In this part, we select 6 presidents and study their personalities based on the Personality Insights analysis from IBM Watson. We not only want to compare different individual presidents’ personalities, but also would like to see the time/generation difference. So we picked the presidents in two groups: those before the 1940s and those after the 1990s. We would like to compare if the presidents demonstrate strong personality differences through their Union of the State speeches, and if the presidents from different times tend to show some common features. So we choose George Washington, Thomas Jefferson, Franklin D. Roosevelt, William J. Clinton, George W. Bush and Barack Obama.

The IBM Watson Personality Insights takes people’s writing text as input and gives analysis about personality Big 5, Values, and Needs as the output. The analysis works well on text with more than 3,500 words. For each president, we combine all his Union of the State speech documents into one. Hence we have large enough corpus for each president to get very strong analysis results from the application.

We use most of the analysis results in our visualization. Let’s first look at the definitions for the categories. We quote the official definition form IBM Watson here (<http://www.ibm.com/smarterplanet/us/en/ibmwatson/developercloud/doc/personality-insights/basics.shtml>):

\* <b>Big Five </b> personality characteristics represent the most widely used model for generally describing how a person engages with the world. The model includes five primary characteristics, or dimensions:

\* Agreeableness is a person's tendency to be compassionate and cooperative toward others.

\* Conscientiousness is a person's tendency to act in an organized or thoughtful way.

\* Extraversion is a person's tendency to seek stimulation in the company of others.

\* Emotional Range, also referred to as Neuroticism or Natural Reactions, is the extent to which a person's emotions are sensitive to the person's environment.

\* Openness is the extent to which a person is open to experiencing a variety of activities.

\* <b>Needs</b> describe which aspects of a product will resonate with a person.

\* <b>Values</b> describe motivating factors that influence a person's decision making.

We summarize all test results in the following table. The color range from dark read to dark green is corresponding to the 0% to 100% percentile.

From the table we can see some obvious features. First of all, Agreeableness changes a lot over time. The 3 presidents before the 1940s tend to have very low Agreeableness comparing with the most recent ones. One of the reasons could be that the major issues the US is dealing with nowadays are very different from the early time. Presidents during war time tend to have low agreeableness. The other reason might be that the change of language usage over time affects the test results. It is possible that the Watson system’s analysis is more based on modern languages and standards. Another obvious pattern is that the analyses of Franklin Roosevelt and George W. Bush show similar patterns. We would like to point out another interesting finding: all 6 presidents’ reveal very similar Values. This means that the general values shown in the Union of the State speeches stay the same over time.

After interpreting the table, we visualize the information for different presidents on the following 2 radar plots. We omit the Value information here, because all 6 president show almost identical patterns for the Value analysis.

The first radar plot shows the Big 5 Personality percentiles. We can see that the scores for Openness and Conscientiousness are similar for all 6 presidents. Agreeableness and Introversion/Extraversion have larger variation across the presidents. It is also very clear that the most recent presidents tend to show more Agreeableness, Emotional Range and Introversion in their Union of the State speech than the presidents before 1940s. There is a clear shift from the left side to the right side of the graph: from higher openness and conscientiousness towards higher agreeableness, emotional range, and introversion,

From the above radar plot for Needs, we can clearly that the 6 presidents can be divided into 3 groups based on these standards. George Washington and Thomas Jefferson have similar patterns with very high consumer needs in challenge and comparatively low needs in the others. The distribution patterns for William J. Clinton and Barack Obama are almost identical: high love, practicality, harmony and very low need for challenge, ideal and self-expression. Franklin D. Roosevelt tend to have similar patterns and hive very high percentiles in almost all categories. One of the interpretation could be that the speech of presidents during peace time can be very different from those during the war time.

With these plots and personality analyses, we are able to see what kind of values and personalities the presidents show through their Union of the State speeches. These may not be the same as their real personality, however, these are the interpretation of their personalities as presidents of the United States.