**Collecting Data From Weather Underground**

This is the first article of a multi-part series on using Python and Machine Learning to build models to predict weather temperatures based off data collected from Weather Underground. The series will be comprised of three different articles describing the major aspects of a Machine Learning project. The topics to be covered are:

Data collection and processing (this article)

Linear regression models

Neural network models

The data used in this series will be collected from Weather Underground's free tier API web service. I will be using the requests library to interact with the API to pull in weather data since 2015 for the city of Lincoln, Nebraska. Once collected, the data will need to be process and aggregated into a format that is suitable for data analysis, and then cleaned.

The second article will focus on analyzing the trends in the data with the goal of selecting appropriate features for building a Linear Regression model using the statsmodels and scikit-learn Python libraries. I will discuss the importance of understanding the assumptions necessary for using a Linear Regression model and demonstrate how to evaluate the features to build a robust model. This article will conclude with a discussion of Linear Regression model testing and validation.

The final article will focus on using Neural Networks. I will compare the process of building a Neural Network model, interpreting the results and, overall accuracy between the Linear Regression model built in the prior article and the Neural Network model.

Getting Familiar with Weather Underground

Weather Underground is a company that collects and distributes data on various weather measurements around the globe. The company provides a swath of API's that are available for both commercial and non-commercial uses. In this article, I will describe how to programmatically pull daily weather data from Weather Underground using their free tier of service available for non-commercial purposes.

If you would like to follow along with the tutorial you will want to sign up for their free developer account here. This account provides an API key to access the web service at a rate of 10 requests per minute and up to a total of 500 requests in a day.

Weather Underground provides many different web service API's to access data from but, the one we will be concerned with is their history API. The history API provides a summary of various weather measurements for a city and state on a specific day.

The format of the request for the history API resource is as follows:

<http://api.wunderground.com/api/API_KEY/history_YYYYMMDD/q/STATE/CITY.json>

* API\_KEY: The API\_KEY that Weather Underground provides with your account
* YYYYMMDD: A string representing the target date of your request
* STATE: The two letter state abbreviation in the United States
* CITY: The name of the city associated with the state you requested.