

# A. Technical Documentation

## Indoor Positioning System

- Debian Based Linux Distribution(for now)
- C Socket Programming
- TCP Protocol
- IPv4
- Static IP Addresses
- Wireless Interface Card Required
- terminal commands:
  - Ifconfig
  - Iwconfig *interface*

## Android App

Android Studio version 2.3. The app build with minimum SDK 14 : Android 4.0 (IceCreamSandwich). The app use Google Maps API Free version to get traffic and maps data from Google.

## Database

Currently no database integration at this stage.

We have models of what data we need to store which is persist

Although Android natively supports SQLite3 we are thinking of not using it because it not necessary for our use cases. Below is a table example for the HVAC system.

field (String)	value (int)
current_temp	73
prefered_temp	73
time2temp_min	0
time2temp_sec	0
home_1_away_0	1

For example in the table above there are key value pairs. Because of the simplicity of these fields at least we are thinking of using nosql like mongodb because of the need of key value pairs.

## Alexa

- Java client to interface with the Alexa Voice Service. The java client is set up and running on a Raspberry Pi.
- Also contains a Node.js server to constantly listen for the the wake up word and listen for AirPlay.
- The wake up word engines used are from Sensory or KITT.AI
- Invokes the AVS(Amazon Voice Service) for intelligent voice recognition and natural language

- AirPlay uses a Perl script to create a listening service for the AirPlay connection.
- Utilizes a perl script to implement the Apple RAOP protocol for AirPlay.
- <https://github.com/alexa/alexa-avs-sample-app>
- <https://github.com/njh/perl-net-sdp>
- <https://github.com/hendrikw82/shairport>

## **Webapp**

Flask web application for smart home system. Requires python 2.7+ and pip 0.7+.

File structure:

```

/
/static                --static files
    /icon
/templates             --holds html and css
    /index.html
/__init__.py           --this is the server file to start
/requirements.txt      --required for installing server dependencies

```