

PY681 Final Project Proposal: In-door Cat Detector

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1 Abstract

Indoor cats tend to hide and enter any places due to their curiosity, but often one wants to locate the cats or stop them entering undesired places, including kitchen, balcony, or any opened windows. In this project I am trying to build a cat detector that can locate the cats, more importantly, trying to distinguish between the cats and human, and prevent them from entering forbidden areas.

2 Components Required

- Arduino UNO R3
- Breadboard
- PIR Motions Sensor Module
- DC motor
- GY-521 Module
- buzzer
- relay module
- power supply module
- NPN transistor
- cat wand or any cat toys
- a cat

3 Design Explanation

- Assumption: A cat can not reject a spinning wand but human can.
- Active measurement: Instead of passively measuring the signals from cats, I decide to utilize active measurement by sending signals to cats and measure the feedback signals.
- Work flow: Capture signals from motion(PIR) → Arduino → if the signal is high → turn on the motor which connects to a cat stick → humans and domestic pets other than cats are usually not interested in a swinging stick but cats are → cats will slap the cat wand → GY-512 module will capture this signal and turn on the LEDs or speaker → the cats are located
- Limitations: The detection range of PIR sensor depends on the temperature and speed of the moving object. A native solution will be put the designed circuit on top of a cleaning robot, so will be able to travel around the apartment. Future solution will install the circuits to a remote control cars so as to improve the flexibility.

4 Implementation Plan

- Compartmentalization: I will compartmentalize the circuits into two modules, that module 1 = PIR sensor + stepper motor, and module 2 = GY-521 module + buzzer.
- Week1 and 2: Implement module 1, mainly focusing on testing the detection range and angle

of the PIR sensor, and if necessary, add additional PIR sensors to the circuit to improve the sensitivity.

- Week 3: Implement module 2, and I checked the sensitivity of the GY-521 module is pretty high, and very easy to output the signals from GY-521 to turn on buzzer.
- Week 4: Combine two modules and prepare final presentation.

5 Flow Chart and Schematic

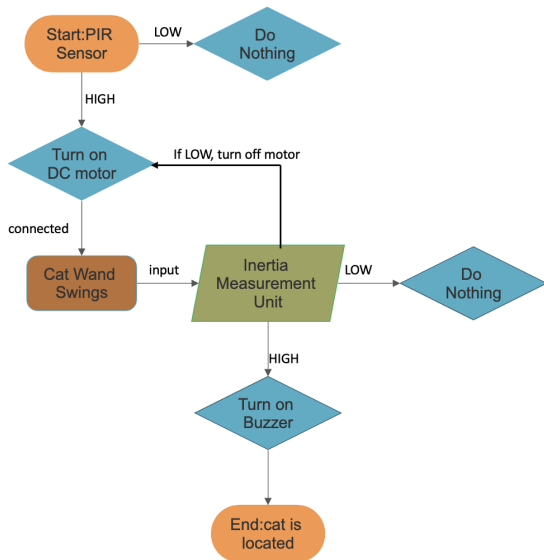


Figure 1: Flow chart presentation

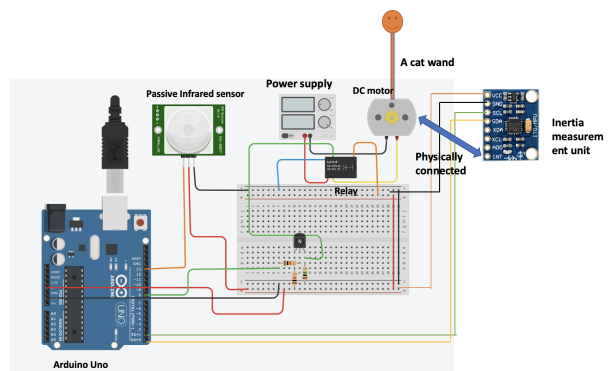


Figure 2: Schematic presentation