README

Voice-activated Cloud-based Assistant

The system is an IoT-based home automation/personal assistant. The goal of the project is to make the drone search the enclosed area for an object that is requested.

Features:

- Completely voice activated

- Cloud-native
- Raspberry-Pi as a server

code: https://github.com/bhuvaneswarignanasekar/bhoodrone-backend

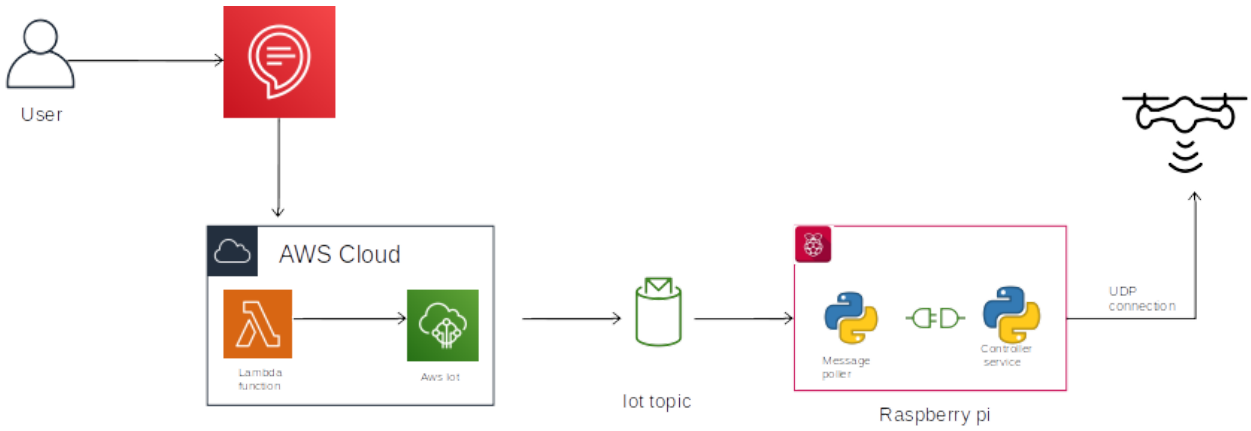
What user sees:

User-> Alexa-> Drone find the object

What's happening in the background:

What's the better way to explain than with diagrams, so let me explain with few diagrams to give some idea of what's happening in background

Architecture:



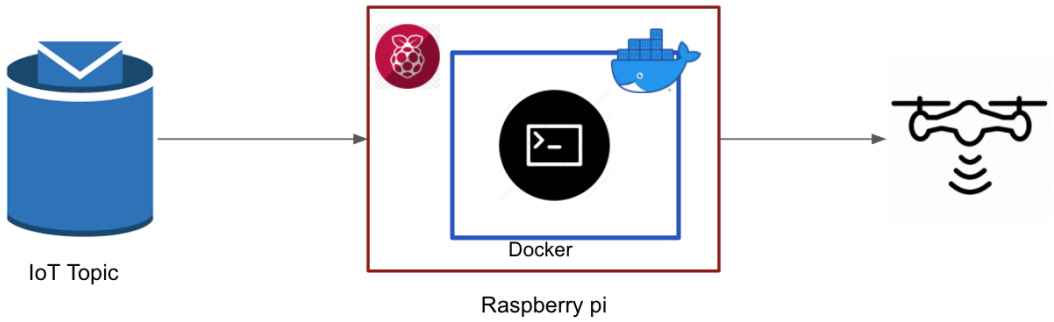
Flow:

- The User interacts with the Alexa to start the drone, such as

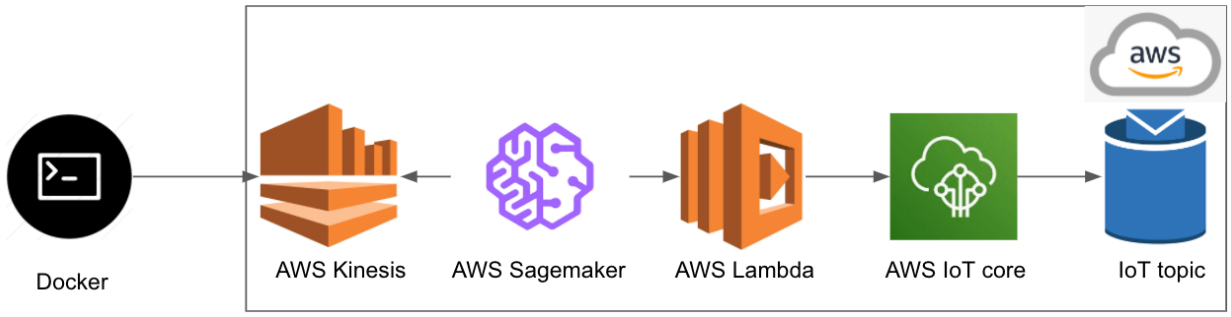
- Alexa, ask bhoo drone to find me “bowl”

Here Bhoo drone is the name I gave to the system. This is the trigger command and “bowl” is the needed attribute/information.

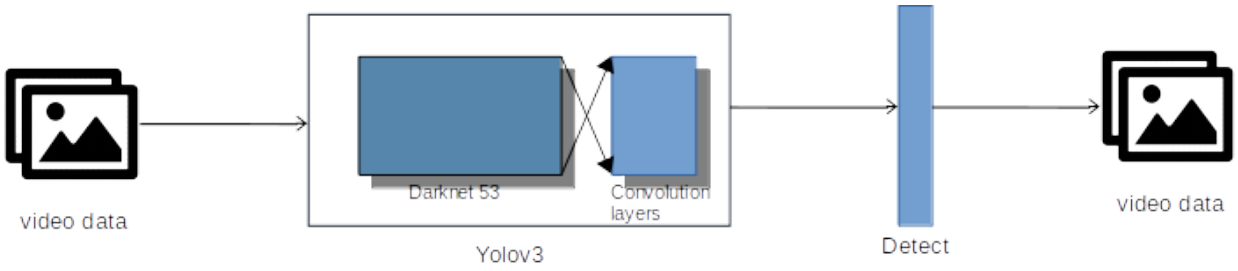
- The information is sent the IoT topic through lambda function and AWS IoT.
- IoT topic publishes the information to the server
- The topic published to the server is caught by the message poller, which initiates the process



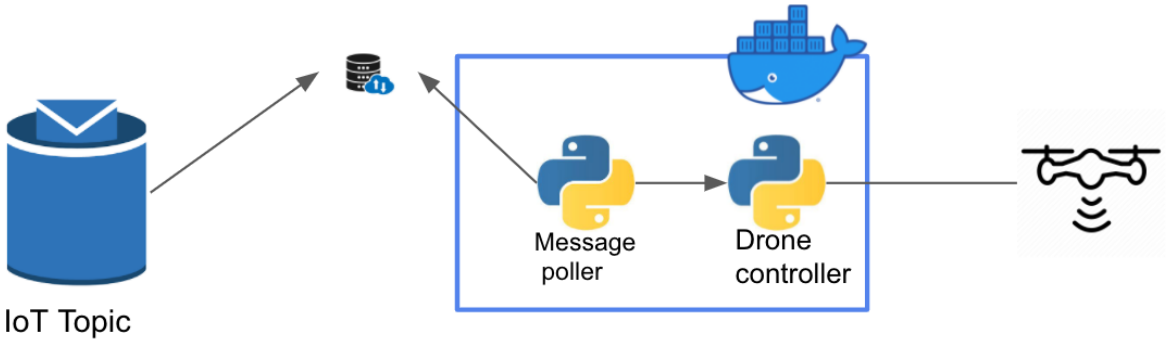
- The message caught by the message poller starts the drone and starts sending the real-time video data to the AWS cloud



- The video data is sent to the AWS kinesis which is a video/data streaming service
- Through AWS sagemaker I read the data that is being streamed to the AWS kinesis and data is processed to detect the object.



- Used YOLO pre-trained model for object detection
- The next step is decided by the system and information is sent to AWS Lambda function from AWS sagemaker
- The message is delivered to AWS IoT by AWS Lambda which then sends to the IoT Topic which publishes it to the server



- The message is then caught by the message poller and is sent to the drone controller class
- The Drone controller sends the command to the drone

DEMO:
http://bhoo-portfolio.s3-website-us-east-1.amazonaws.com/projectDemo

PRESENTATION:
https://docs.google.com/presentation/d/1PARjfrdABAXJw3SP6z6qdkQEGS-dIR5-xWaPVJe9MSY/edit#slide=id.g9a2edfe9a3_1_9