**INTRODUCTION**

Smart environments have been of growing interest in recent years due to their potential for assisting elderly individuals in activities of daily living. In order to deploy a smart environment, several weeks worth of data must first be annotated with corresponding activities. This process can be very time consuming, tedious, inaccurate, and somewhat invasive. We came up with a tool that would automatically provide annotations and tried to determine how beneficial it was.

**APPROACH**

Our approach involved combining two previously developed technologies to create automatic annotation.

- Naïve Bayes classifier
- Smart home visualizer

The Bayes technique was borrowed from another paper[1]. Five features are used for the Bayes model.

- Time
- Location
- Water
- Burner
- Cabinet door

The probabilities are based on the relative frequencies of each feature for each activity. Before predictions can occur, some data must first be annotated by hand. The Bayes model is then trained on this data and used to annotate the remaining data. As more data is annotated, the Bayes classifier error rate decreases.

**DATA**

The data was collected from a single resident in the winter of 2008. Each day was broken up into two time frames, the first being from 6:00 am to 10:00 am, and the second from 3:00 pm to 11:00 pm. Nine activities were observed, which are listed on the right hand side of the screenshot above.

To test the tool, we’ll have one person annotate five days worth of data using just the visualizer, and another person annotate five days using the visualizer along with the prediction viewer. Before we can say anything conclusive about the results, more testing will need to be done, involving more annotators and more data sets.

**REFERENCES**


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