Homework III - Datascience

Nathan Bunch

Describe k-means algorithm in your own words. Describe data with clustered points that the
algorithm would successfully find the clusters. Describe data with clustered points
where it will not do well.

The k-means algorithm works by taking points of similar values and clusters them together.
This is done by calculating a center in the middle of the clusters of points and then
calculating a radius around each cluster and any point in this radius is considered part
of that cluster.
A good set of data that could be analyzed by the k-means algorithm would be data collected
by car accident locations. The data collected and analyzed by the k-means function
would be able to detect both heavy traffic areas and possibly dangerous situations of
where car accidents occur.

On September 27 we explored the work of Shwetak Patel. There was part of the second
video that we didn't get to in class starting at the 41 minute mark where he talks about
coughing. Watch this part of the video and write down how this idea fits with our model
of understanding data science. How can this technology be used to understand the
past? How can it be used to predict the future? How can it be used to influence policy?
Give both positive and negative answers to these questions.

The good reasons:

The technology could be used for studying the past coughs that are associated with certain
diseases. In terms of predicting the future, a specific cough could be analyzed to see
what disease or sickness could be happening to a person. In terms of affecting policy,
the cough could influence the detection and elimination of outbreaks of certain
diseases.

The bad reasons:

The technology could be used to look into a person's past habits. For predicting the future, I
am semi positive that the analyzation of a person's cough could result in finding out if
they are weaker than others, which could result (in a very futuristic dystopia sense) in
that person being targeted for execution. With the idea of affecting policy, it wouldn't be

horribly wrong if we eliminate the weaker peoples in the world, the world would be a healthier and happier place (sarcasm).

In the answers for the good and bad reasons for analyzing coughs, I may have gotten carried away with the "bad reasons" section. However, that situation shouldn't be underestimated. You never know what might happen.