**CSCE 5320: Scientific Data Visualization**

**PROJECT PROPOSAL**

**GITHUB LINK:**

**https://github.com/TogaruPravalika/DV\_Visualizing-the-impact-of-climate-change-on-global-agriculture**

**PROJECT TITLE**

VISUALISING THE IMPACT OF CLIMATE CHANGE ON GLOBAL AGRICULTURE.

**TEAM MEMBERS**

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**MOTIVATION**

The goal of "Visualizing the Effect of Climate Change on Global Agriculture" is to increase public understanding of how climate change may affect the world's food supply and agricultural output. Worldwide variations in temperature, precipitation patterns, and extreme weather events are already having an impact on agricultural productivity, resulting in lower crop yields, food shortages, and higher food costs.

This project can assist policymakers, farmers, and other stakeholders in better understanding the potential risks and challenges associated with climate change and in developing strategies for adapting to and mitigating these impacts by visualizing data on the impact of climate change on global agriculture. The project can also aid in educating the general public about the significance of taking action on climate change and the part that agriculture plays in tackling it.

The ultimate objective of this project is to employ data visualization and analysis to enhance efforts to address the effects of climate change on agriculture and food security and to encourage more informed decision-making.

**SIGNIFICANCE**

"Visualizing the Effect of Climate Change on Global Agriculture" is significant because it has the ability to raise awareness of how climate change is affecting food security and agricultural output around the world. Millions of people around the world depend on the agricultural sector as a source of food and a living. Nonetheless, the implications of climate change on agriculture are already evident in many areas and are anticipated to worsen with time.[1]

This project can assist policymakers, farmers, and other stakeholders in better understanding the potential risks and challenges associated with climate change and in developing strategies for adapting to and mitigating these impacts by visualizing data on the impact of climate change on global agriculture. For instance, illustrating the effects of changes in temperature and precipitation on crop yields can assist farmers in selecting the right crops to plant at the right time, and illustrating the effects of extreme weather events can assist policy makers in preparing for and responding to disasters like floods and droughts.[2][3]

Also, this project has the ability to increase public awareness of how critical it is to address climate change and its effects on food security worldwide. This initiative can assist in educating the public about the need for climate action and the part that agriculture plays in combating global climate change by providing data in an understandable and interesting way.

In general, this project's significance lies in its potential to use data visualization and analysis to foster more informed decision-making, to support initiatives to address the impacts of climate change on agriculture and food security, and to increase public awareness of the significance of addressing climate change.

**OBJECTIVES**

The following could be the major goals of "Visualizing the Effect of Climate Change on World Agriculture":

* To gather and evaluate information on how climate change is affecting crop yields, frequency and intensity of extreme weather events, temperature and precipitation patterns, and other aspects of global agricultural production.
* To create interactive data visualizations that let consumers explore and comprehend the intricate connections between ag productivity, food security, and climate change.
* To use the data visualizations to support more informed decision-making by policymakers, farmers, and other stakeholders and to increase awareness of the possible effects of climate change on global agriculture and food security.
* To find important patterns and trends in the data that might guide management and policy choices targeted at reducing the effects of climate change on agriculture and food security.
* Assist initiatives to increase climate resilience in the agricultural sector by giving decision-makers data and insights that can aid in their ability to foresee and address risks and issues related to the climate.

The overall goals of this project are to better understand the effects of climate change on global agriculture through data visualization and analysis, and to support efforts to increase climate resilience in the agricultural sector through well-informed decision-making and targeted actions.

**FEATURES**

This web application offers a range of features that make it a unique and useful tool for consumers. One of the key features is,

**Interactive mapping**: By the use of an easy-to-use, interactive map-based interface, users would be able to investigate how climate change may affect crop yields and agricultural production in various parts of the world.

Use mapping applications like Leaflet, Open Layers, or the Google Maps API to build an interactive map that overlays information on crop yields, temperature, precipitation, and other pertinent variables over a global or regional map to implement this functionality. To view in-depth details on crop yields and climate variables, users could zoom in and out of the map, pan to various regions, and hover over various places.

You might also include a slider that enables users to compare data from various years or scenarios, interactive legends, and color scales that let people examine the data in various ways to make the mapping function more engaging.

Interactive data visualizations, Customizable parameters, Real-time data updates, Multiple data sources, Accessibility, Educational resources these are the features that need to be added. And few are already existing.

Overall, incorporating an interactive mapping feature into the "Visualizing the Impact of Climate Change on Global Agriculture" project could offer a useful tool for examining how climate change is affecting agriculture in various parts of the world and for using data to guide decisions about how to tackle climate change challenges.

**REFERENCES**

**1.** Foley, J., Ramankutty, N., Brauman, Solutions for a cultivated planet.

<https://www.nature.com/articles/nature10452>

Published on 12 October 2011

**2.** Ji Lin,Di Bai,Renjie Xu and Haifeng Lin, Improved tea disease detection based on attention mechanisms.

<https://www.mdpi.com/>

Published on March 2023

**3.** JW Jones, et al., Use of crop models for climate-agricultural decisions.

<https://www.pnas.org/doi/abs/10.1073/pnas.1222463110>

**4.** Bennett, J., Blangiardo, M., Fecht, Vulnerability to the mortality effects of warm temperature in the districts of England and Wales.

<https://www.nature.com/articles/nclimate2123#citeas>

Published on 23 March 2014