Texas A&M University at Qatar

Electrical and Computer Engineering Program

ECEN 403

Senior Design Lab

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Functional Model

Emergency Drone

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"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

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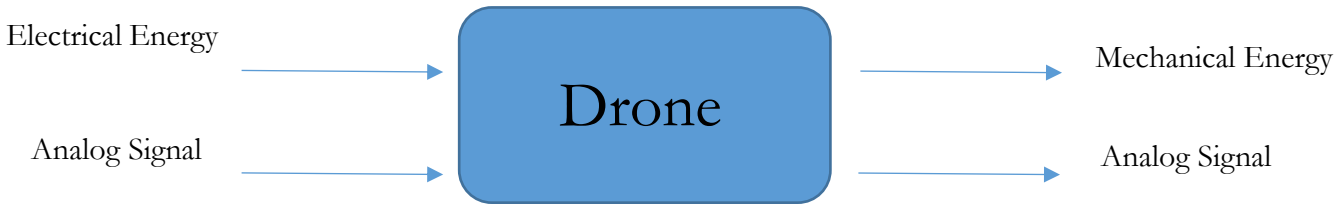
1.0 Introduction

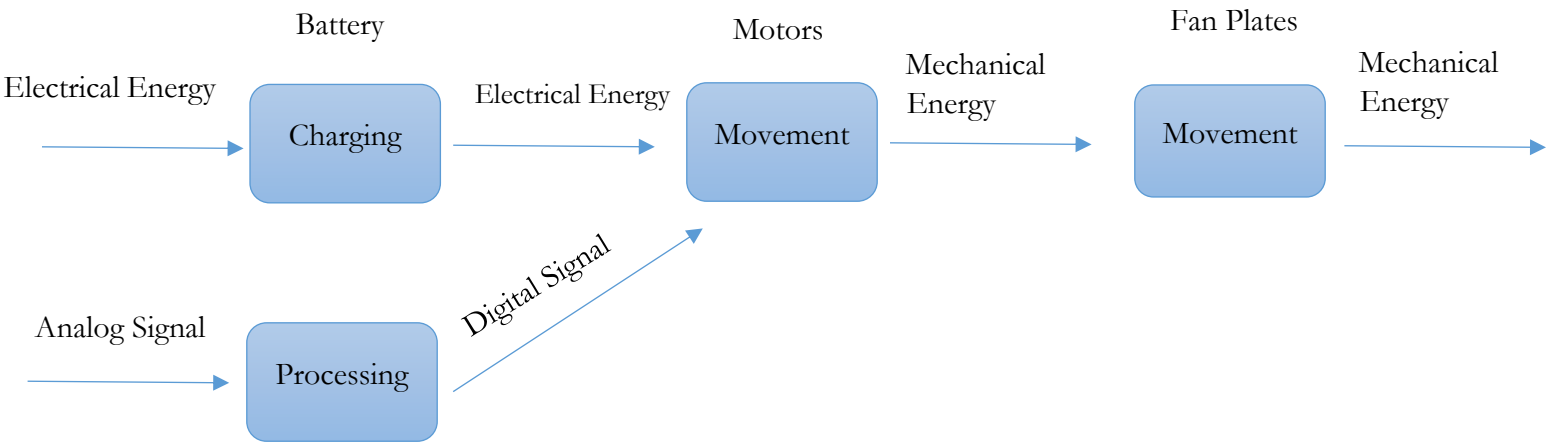
Functional modeling plays huge role in designing a successful system. In order to have a sufficient system for the emergency drone project, a functional model was created. In this report, we are going to discuss the functional model of our emergency drone project and how it can impact our project. The upper level and detailed function model will be illustrated with the analysis of them.

2.0 Upper Level Functional Model



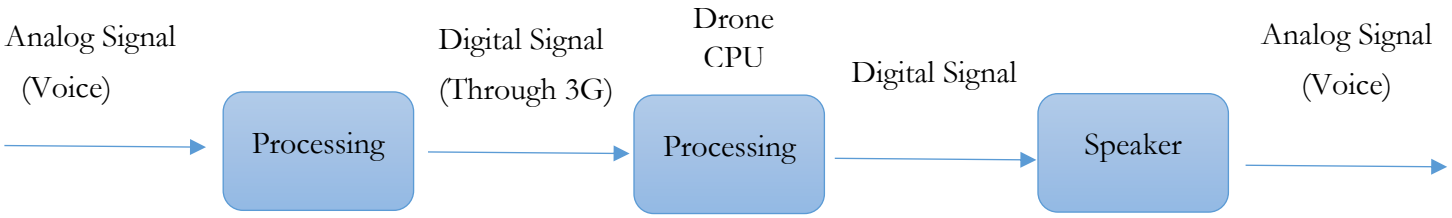
For the upper level functional model, it is consists of two parts which are the inputs and outputs. In the inputs there are the electrical energy in the movement and the analog signal for the processing. However, in the output there are the mechanical energy in the movement and also it gives the analog signal for processing. The emergency drone, has a main features which is the processing of it. As there will be a camera and speakers attached to this drone.

3.0 Detailed Functional Modeling



Above is the emergency drone detailed block diagram which represent our system. The sub functions are as labeled which are the charging which is the main point to be considered in the drone. Then, the movement and the balancing which will prevent the drone from falling down. Then, the processor which is discussed in the upper level functional model, and this will help in wiring the camera to the drone.

Branch Functional Model



The input and output of our system is the analog signal which will produce the voice communication. The desired analog signal will be transmitted to a processor then to the Drone CPU through 3G network. The transmitted signal will then be processed again to the speaker and finally the speaker will feed the receiver the desired signal.

4.0 Analysis and Evaluation of Assignment

The main purpose of the functional modeling is to know the flow and the behavior of the system. In addition, the Functional Model helps in locating problems and errors that can be faced during the building process of the Emergency Drone.

By working on this report, we analyzed the products used and how will they be wired in the emergency drone. Also, we note than we have an actuator which will help us in balancing the drone. One of the positive outcomes that by locating the errors, we can introduced different kind of solutions to each part of the model. Lastly, by the functional model, we can modulate new designs and compare them to our functional model for future improvements.