



**FINAL YEAR PROJECT REPORT**

**REAL-TIME CLOUD BASED & AI DRIVEN  
MULTITENANT SMART HOME AND  
OFFICE AUTOMATION SYSTEM**

**In fulfillment of the requirement  
For degree of  
BS (COMPUTER SCIENCES)**

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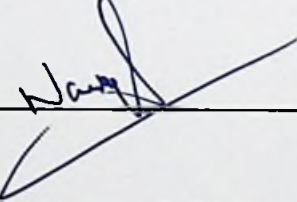
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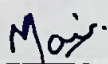
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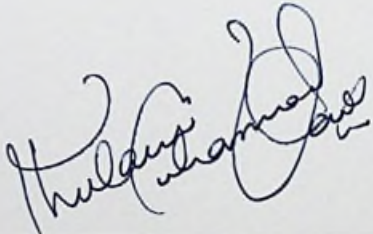
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We certify that this project report entitled **“REAL-TIME CLOUD BASED & AI DRIVEN MULTITANENT SMART HOME AND OFFICE AUTOMATION SYSTEM”** was prepared by **FATIMA BUTT, M. NAWFAL BURHAN & MARIAM REEM SIDDIQUI** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of Science in **Computer Science** at Bahria University, Karachi.

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Specially dedicated to

my beloved mother and father

(Fatima Butt)

my beloved mother and father

(M. Nawfal Burhan)

my beloved mother and father

(Mariam Reem Siddiqui)



## **REAL-TIME CLOUD BASED & AI DRIVEN MULTITENANT SMART HOME AND OFFICE AUTOMATION SYSTEM**

### **ABSTRACT**

Smart home automation systems have greatly revolutionized the way of living most of us. It has brought ease, comfort, and relaxation to our lives. The control of our homes has been brought to our fingertips, i.e., controlling our homes is just one tap away. The main aim of this project is to build a smart home and office automation system with the use of Internet of Things (IoT) and Artificial Intelligence (AI). The goal is to build a cloud-based automation system that collects, stores, and processes data from IoT devices, enabling the users to manage their own IoT devices, data, and insights. The system will be accessible and controlled through a react application, and it will be protected against unauthorized access, theft, and tampering of data. This project uses the MQTT technique for real-time communication with smart devices, i.e., it will send real-time updates to our mobile application that is developed using React. Home devices like fan, bulb, AC, etc., are first registered on the mobile application, through which they can be turned on or off from anywhere via internet connection. The role of AI in this project is to detect and analyse the usage patterns of the IoT appliances and provide recommendations to the user accordingly. This intelligent home and office automation system is not only user-friendly, but also highly secure, scalable, and efficient, as it uses the latest IoT and AI technologies and advancements. This system also utilizes the concept of multitenancy which refers to a single system serving multiple households while keeping respective data and configurations isolated and secure from one another.

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