



SOFE 4610 Fall 2021 - Design & Analysis of IoT

Project Title: Smart Fan

[Proposal]

Project Group No: 11

Group Members:

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Github Link - <https://github.com/esam191/Smart-Anti-Theft-System>

Project Description:

The project aims to develop an IoT application based on the IoT platform that we will build in class using, “Develop a Fully Flexible and Scalable Internet of Things Platform in 24Hours by Anand Tamboli”. We decided to build a smart fan based on the IoT platform that we will build. We will essentially create a device that modulates the speed of the fan based on the temperature and humidity data taken. We will hook up the DHT11 temperature and humidity sensor to the Node-MCU to get the data it provides. We will use a stepper motor driver, that is mainly used in air conditioner louvers or small cooling and heating fans, which would be a perfect application to our project. The data will be sent to the user on the web application where they can choose to turn on/off the fan manually, or it works automatically based on the temperature.

Functional Requirements:

FR-01: The device should be able to successfully start the fan upon crossing the maximum temperature.

FR-02: The device should be able to stop the fan upon crossing the reaching room temperature.

FR-03: The device should be able to collect information on the temperature and humidity of the surrounding area and send the information on a web application.

FR-04: The device must be able to allow users to manually turn on/off.

FR-05: The device should be able to measure the surrounding temperature and humidity using the DHT11 sensor.

FR-06: The device must utilize the stepper motor that serves as a fan for the purpose of this project (a supporting fan is attached to the motor).

Nonfunctional Requirements:

N-FR-01:(Accuracy) The device should be able to display the temperature/humidity data on the web application accurately.

N-FR-02 (Availability): The device must be able to operate on low power consumption.

N-FR-03 (Performance): The device should use a DHT11 sensor to measure temperature and humidity.

N-FR-04 (Reliability, Availability): The device should support dual sensing redundancy in case of sensor failure.

N-FR-05 (Performance): The device must have low latency when transferring data from the sensors to the NodeMCU.

N-FR-06 (Usability): The device should display the manual control options on the web application.