

Funny Kitty Stick Haptic Feedback Tech Doc



Overview:

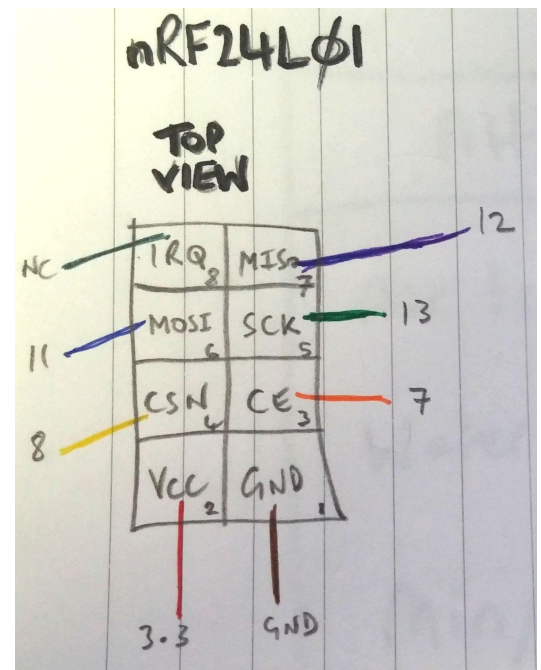
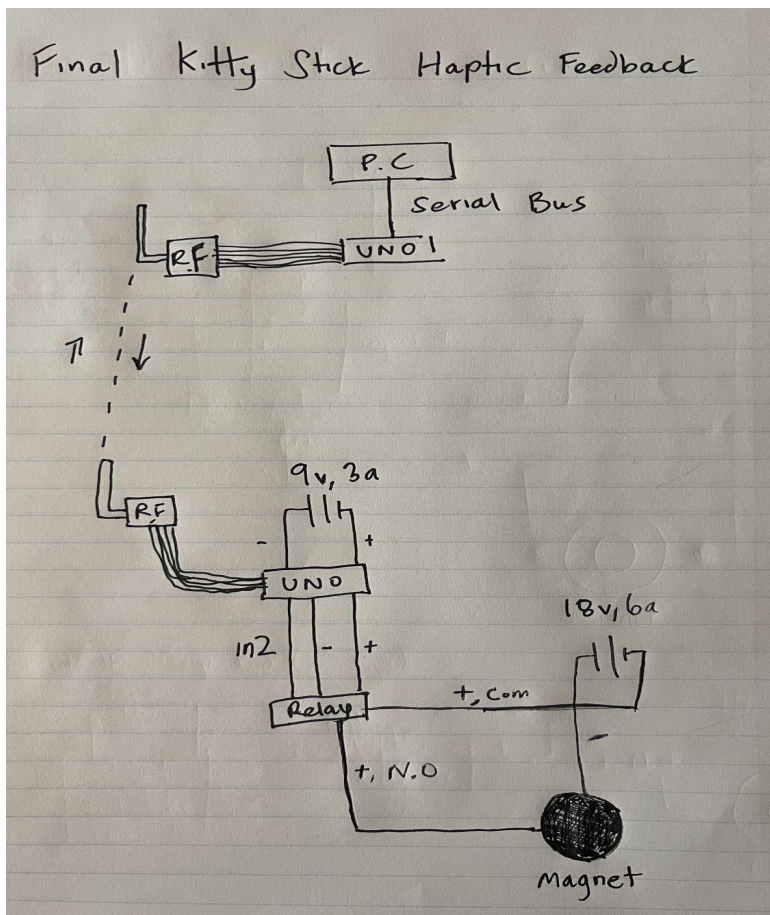
Funny Kitty Stick provides haptic feedback during in-game play. When the cat touches the cat stick in the game, the computer will send a signal to the haptic feedback module via radio frequency to turn on an electromagnet. The player holds a cat stick above the module so that when the magnet turns on, the player's cat stick will stick to it, simulating a resistive force one would feel if a cat were tugging on it. The haptic feedback module is fully portable and has the ability to be completely disassembled for repairs, battery / component swaps, etc.

Materials Used (excluding wires / minute materials):

- 1 x 12v electromagnet
- 1 x 5v electromagnet
- 2 x Arduino Uno
- 2 x Nrf24L01 rf boards
- 2 x nrf24L01 5v regulators
- 2 x nrf24L01 antenna amplifiers
- 1 x mini breadboard
- 5 x 9v batteries
- 5 x 9v battery switch cases
- 1 x 5v relay module
- 1 x wooden box enclosure
- 1 x 220 Ohm Resistor
- 2 x LED (Red and Green)

Schematic:

The Funny Kitty Stick Haptic feedback system uses radio frequency to communicate between the computer and the floor module where the electromagnet is housed. The flow of communication is shown in the schematic below, alongside the Rf wiring set up:



The pins on board need to go to specific digital output signals on the arduino.

RF Communication:

The haptic feedback system requires 2 RF modules communicating back and forth. Both act as a transmitter and receiver of data, but each board needs custom instructions on how to deliver and receive data. The code for both boards can be found here:

<https://drive.google.com/file/d/19gD1qSxNb57iQJsUnO8FErMeyzPWIGi-/view?usp=sharing>

https://drive.google.com/file/d/1snvC30MP0tQCSJAhSkW3PP_V_cStQVfM/view?usp=sharing

Box portability and enclosure:

5 9v batteries are required to power this box with complete portability. 1 battery is used to power the arduino, 5v relay, and LED breadboard expansion. The other 4 must be separately wired so as to not overload the arduino or relay. The other 4 should be wired in series and in parallel to provide more voltage and Kwh for the magnet. Photos of internal components below.

