Chapter 1

Introduction

1 .1 Background

Unmanned aerial vehicle (UAV), commonly known as a drone, is an aircraft without any human pilot, crew, or passenger on board. There are many ways drone can be used, for example aerial surveillance, mapping a location, rescue mission, and etc. Drones have the ability to strengthen a surveillance team's ability to cover more area with less time and with higher accuracy. Drones have high potential in search and rescue mission, because drone can reach to inaccessible location faster than human can.

Integrated positioning system can be applied to a drone for locating and controlling, one of the ways to identify a location is using beacon that can emit a signal to determine a location, there are several kinds of positioning beacons based on electromagnetic signal, there are also positioning technology based on ultrasonic, infrared, and other signal. [4]

In this final project the author proposes a design of microcomputer-based location identify-er system that can locate and identify a specific location. the location identify-er is expected to be able to locate, identify, and fly to the designated position automatically or we can call it a beacon, the beacon can be detected by implementing localization based on Global positioning system (GPS) coordinate, [5] By using GPS raw measurement we can determine an accurate location, the system is expected to be lightweight, and have a sufficient lifting capacity.

1. 2 Problem Formulation

1. How to design a marker using LoRa GPS that act like a beacon?

2. How to make the drone to detect a GPS coordinate and Automatically Control to fly to the beacon?

1. 3 Objectives and Benefits

The benefits of this final project are expected to improve search and rescue mission.

1. Design a system that can locate and determine the beacon from any direction with radius up to 250m

2. Implement LoRa GPS that can transmit coordinate location and distance.

3. Implement LoRa Receiver that can receive coordinate location send by the beacon.

1. 4 Problem Limitation

1. The system cannot react to two or more beacons.

2. The system can't yet to detect the live location.

3. Type of drone used is a DIY 4 Motors with 2 blades propellers.

1. 5 Research Method

In this research, there are several stages that must be carried out as a research method, namely:

1. Literature Study

   Used to find out the basic theory needed in making   the final project, to locate and determine the method to be implemented in drone control. The sources are reference books or journals, and discussions with supervisors.

2. System Planning

   Performing the design of systems using microcomputers for programming the beacon and drone movements.

3. Testing

   Conducting a test and collecting data on the system that have been made.

4. Analysis and Evaluation

   Carry out data analysis activities on the system that has been made to find out the test results and evaluate the designed system.

1. 6 Timeline

The following is the implementation plan that will be carried out in the final project which lasts for 6 month which is attach in the Table 1.1

No	Stage	Duration	Date of completion	Milestone
1	Selecting the beacon type	1 weak	25 Mei 2022	Determine the suitable beacon type
2	Choosing component	1 weak	1 June 2022	List of components to be used
3	Hardware implementation	2 months	8 June 2022	Prototype Completion
4	Report completion on thesis book	2 weeks	22 August 2022	Thesis completion

Table 1.1 Timeline Table