services.
- Integrated Redis distributed caching and PostgreSQL databases to improve response times and maintain data integrity across services.

### Space Cargo Stowage Application

🔗 <https://github.com/PigeonOfPrison/space-cargo-stowage-project>

Lead developer ISRO Hackathon 2025

(Tech : Python, Java, React, PostgreSQL, bin-packing heuristics)

- Designed and implemented a cargo stowage system.
- Developed a React frontend and Java backend to optimize placement and retrieval for ISS-like constraints.
- Implemented custom bin-packing and priority heuristics to consider size, importance, and reuse, generated automated retrieval steps.
- Validated prototype on sample datasets, reduced average retrieval steps and waste tracking.

### HighJumps - Platformer Game

🔗 <https://github.com/PigeonOfPrison/Bomb-Da-Base>

A 2D platformer game made in C# with Unity.

(Tech : C#, Unity, A\*, FSM)

- Used hierarchical state machines for player controller and FSM-based enemy AI.
- Implemented A\* pathfinding adapted for gravity and jump mechanics to handle grounded enemy movement.
- Employed bullet pooling and QoL improvements like coyote time and jump buffer for smoother player control.
- Achieved responsive AI and reduced hard-coded behavior; integrated level progression and collision optimizations.

### Environment Mapper

Developed an ESP-32 based 3D environment mapper

(Tech : ESP32, LIDAR, MQTT, Java, Unity)

- Used servo-mounted LIDAR sensor to capture range and angle and reconstruct a 3D map in Java and alternate Unity visualization.
- Built a scalable, open-source pipeline for sensor data to map generation; used MQTT for telemetry and real-time updates.
- Deployed a prototype and validated mapping accuracy in test environments.

## ABOUT ME

Software engineering student with experience building full-stack applications, distributed systems, and gameplay mechanics. Strong foundations in algorithms and OOP with projects using Java, Spring Boot, React, Unity, and PostgreSQL. Interested in systems, game development, and backend engineering.

## INTERESTS

🔗 **Distributed Systems  
System Programming**

🧠 **Game AI**

🔗 **Embedded / IoT**

## SKILLS

### Languages

Java   Go   C#   C++   Python

JavaScript / Typescript

### Frameworks / Libraries

SpringBoot   React   Astro   Node.js

Express   Unity   FastAPI

### Databases / Infra

PostgreSQL   MySQL   MongoDB

Redis   Docker   Kubernetes   Git

Consul

## EDUCATION

BTech in Electronics and  
Communication

**Jamia Millia Islamia**

📅 08/2023 - Present

GPA  
**8.53 / 10**