



**RFIDSHIELD**

Work done by GR020:

- Ricardo Silva – ist1100071
- José Lopes – ist1100001

# What are we about?

Our system integrates an **authenticator via RFID card** and a **PIR sensor** for motion detection. Upon motion, if the user had already granted access by presenting a valid card key, the alarm is disabled. But if an unauthorized access is detected, the alarm is triggered, activating a **camera for photo capture**.

Notifications , including photos and intruder details, are relayed through an **Android App** connected via **Google Firebase cloud**. This provides real-time alerts and visual evidence to users, enhancing security monitoring and response capabilities.

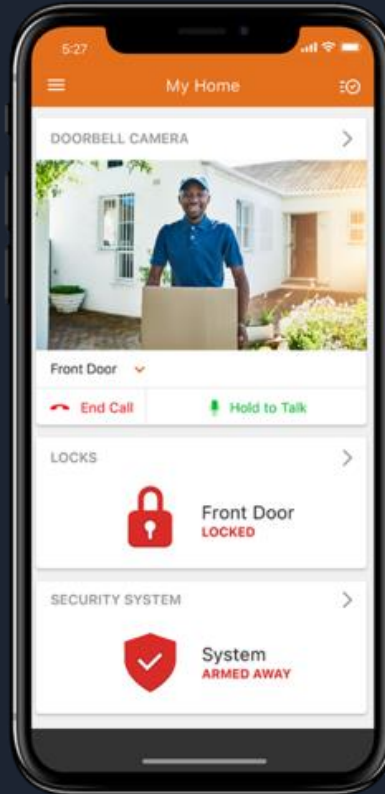
# COMERCIAL LOOKALIKES



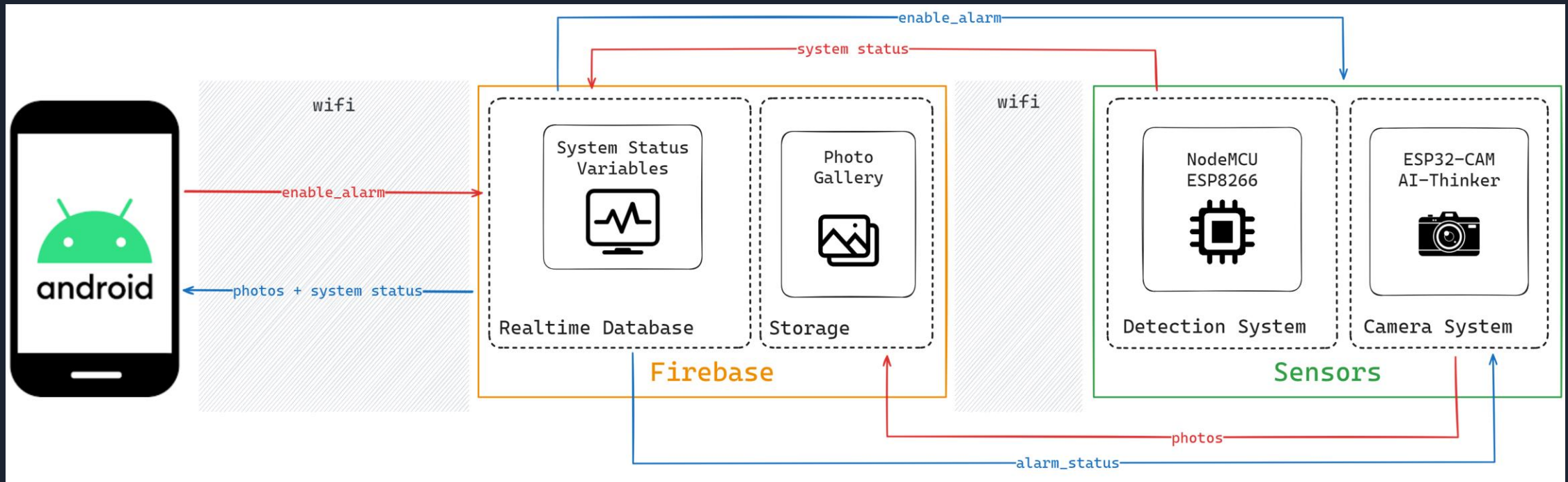
ADT Home Security -  
Control App Clip  
History



Allied security sollution

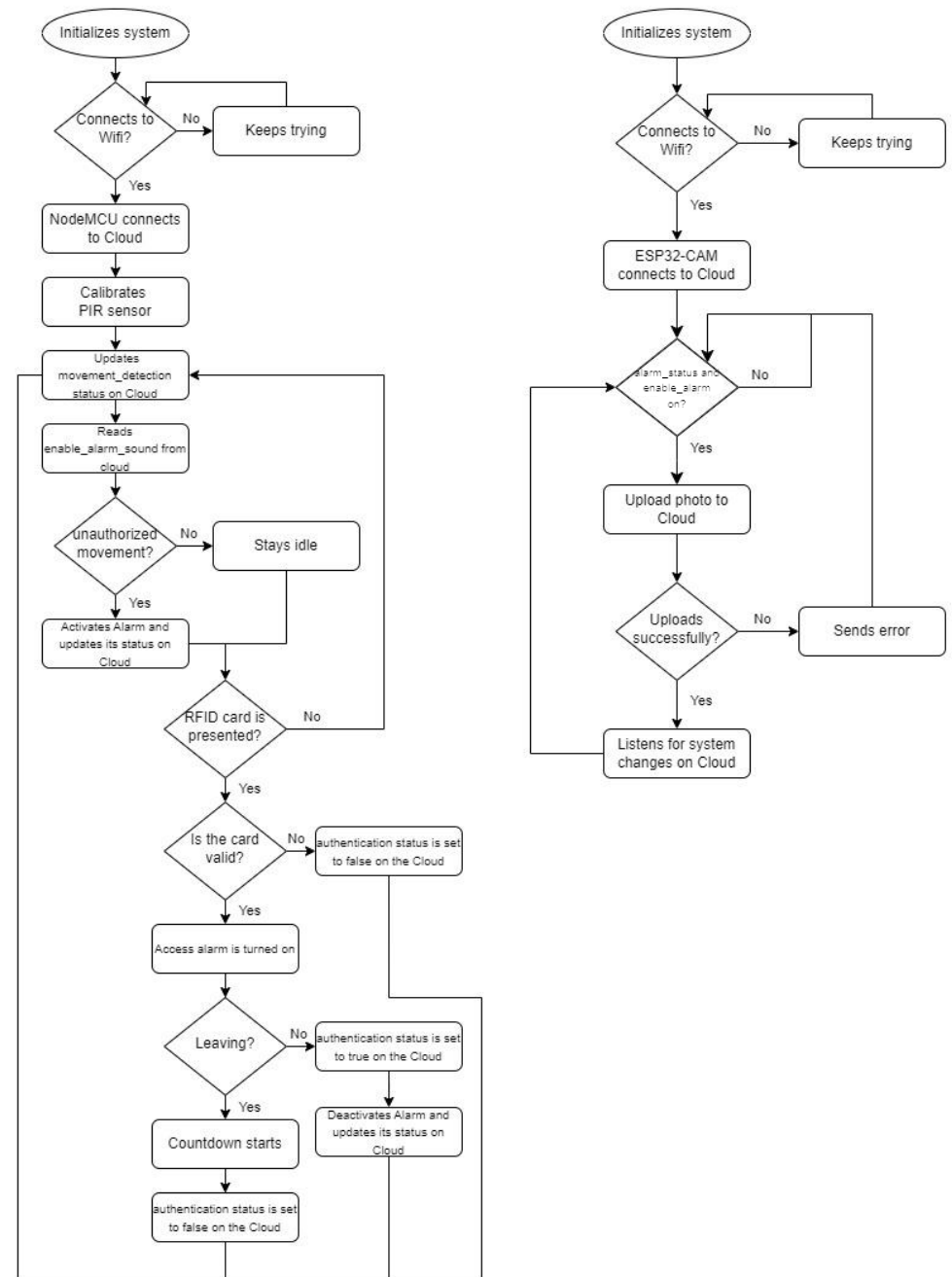


# System Architecture



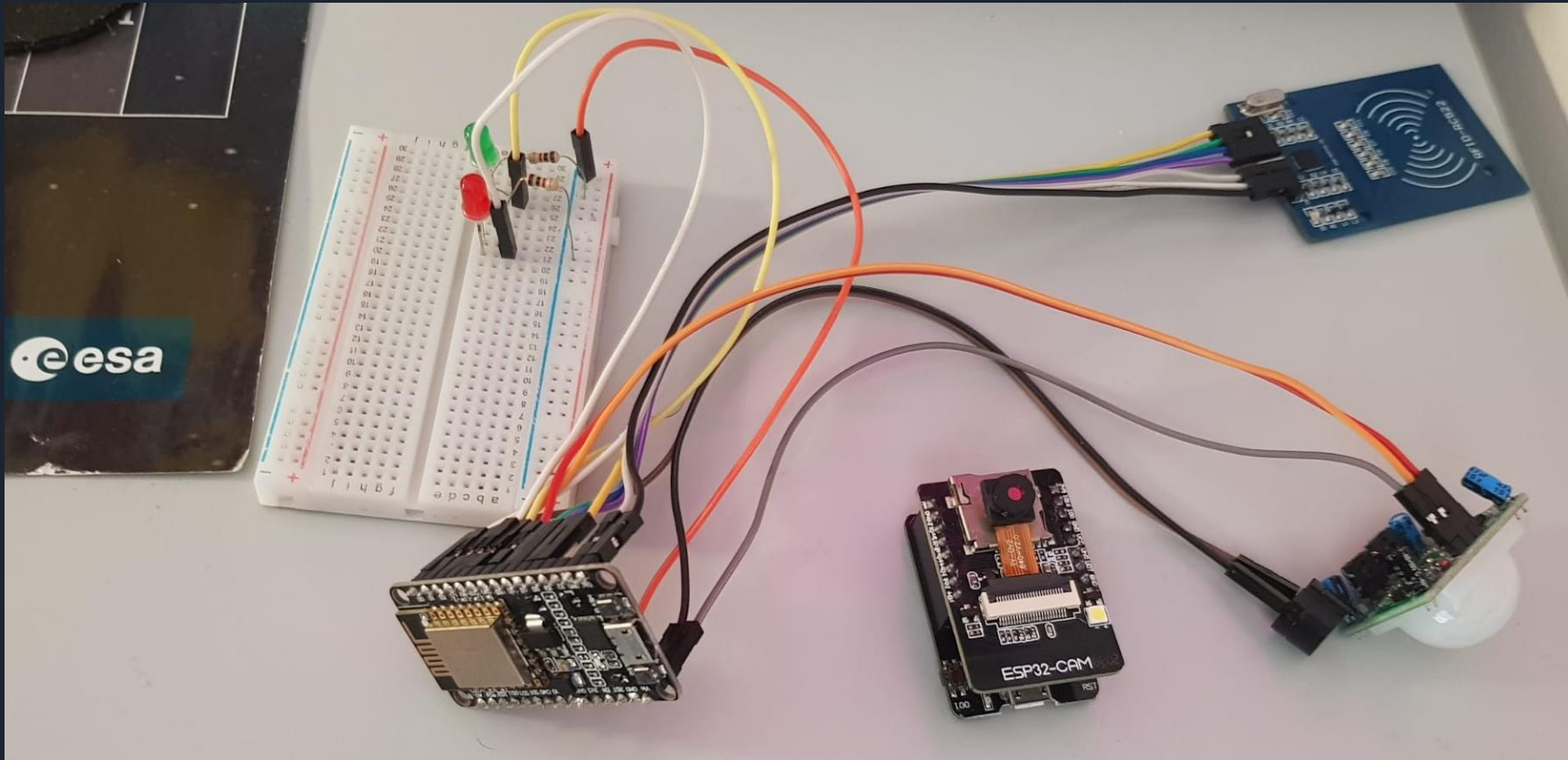
# Flow Diagram

- At the left side we can see the logic performed by the **NodeMCU ESP8266**
- At the right side of the diagram is displayed the logic performed by the **ESP32-CAM**





# Photo of the Hardware Assembly



# Database Platform - Firebase

alarm\_status: false















authentication: false


enable\_alarm: true

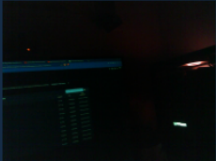
movement\_detection: false

password: "admin"

username: "admin"

<input type="checkbox"/>	Name	Tamanho	Tipo	Última modificação
<input type="checkbox"/>	 10.jpg	75.93 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 11.jpg	75.35 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 12.jpg	82.38 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 13.jpg	87.98 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 14.jpg	78.93 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 15.jpg	74.26 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 16.jpg	78.26 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 17.jpg	89.2 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 18.jpg	82.75 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 19.jpg	75.05 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 20.jpg	81.55 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 21.jpg	79.52 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 22.jpg	79.53 KB	image/jpeg	28 de mar. de 2024
<input type="checkbox"/>	 23.jpg	74.48 KB	image/jpeg	28 de mar. de 2024

 12.jpg ✕



Nome  
[12.jpg](#)

Tamanho  
84.359 bytes

Tipo  
image/jpeg

Criada  
28 de mar. de 2024, 00:03:01

Atualizada  
28 de mar. de 2024, 00:03:01

Local do arquivo ▼

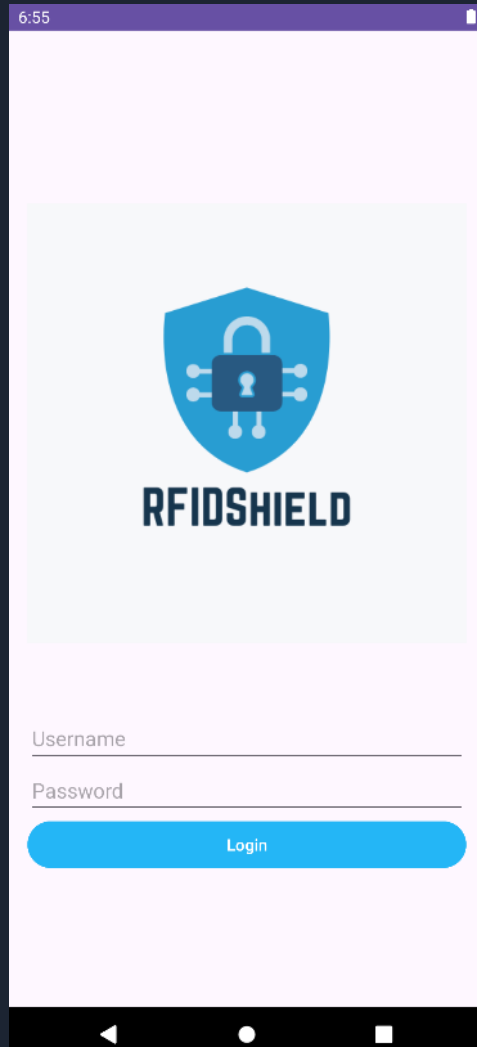
Outros metadados ▼

# App Functionalities

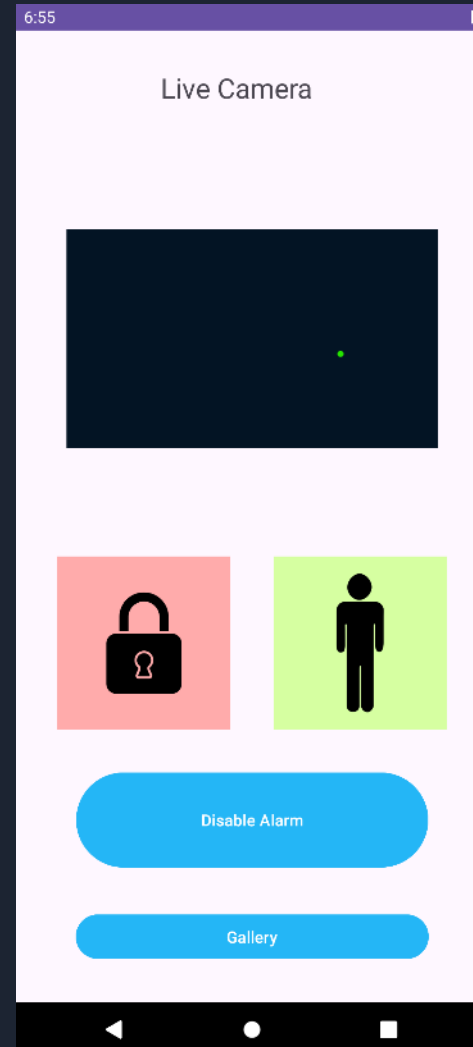
- The user, after authentication process, can check for the existence of movement as well as their authentication status, regarding the alarm.
- If needed the user can see live footage and disable or enable the alarm.
- Additionally, the user can check all the photos that had been taken.
- All of this is done with the help of 3 different screens.



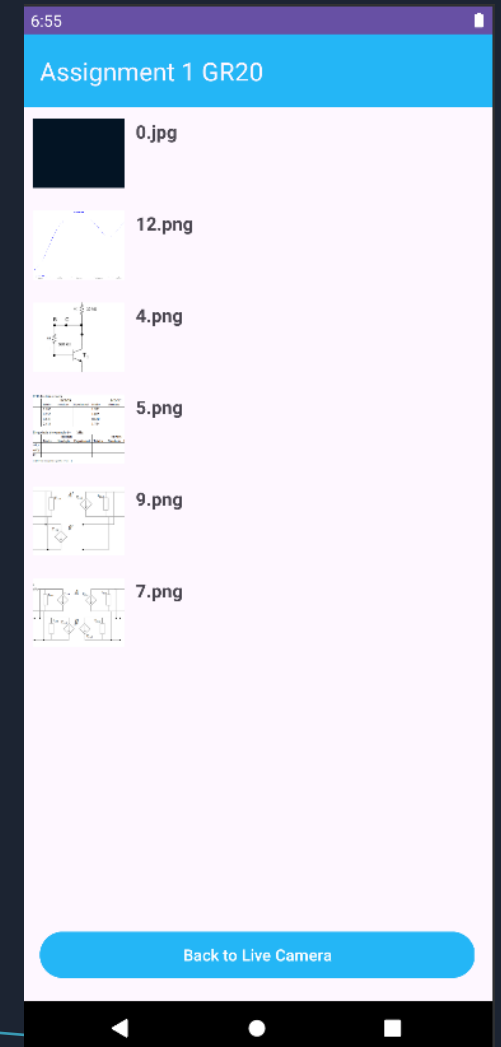
# App Snapshots



Login screen



Main screen



Gallery screen

# Conclusions and Possible Improvements

- To sum up, the theoretical and practical teachings made it possible for us to discover the new world of IoT.
- In terms of the project developed, the maximum frame rate that we were able to implement was a little lacking; perhaps this wouldn't have been a problem if we'd opted for a streaming solution.
- As our project is focused on security, we could also have implemented more robust login options, such as using biometric data like fingerprints or facial recognition systems.