HIMA | حِـمى

smart hajj crowd detection and management system

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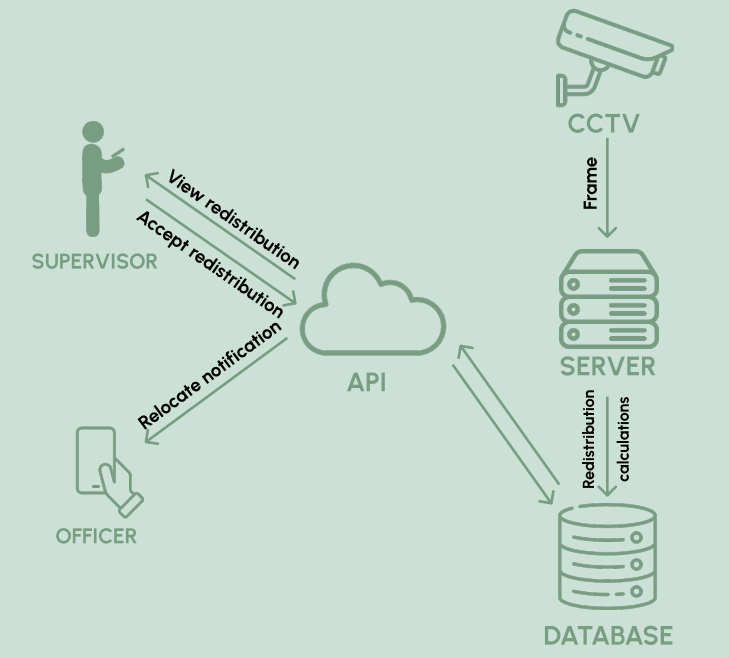College of Computers, Computer Science and Artificial Intelligence Dept. 2023
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INTRODUCTION

Yearly, more than 2 million people go on pilgrimage and our government has made lots of effort managing such an enormous crowd by distributing officers throughout the holy sites. So, we propose the idea of "Hima | حِـمى", a system made to improve crowd management by distributing proper number of officers among areas using real-time object detection algorithms.
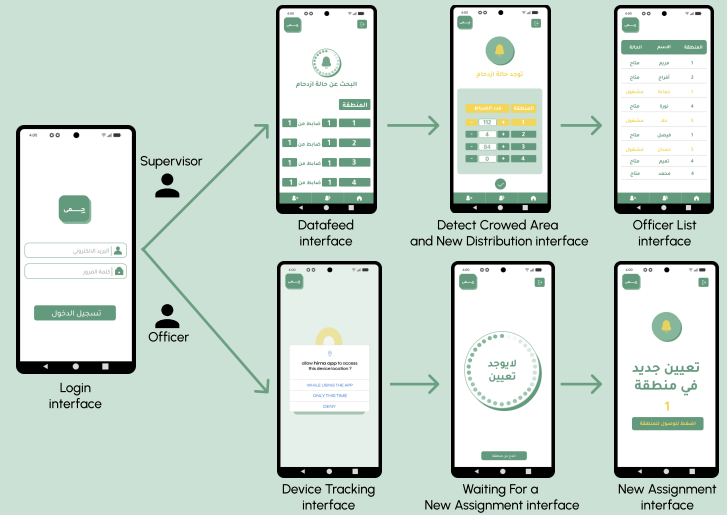
OBJECTIVE

1 Improve crowd management by continuously relocating officers based on crowd density.

2 Keep abreast of unexpected crowds to offer pilgrims a safe pilgrimage.

3 Ensure officers are properly distributed among the areas in case any incidents arise.

SYSTEM ARCHITECTURE

SUPERVISOR
View redistribution
Accept redistribution
Relocate notification
OFFICER
API
CCTV
Frame
SERVER
Redistribution calculations
DATABASE

PROTOTYPE

Login interface
Supervisor
Officer
Datafeed interface
Detect Crowed Area and New Distribution interface
Officer List interface
Device Tracking interface
Waiting For a New Assignment interface
New Assignment interface

TOOLS

Flutter   Firebase   python   OpenCV   Figma   roboflow   ultralytics YOLOv8

FUTURE WORK

1 Train the model to identify crowds at all holy sites, including Mina and Muzdalifah.

2 Add communication between officers; they can exchange backup messages.

3 Expand users range to include all first aid responders, such as paramedics.

CONCLUSION

We believe that Hima would entirely change the way officers and supervisors experience Hajj. Implementing a system that facilitates communication between supervisors and officers, and provides regular notifications to supervisors regarding their supervised areas would significantly improve the organization of Hajj and contribute to its safety.

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References :