Android App

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May 1st ,2019

Motivation

- Collect data from motion, environment and location Sensor
- Store them in Elastic Search (No SQL database)
- In future use Tensor flow to conduct supervised learning
- Android provides access to Location, environment and accelerometer

Idea & Challenges

- Divide & Conquer Strategy -- Collect Data from sensor
- Store them in the database (NOSQL)
- Information Source- Sensor
- Lot of information (Need proper orchestration to handle)

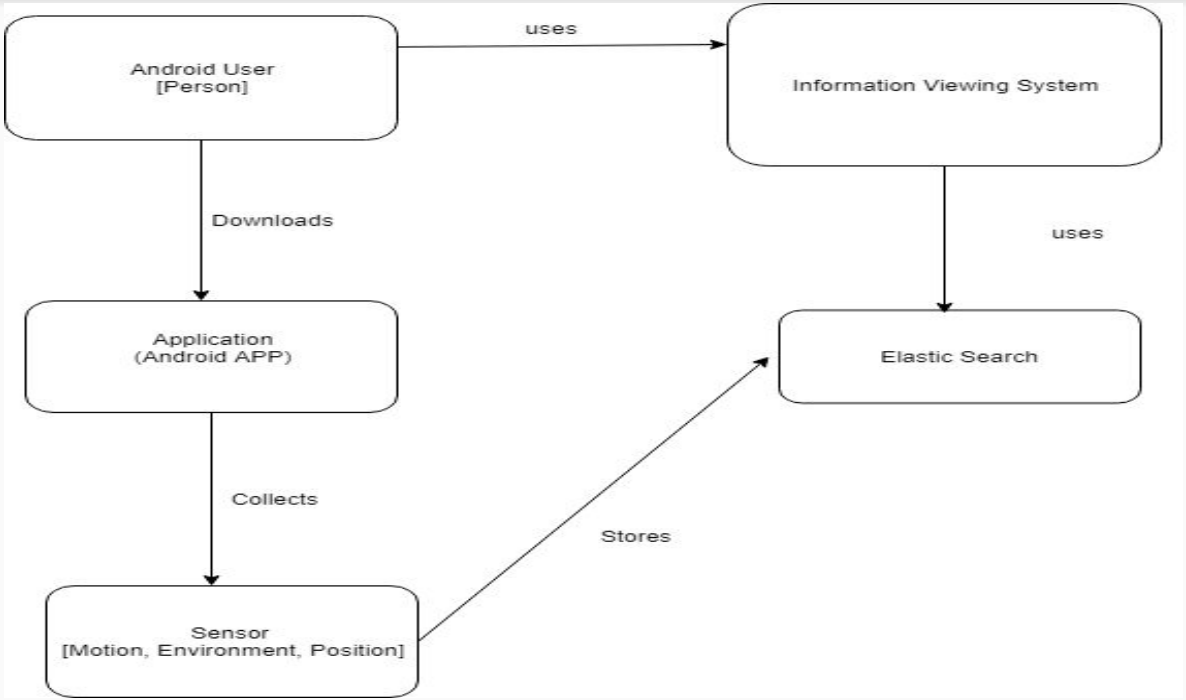
Idea

- Collect Data from the app as values change
- Store them in local storage
- Send the Data every 1 hour to NOSQL database
- Use Android Retrofit <POST> or <PUT>

Technology Stack

- Elastic Search
- Kibana
- Docker (Don't use with Emulator)
- Android
- Django- Information Viewer (Replaced with Kibana)

Architecture



Demo

- Elastic Search:-"http://3e325242.ngrok.io/" (Connects to HCC UNL anvil cloud)
- Kibana :- localhost:5601 (HCC UNL anvil Virtual machine)
- Android EMulator:- Localhost

Challenges

- Setting up Elastic Search (ES), and connecting to Android App
- Docker set up for ES
- Andorid Location values using EMulator (Found a fix, use Android phone via ADB)
- Machine Learning - Data Cleaning

Machine Learning using R (Random Forest)

- Random Forest was applied on Data Set Collected
- Predicted Accelerometer Values only X coordinates
- Random Forest Function in R model gave 38 % Accuracy
- randomForestModel<-randomForest(date.acc$x ~.,

  data=date.May[,-c(1,2,3,15)])

Take Away (CYBR 8480)

- IOT Security very important
- Native Android apps are easily Vulnerable
- Encrypt your code
- Don’t ever take 3 Grad classes and do your Dissertation Proposal during the semester