Smart Home Assistant
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Smart home devices that utilize systems such as machine learning have offered dynamic solutions that are customizable and adaptable to aspects of everyday life. Those devices include Amazon’s Alexa, Google Home, and Samsung’s SmartThings. Normally these devices rely on a central device that will capture audio from the user and then process this audio into text on a server which translates it to a command. That command is sent back to the origin device so that it can control other smart devices that are connected to it.

Our approach aims to implement an open source, modular system that can interact with a smart home device such as a Philips Hue Smart Bulb. The system will consist of a Spoken Language Unit (SLU) which contains two different modules. The Automatic Speech Recognition (ASR) Unit will be able to capture audio in .wav files and then convert the audio into text using different models like the Librispeech or ASpIRE model. The Natural Language Understanding (NLU) Unit will handle the text recovered from the ASR and use keywords from the text in order to carry out commands. Those commands will be sent back to the Raspberry Pi that the SLU is hosted on in order to control the Philips Hue Light Bulb. The components on the Raspberry Pi will include a speaker and either a USB or Bluetooth Microphone. We hope to ultimately add to the range of open source end to end smart home devices that anyone can be able to use and program!

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