CyBot-Ultimate

System Design Proposal
Team Ultimate
October 11, 2016

Introduction

This document will overview Team Ultimate's design for a Slack-based chat bot, CyBot-Ultimate. This document will cover proposed functionality, bot format, development timeline, planned modules and components, and all external data sources that will be utilized.

Proposed Functionality

CyBot-Ultimate will have three major functions: bus data, current weather data, and Iowa State Football Schedule. Users will interact with the bot through a designated group Slack channel that the bot has been invited to, or through Slack private messages. Each of the three main external data features will be divided into modules. All chat messages to the bot in the group channel will be identified using a trigger word, CyBot. Messages in private chat will not require the trigger word.

Development Plan

Project development work will be split up among team members to allow for completion before the November 2nd deadline. Each member will work on one of the main modules of CyBot Ultimate.

Dependencies

Python v3.x

CyBot-Ultimate will run in a Python environment, meaning all dependencies will be Python-based.

Requests

CyBot will make use of the requests package to make requests to the various API's that will provide information to the bot's external data-driven packages. This package can be installed via PIP.

Python Slack Client

CyBot will make use of Slack's official Python Slack Client package for interfacing with Slack's servers. This module will be utilized for sending out chat responses, as well as for its Real Time Messaging functionality, which we will use to receive messages as the bot receives them.

Isolation of Dependencies

Virtualenv and PIP will be used to handle Python application dependencies. Starterbot in virtualenv will isolate our application dependencies from other Python projects.

Planned Modules

Main Bot Script

The main bot module will use the package of SlackClient to connect to the slack servers. This script will be the main interface between Slack users and all of the other modules in the bot.

Bus Information

The bus information module will get CyRide data from the NextBusXMLFeed API, parse the response and return the relevant data to the main program. The module will contain a function that takes a bus stop number as an argument and returns a list of the routes that service that particular stop, as well as a list of busses arriving in the next 15 minutes.

Weather Conditions

The Weather Conditions module will contain two major functions. One to return the current weather conditions, and one to return the forecasted weather conditions for the next day. This module will make use of the Dark Sky weather API.

The current conditions function will return the most recently collected snapshot of weather data for the Ames area. This snapshot will include current temp, forecasted high, forecasted low, as well as the current conditions.

The forecast function will return similar results, but instead of returning data for the current day's conditions, it will instead return data for the next day (tomorrow).

Iowa State Sports Schedule

This module will read the cyclones.com schedule RSS feed to determine upcoming ISU athletic events. It will parse the RSS response and get the next couple of events that have not yet occurred. Then, this

Data Sources

Weather

For our weather function, we will reincorporate DarkSky API to get current and future forecasts. As we previously used DarkSky before and have clear understanding how to request weather information, we think using DarkSky again will work to our advantage.

Bus

We plan on using the NextBus API to gather information on next bus times. The information will also provide other bus routes that stop at the same bus stop, and times for the previous and next bus stop for the same route.

Sports

We plan to use the Cyclones.com calandar RSS feed to retrieve the titles and dates/times of upcoming ISU sports events.