Birdcall

Dan Kerrigan, Michael Krumdick, Royce Branning

The Birdwatchers

Project Description

Birdcall is a mobile phone application that enables the user to control their drone using their voice. The user will speak commands into the app, which will communicate with an onboard Raspberry Pi to send commands to the drone. The user will be able to set up waypoints through an on screen UI, since it would be cumbersome to speak coordinates.

System Overview

Mobile Application

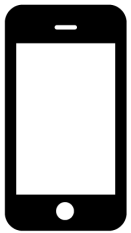
The mobile application serves as the user interface for BirdCall. A user speaks voice commands to the application which uses a local natural language processing library to translate the voice command to text. The application then sends the text command to the Drone Server.

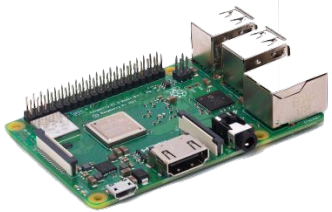
Drone Server

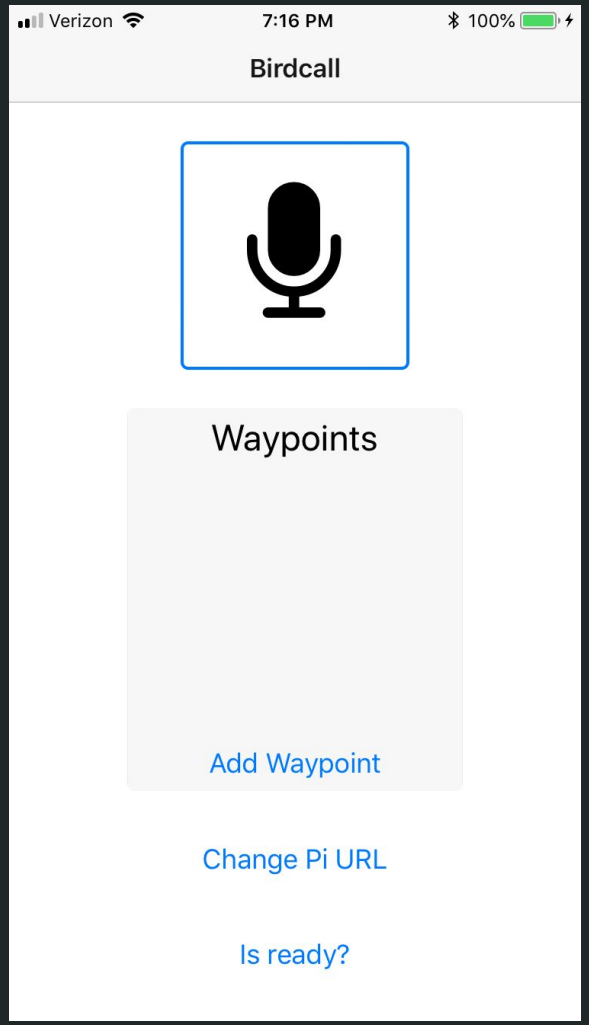
The drone server lives on the Raspberry Pi mounted on the Drone. It recieves JSON encoded HTTP requests from the Mobile Application, parses the text and sends the command to the Drone using DroneKit-Python.

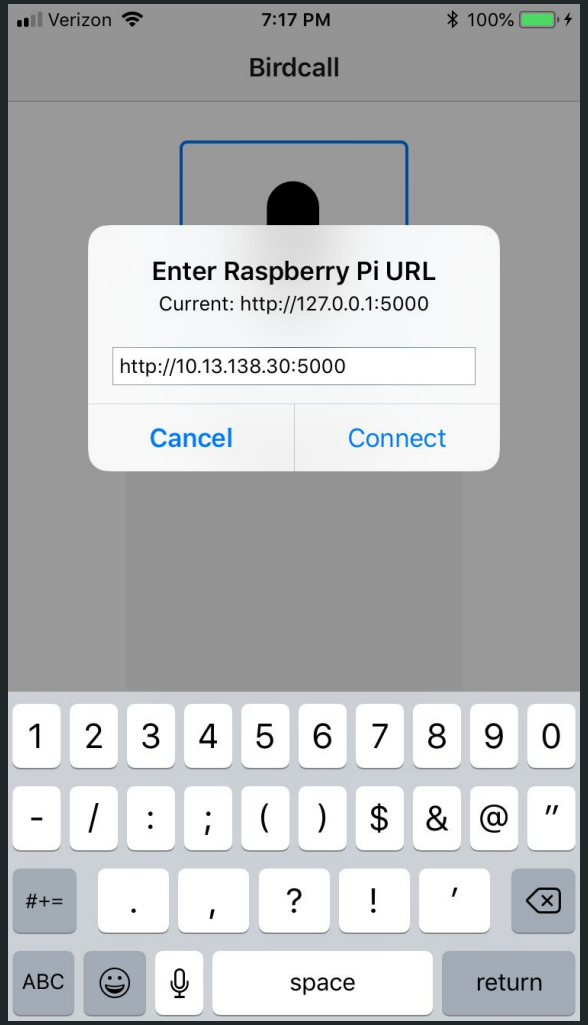
Drone

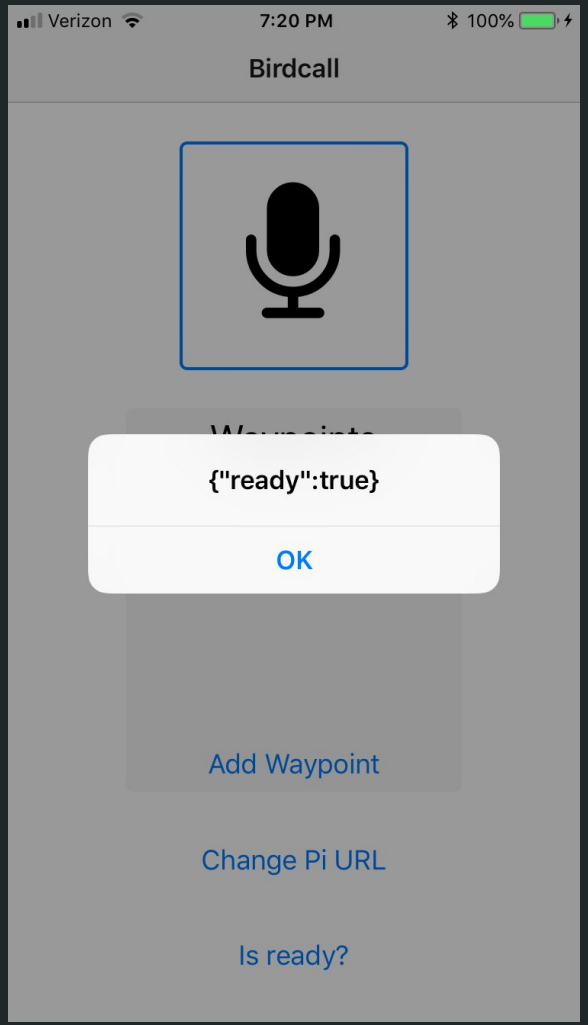
The Drone receives commands from the Drone Server and responds accordingly.






Verizon
7:16 PM
100%
Birdcall
Waypoints
Add Waypoint
Change Pi URL
Is ready?


Verizon
7:17 PM
100%
Birdcall
Enter Raspberry Pi URL
Current: http://127.0.0.1:5000
http://10.13.138.30:5000
Cancel
Connect
1 2 3 4 5 6 7 8 9 0
- / : ; ( ) $ & @ "
#+= . , ? ! '
ABC
space
return


Verizon
7:20 PM
100%
Birdcall
{"ready":true}
OK
Add Waypoint
Change Pi URL
Is ready?

Verizon 7:16 PM 100%

Birdcall

Waypoints

Add Waypoint

Change Pi URL

Is ready?

Verizon 7:22 PM 100%

Birdcall | New Waypoint

Name

center

Latitude

41.71480

Longitude

-86.24187

Altitude

30

Add

"30"

1 2 3 4 5 6 7 8 9 0

- / : ; ( ) $ & @ "

#+= . , ? ! '

ABC space return

Verizon 7:22 PM 100%

Birdcall

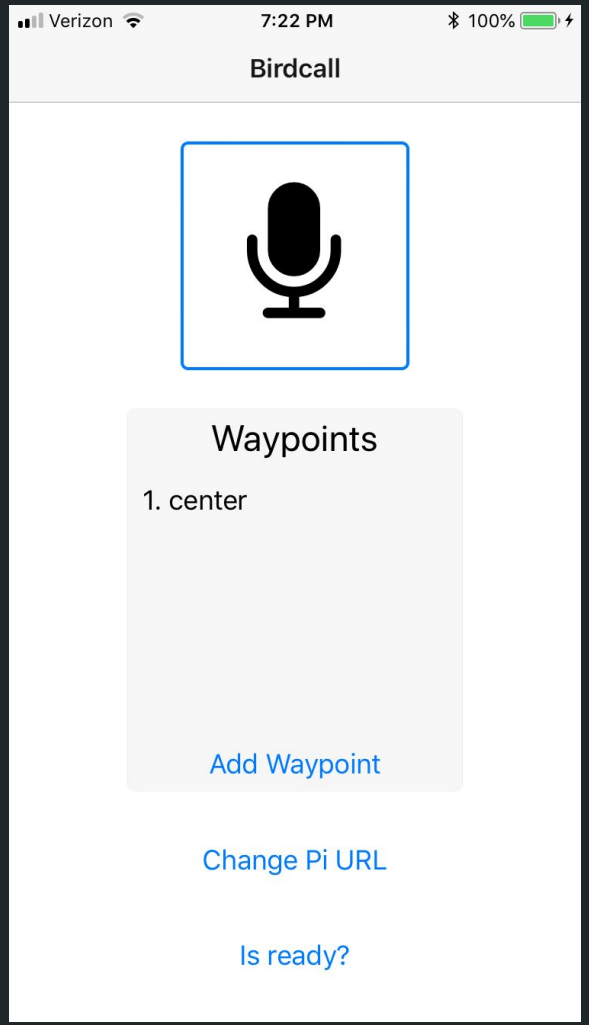
Waypoints

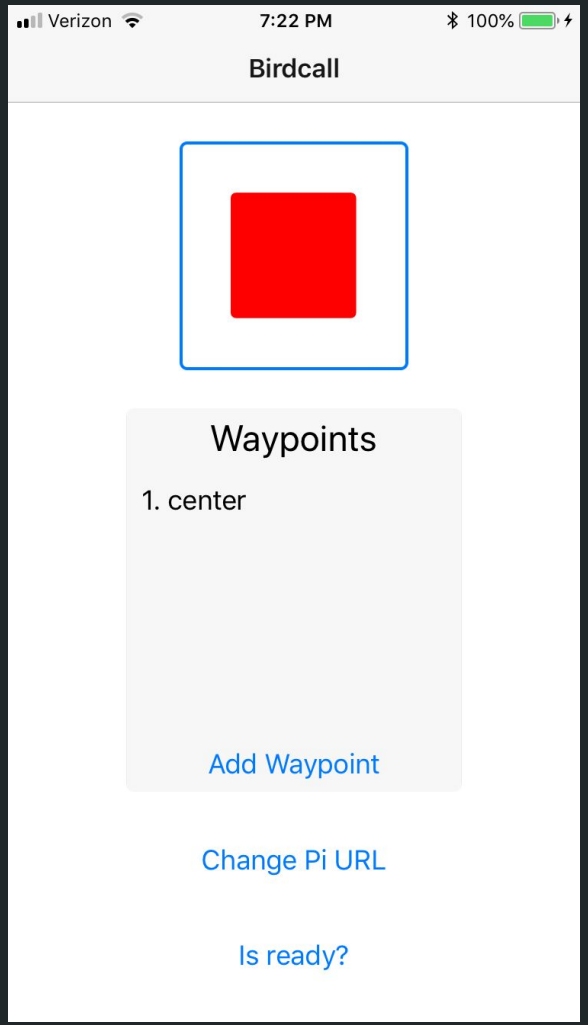
1. center

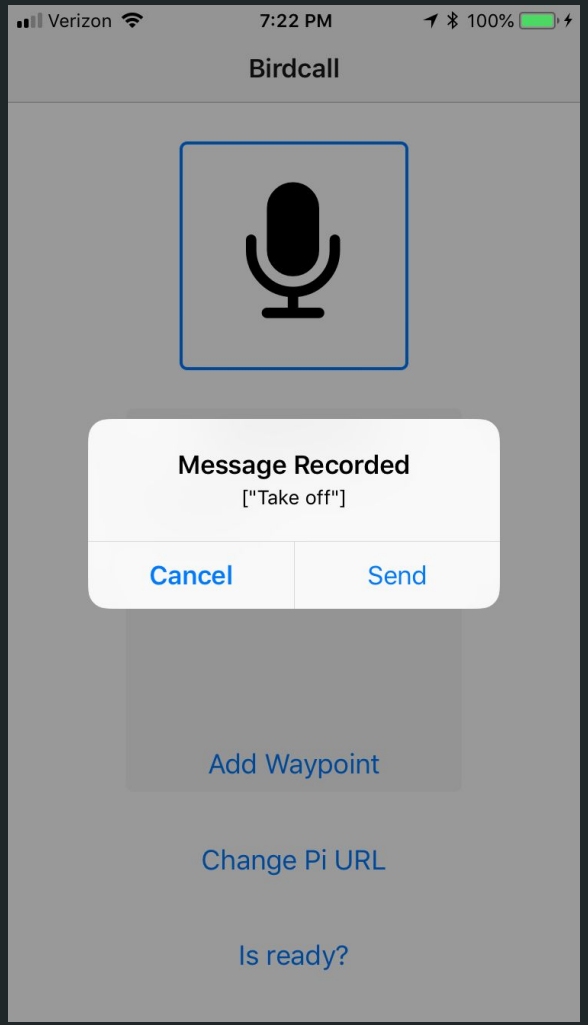
Add Waypoint

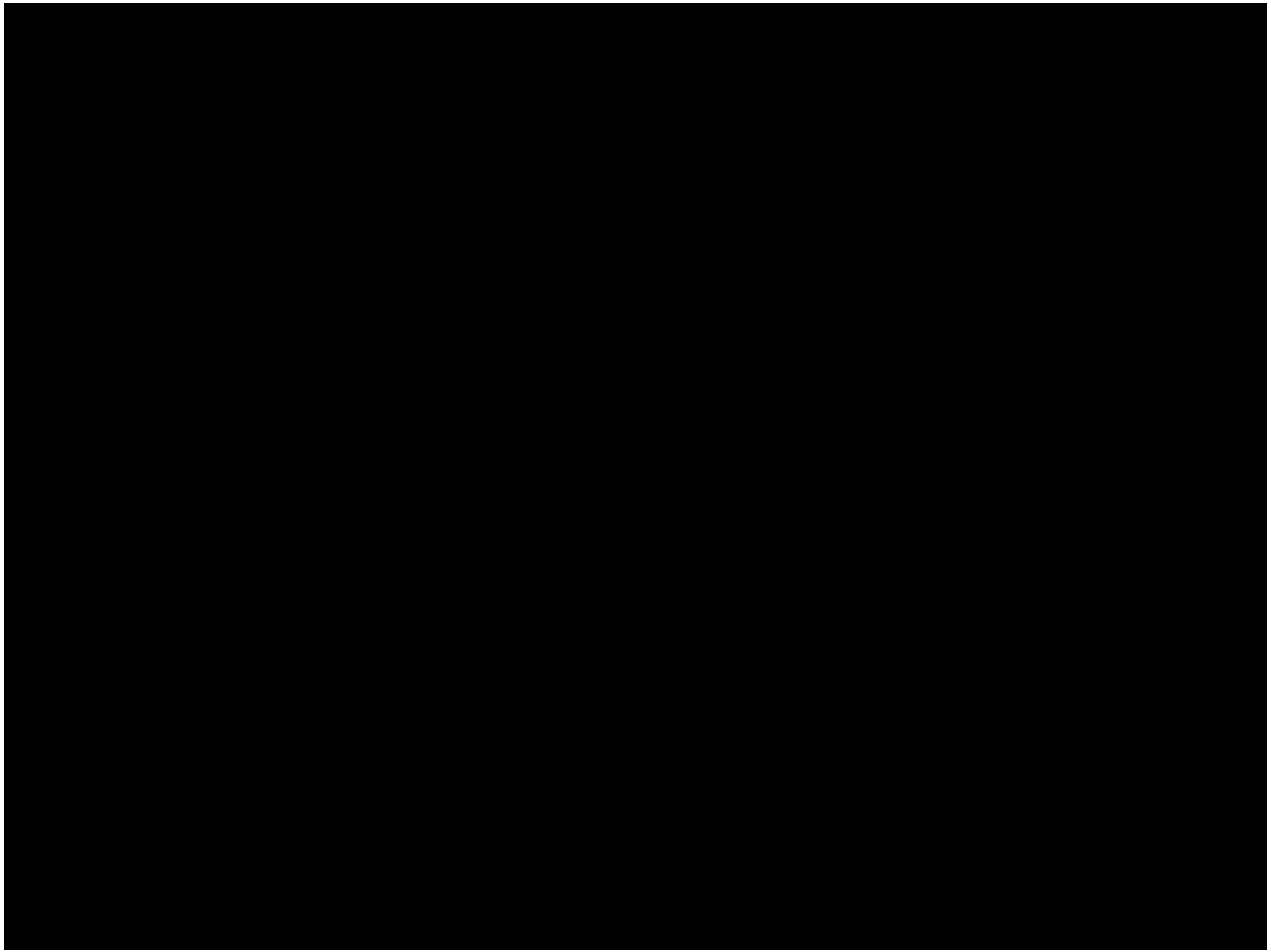
Change Pi URL

Is ready?


Verizon
7:22 PM
100%
Birdcall
Waypoints
1. center
Add Waypoint
Change Pi URL
Is ready?


Verizon
7:22 PM
100%
Birdcall
Waypoints
1. center
Add Waypoint
Change Pi URL
Is ready?


Verizon
7:22 PM
100%
Birdcall
Message Recorded
["Take off"]
Cancel
Send
Add Waypoint
Change Pi URL
Is ready?



Challenges

Drones are inconsistent, hard to diagnose issues

Building hardware solutions

Synchronizing communication between the iPhone, Pi, and Drone

Real World Applications

Drone Photography/Videography

Firefighting

Managing drone fleets