System Scenarios

for

Machine Learning Smart Home

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1. Introduction

In order to better understand the motivations for using the learning home automation system, we have created a number of scenarios where we expect the behaviour of homeowners to follow patterns that a machine learning algorithm could pick up on. These particular scenarios were chosen because they involve relationships between multiple devices which may not be obvious. The scenarios also include a list of smart devices involved. Using the devices identified in these scenarios, the team can compile a list of devices which will showcase the machine learning capabilities of the system for testing and demos.

2. Hosting a Party

2.1 Description

A big group of people arrive at the house for a party. Your home automation system has learned how to set up your environment to make your party awesome.

- Turn on some music
- Adjust the AC to compensate for more people
- Adjust the lighting (mood lights?)
- Adjusting music volume
- Change which speakers are active as people move between rooms

2.2 Interesting Devices

- Motion Sensor
- Speaker System
- Mood Lights
- Thermostat
- Audio Sensor

3. Efficient Lights and Temperature

3.1 Description

During a work week, a home is left to cool during the day when no one is home. In the evening, before the owner arrives, the system heats the house to a comfortable temperature. As the owner arrives home, the lights automatically turn on in the rooms that the owner will enter. Later in the evening, the system cools the house to a comfortable sleeping temperature and dims the lights.

On the weekend, the house remains warm during the day while the owner is home. The owner then leaves to go to a store, the system turns off all the lights and lowers the temperature. When the owner arrives home again the system turns the lights back on and raises the temperature.

In the summer months, when it is more light outside, the system does not turn the home's lights on until later. In the winter months, the home turns the lights on earlier.

3.2 Devices of Interest

- Light sensor
- Temperature sensor
- Motion sensor
- Thermostat control
- Light controller

4. TV Automation

4.1 Description

Your family watches Game of Thrones every Sunday evening. Everyone generally moves from around the house to meet in the family room, getting ready to enjoy the show. As you settle in, the system turns off all the lights on the floor turn, turns the television on, and the show begins. As it finishes up an hour later, the floor lights come back on.

The next week is Thanksgiving Sunday, and the family is out of town. The house is silent. When Game of Thrones begins, the television remains off, and the DVR silently begins recording everyone's favourite show. No lights turn on when the show concludes.

4.2 Devices of Interest

- Motion Sensors
- Light Sensors
- Light Control
- SMART tv
- DVR control

5. Coffee Automation

5.1 Description

Your home automation system has learned your mourning routine. It notices that you have woken up so it puts on a pot of coffee that will be ready right when you get to the kitchen.

5.2 Devices of Interest

- Motion Sensors
- Smart Coffee Maker
- Audio Sensors