Your Name and Date: Zahra Khalilzadeh, April 1st 2023

Project Title: Crop Yield Analysis

Abstract: (This will be used on a web page listing all the LA 558 projects (~150 Words max):

The goal of this project is to develop a web map using R or Tableau to visualize crop yields in Iowa over time and identify factors that impact production such as soil quality and weather patterns. The project will use data analysis techniques to explore the correlation between crop yields and factors such as soil quality, weather patterns, and crop management practices. By creating a web map that displays crop yields across different counties in Iowa over time, the project aims to identify trends and patterns that could help farmers optimize their crop management practices. The project will also incorporate remote sensing technologies to monitor plant growth and health, as well as weather patterns, to predict pest and disease outbreaks and determine when and how much water to apply to different areas of the field.

Overview: (~300 to 500 words):

The project aims to conduct a comprehensive analysis of crop yields in Iowa, with a particular focus on factors that impact production such as soil quality and weather patterns. To achieve this, the project will use data analysis techniques to explore the correlation between crop yields and factors such as soil quality, and weather patterns. The project will also develop a web map using R or Tableau that visualizes crop yields across different counties in Iowa over time. The web map will enable farmers to see trends and patterns in crop yields, which could help them optimize their crop management practices.

In addition to analyzing crop yield data, the project will also conduct a soil analysis to identify trends and correlations in soil quality across Iowa's fields. The soil analysis will examine factors such as pH, nutrient levels, and organic matter content to create a soil map that shows which areas are more or less fertile. The soil map could help farmers identify which areas of their fields need more or less fertilizer, which could improve crop yields.

To further enhance the analysis, the project will use remote sensing technologies such as satellites to monitor plant growth and health. This data will enable the project to create a vegetation map that shows which areas of the field are growing more or less vigorously, which could be used to optimize crop management practices. By analyzing the vegetation map alongside the soil map, farmers could identify areas of their fields that are not growing as well as they should and take corrective measures.

Finally, the project will monitor weather patterns in the region to identify correlations between weather events and crop yields.

In summary, the project aims to use data analysis techniques and remote sensing technologies to create a comprehensive analysis of crop yields in Iowa. By developing a web map that visualizes crop yields across different counties in Iowa over time, the project aims to help farmers optimize their crop management practices. The project will also use a soil analysis, vegetation map, and weather monitoring to identify trends and patterns that could improve crop yields and reduce the risk of pest and disease outbreaks.

Technology: proposed to use to complete the project

The project proposes to use web mapping technology such as R or Tableau to visualize crop yields across different regions over time.

Data: List of data sources you will utilize

Yield data, soil data, and weather data will be downloaded from https://github.com/saeedkhaki92/CNN-RNN-Yield-Prediction.

Inspiration: List of Web Sites used for inspiration for the project

https://www.nass.usda.gov/Charts\_and\_Maps/Crops\_County/index.php#cr

Potential Challenges: List items you will need to work through on the project

Data collection and cleaning: Gathering and cleaning data from different sources can be a time-consuming and challenging task. Ensuring data accuracy and consistency will be important to obtain meaningful insights from the analysis.

Developing a web map using R or Tableau requires technical skills in programming, data visualization, and geospatial analysis.

Timeline: Goal dates showcasing what you home to complete by certain dates. For example data collection, cleaning

I am planning to finish up this project by the end of April 2023.

I will first start to collect and clean data on crop yields, soil quality, and weather patterns in Iowa. Then I will analyze the data to identify trends and correlations in crop production, soil quality, and weather pattern. Then I will use R or Tableau to create a web map that visualizes crop yields across different counties in Iowa over time. After that I will conduct a soil analysis to identify trends and correlations in soil quality across Iowa's fields, and monitor weather patterns in the region to identify correlations between weather events and crop yields. If I have time I also plan to use remote sensing technologies (such as satellites) to monitor plant growth and health and create a vegetation map. Finally, I will write a report summarizing the analysis and findings of the project, and repare a presentation to showcase the project and its results.