TECH BATCH

AD HOC NETWORK COMMUNICATION SYSTEM FOR DISASTER RELIEF

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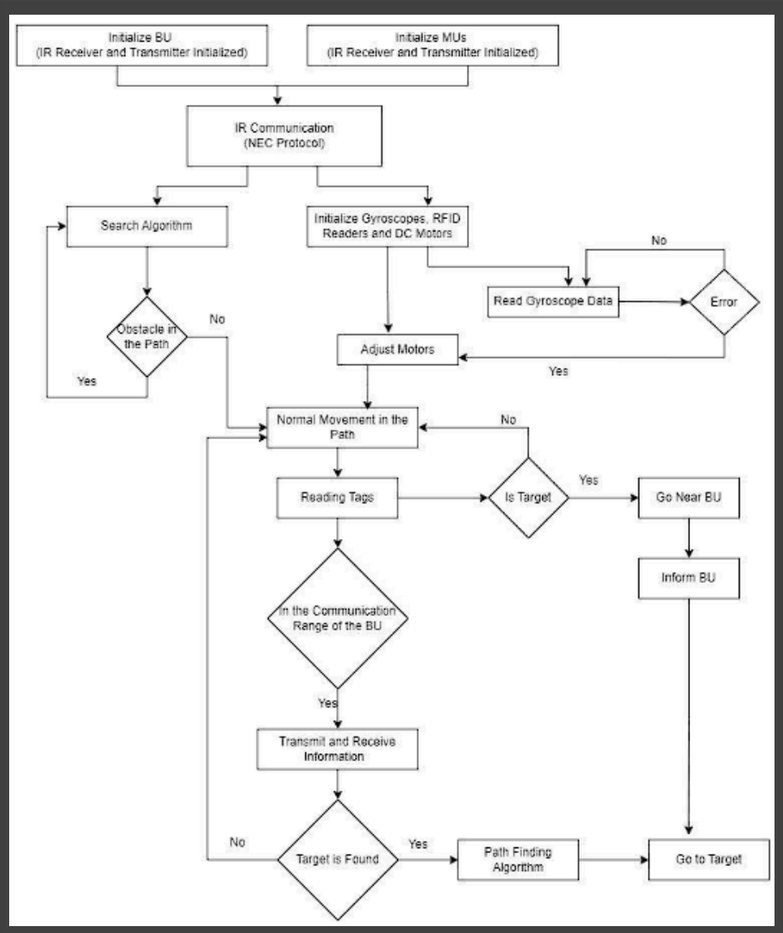
Project Description

- Effective and prompt communication is crucial during unavoidable disasters to coordinate rescue efforts, manage resources, transmit critical information, and execute a cohesive response, thereby reducing the crisis's impact. To address this need, TechBatch introduces an innovative ad hoc communication system specifically designed for disaster relief scenarios.
- TechBatch's ad hoc infrared communication system for disaster relief aims to revolutionize the efficiency of search and rescue operations.
- By promoting effective communication and leveraging advanced technology, this project seeks to significantly reduce the severity of disaster impacts and enhance the overall response capabilities of rescue teams. Through innovation, collaboration, and a commitment to excellence, TechBatch is poised to deliver a cutting-edge solution tailored to real-world challenges.

Flowchart

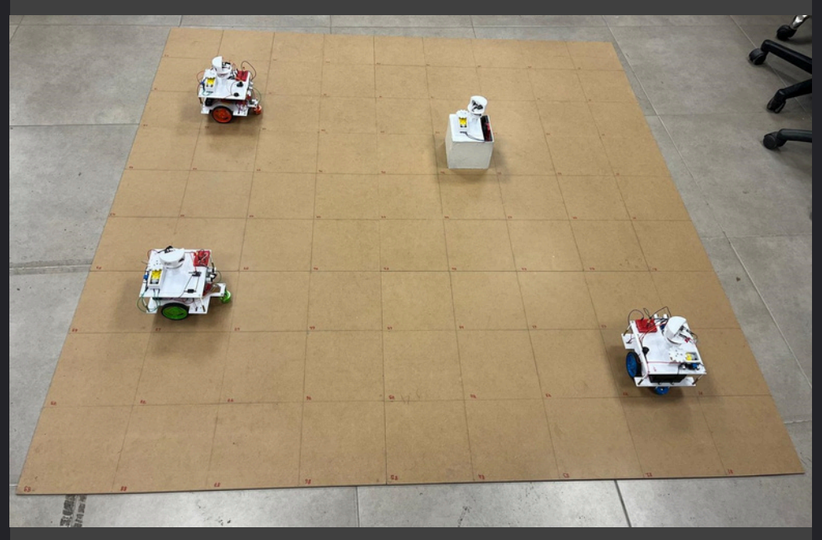


Budget

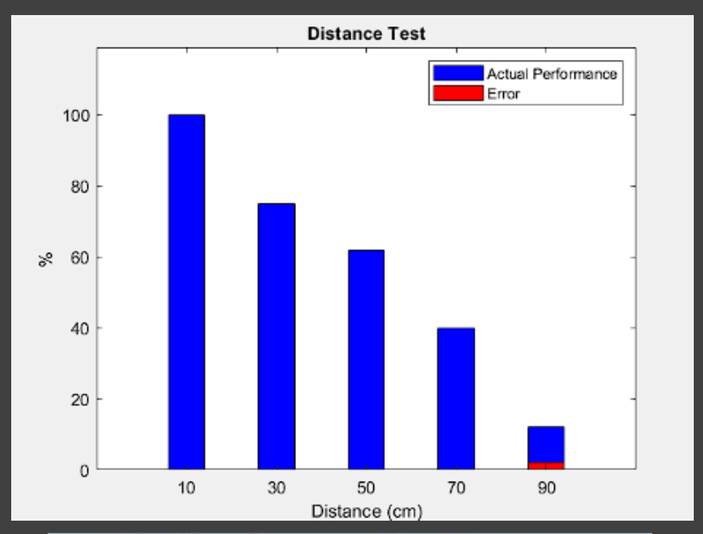
Cost Breakdown

Item	Number Requested	Cost Per Item	Cost for all Items	Total Cost
Movement Sub-System				
ESP32	3	₺ 207.33	₺ 621.99	
DC motor	6	₺ 31.52	₺ 189.12	
RFID cards	82	₺ 8.24	₺ 675.68	
Battery holder	3	₺ 16.37	₺ 49.11	
Li-ion battery	6	₺ 190.00	₺ 1,140.00	
MPU6050	3	₺ 74.85	₺ 224.55	
DC - DC converter	3	₺ 12.20	₺ 36.60	
DC motor wheel	6	₺ 98.49	₺ 590.94	
Caster wheel	3	₺ 39.28	₺ 117.84	
RFID reader	3	₺ 59.09	₺ 177.27	
Distance sensing sensor	3	₺ 38.61	₺ 115.83	
Other			₺ 400.00	₺ 4,338.93
Communication Sub-System				
DC motor	3	₺ 133.00	₺ 399.00	
IR transmitter	11	₺ 25.86	₺ 284.46	
IR receiver	11	₺ 10.14	₺ 111.54	
Slip rings	3	₺ 600.00	$ 1,800.00	
TB6612FNG motor driver	3	₺ 95.33	₺ 285.99	₺ 2,880.99
Search and Rescue Algortihm Sub-System				
			Total:	₺ 7,219.92

Product



Test Results

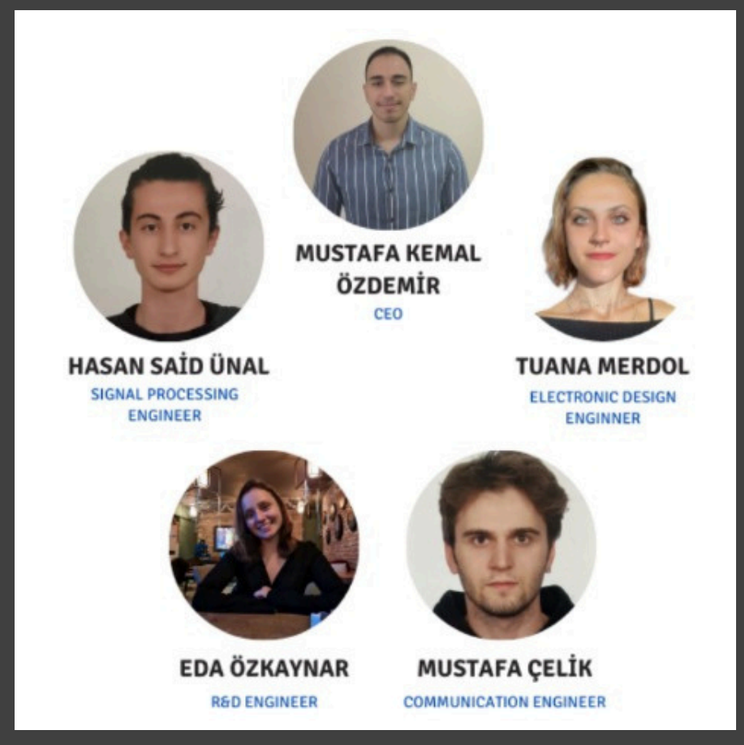


Test 1	Parameters			
Result	0	1	2	3
Succesfull	☑	☑	☑	☑
Unsuccesfull				
Test 2	Parameters			
Result	0	1	2	3
Succesfull	☑	☑	☑	☑
Unsuccesfull				
Test 3	Param			
Result	0	1	2	3
Succesfull	☑	☑	☑	
Unsuccesfull				☑

Customer and Engineering Requirements

- Reliable communication and coordination:
  - o The BU must communicate with all MUs when they are in the range.
  - o Messages must be sent and received correctly.
  - o The BU and MUs must be point to point when they are in communication.
- Efficient and robust search algorithm:
  - o MUs must search for the target on the map with an efficient algorithm without collision.
  - o MUs must avoid obstacles on their path.
- Target Detection and Rescue:
  - o MUs must identify the target.
  - o When an MU identifies a target, it must inform the BU.
  - o The BU must inform other MUs and coordinate them to go to the target location without collision.

Shareholders



Method of Solution

- Creation of Design Alternatives and Determination of Subsystems
- Creation of Test Procedure Guidelines
- Module Test Demonstration
- Creation of the Final Product's Conceptual Design
- Finalizeing the Subsytem Tests
- Building the End Product and Test

Deliverables

- 3 Mobile units (MU)
- 1 Base unit (BU)
- 3 Obstacles
- 1 Grid
- Software
- User manual
- Data transmission cable

Why TECHBATCH?

- As TechBatch, we ensure users a communication system that can operate quickly and effectively.
- We offer a search and rescue algorithm that can be used in various environments.
- We achieve 100% accuracy in the localization of our mobile units.