Improving Elevator System using RFID and Emergency Stuck System

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1 Background and Motivation

Elevators are a type of modern transportation that are frequently used to transfer people or things vertically in tall buildings like hotels, retail malls, and offices. The elevator control system's primary goals are to direct the elevator car to the target floor, cut travel time, and enforce the safe speed restriction[2]. "Werner von Siemens", a German inventor, introduced the electric motor with elevator technology in the 1800s after the invention of electricity. By 1903, this concept had developed into the gearless traction electric elevator, making it feasible to construct structures with more than 100 stories and permanently altering the urban environment. [1]

2 Goals and Benefits of the Project

Nowadays, elevators are using in everywhere. In every hospital, market, and office building there is some restricted elevator that is available for authorized persons only. But sometimes unauthorized persons use that elevator. So, we are planning to modify the traditional elevator system using an RFID Card. Only authorized persons will have RFID Cards without RFID cards elevator doors won't open. Which will keep the elevator more restricted. Also, we are planning to make the elevator more secure. If the elevator will unattached from its wire, the elevator will fall down and people will die. So, we are planning to implement an Emergency Stuck system. When the elevator will fall down, it will stuck there.

After implementing these two systems, the elevator will be more secure and restricted. No unauthorized person will use the elevator. And the RFID system will also help disable person for whom clicking buttons is not easy, can also easily use the elevator by their own. Also, if the elevator will fall down, the emergency stuck system will save the people. So,that is the way the elevating system will be more upgraded and secured.

3 Survey to develop a process for complex engineering problems considering cultural and societal factors

The survey questions are,

- Do you know about RFID Cards?

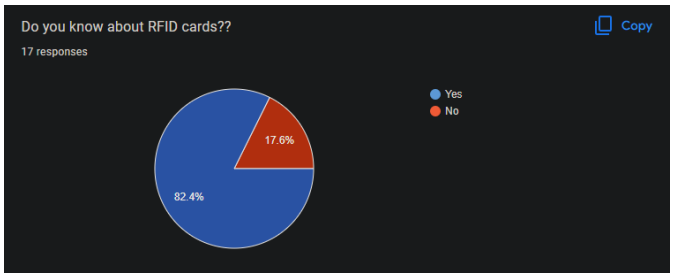

Figure 1: Responses for question no 1

- Are you interested in using RFID Card in the elevator system?

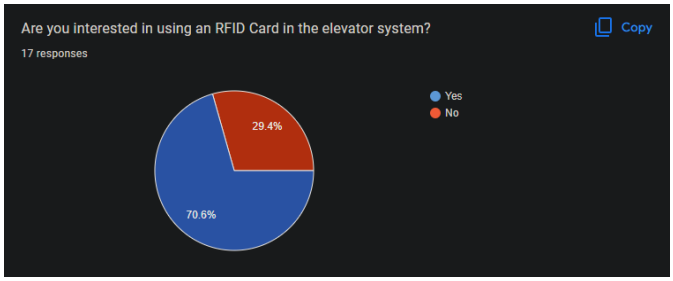

Figure 2: Responses for question no 2

- Do you think that authorized life will be more secure with RFID Card validation?

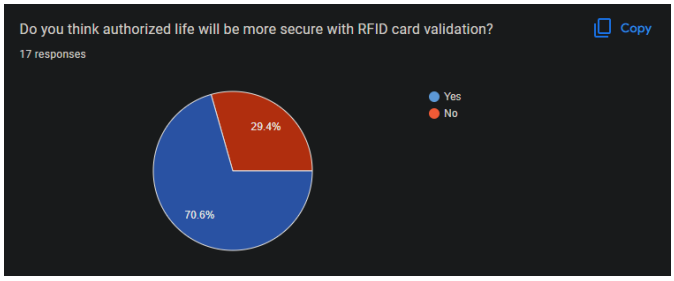

Figure 3: Responses for question no 3

- Which one do you prefer?

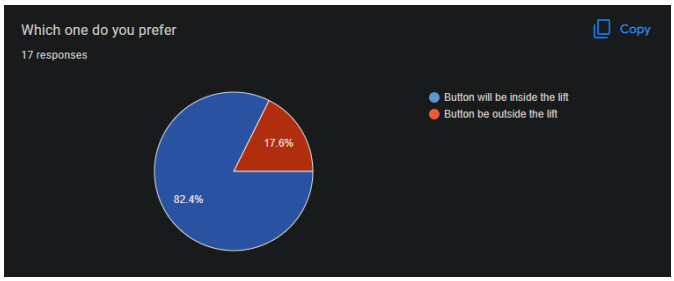

Figure 4: Responses for question no 4

4 Experimental Block Diagram

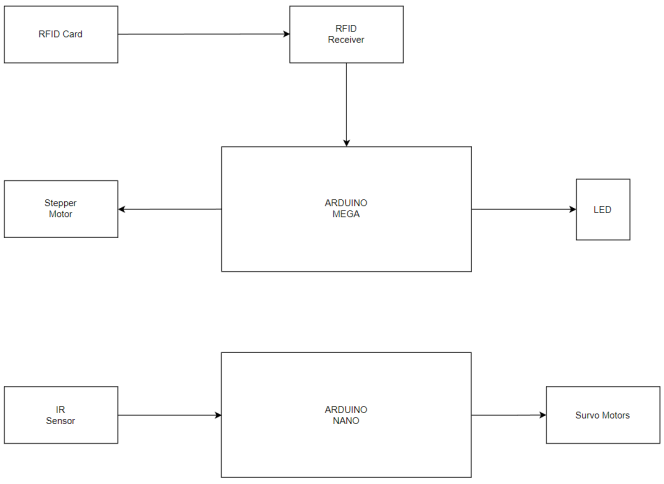

Figure 5: Improving Elevator System Block Diagram

5 Project Timeline(Gantt Chart)

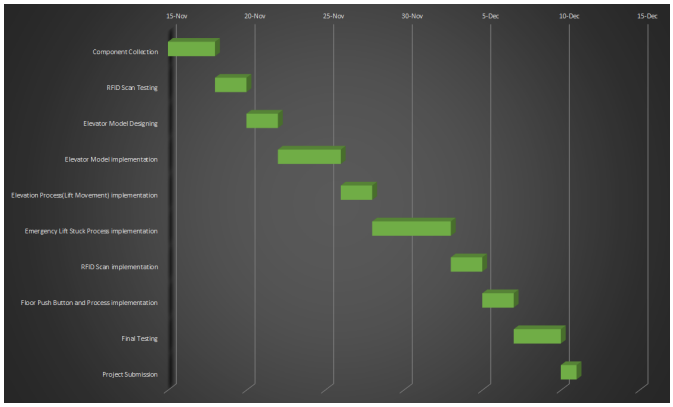

Figure 6: Gantt Chart

References

[1] Abdullah Abdalmonem Abdullah Mohammed, Hamadnallah Gaber Hamadnallah Alasha, Mohammed Fadoul Alkreem Ahmed Essoi, Mohammed Towfeg Abdulraheim Hassan, and Awadalla Taifour Ali Superviser. *An Elevator control system using microcontroller*. PhD thesis, Sudan University Of Science & Technology, 2020.

[2] Abdel-Nasser Sharkawy and Gamal T Abdel-Jaber. Design and implementation of a prototype of elevator control system: Experimental work. *SVU-International Journal of Engineering Sciences and Applications*, 3(2):80–86, 2022.