CVEN 5370 Mini Project 1

- You are required to work individually on this project.

- You need to submit a Jupyter Notebook and Relevant files (Input files) in a zip format via Github link

- You need to also upload a 10 minute video on YouTube or similar platform that describes your work and major results that you obtained.

- Due Date – Friday 27th Sept. 2024 – By 5:00 PM Central (no late submissions allowed)

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In this project you will work with national bridge inventory data (NBI) that is available at: https://www.fhwa.dot.gov/bridge/nbi.cfm

Download two consecutive years of data (say 2022 and 2023) for Texas. Identify those bridges that were surveyed in 2023 but not in 2022. Show these on a map,

Your goal will be to predict the bridges sampled in 2023 (but not in 2022) as to their Rating of the Deck, Culvert and Channel /Channel Protection. These are coded in values of 0 – 9. Divide them into two categories Less than Satisfactory (0) ; Satisfactory or better (1).

Perform a logistic regression to predict the probability of the Bridge elements being less than satisfactory. Use the inputs available about the structure, loading, age, etc that are available. You can do a quick literature review to see what others have used.

Predict the state of the bridges that were not sampled in 2022 but in 2023. Visualize these using a map. Color code the probabilities to indicate risk of failure (defined here as probability of being less than satisfactory).

You shall use Python for the project.

Useful Reference:

Recording and Coding Guide for Inventory and Appraisal of National Bridges – FHWA Report Available online: https://www.fhwa.dot.gov/bridge/mtguide.pdf