Case Study Rubric

DS 4002 – Spring 2024 - Addison Lowman
Submission format: Submit a link to your GitHub repository and a PDF copy of your final presentation.

Individual Assignment
General Description: The objective of this project is to classify various, distinct classes from tiny images in an accurate manner to measure its ramifications on image-recognition CAPTCHAs. Once the analysis is completed, submit a link to your case study repository and a PDF of the final presentation.

Preparatory Assignments – The case study description and attached resource materials.

Why am I doing this? As a second-year student, this assignment serves as a crucial stepping stone in your development as a data scientist. By meticulously following through on this assignment, you lay the groundwork for achieving the objectives outlined in the project's general description. The focus extends beyond the final results to encompass the process itself, emphasizing the importance of thorough documentation. This assignment offers a platform for growth and learning, encouraging you to excel both academically and professionally.

- Learning Objective: Understand the fundamentals of image classification
- Learning Objective: Enhance documentation and presentation skills
- Learning Objective: Foster critical thinking and problem-solving skills

What am I going to do? Within this project, you will be required to develop a presentation for the FBI Cyber Division as if you are an intern supporting cyber security goals. After reading through the information provided in GitHub, you will then determine which modeling approach you will use and analyze the provided data. After you conclude, you will prepare a presentation to communicate your results and walk the audience through your process.

- Github repository and data set – to provide resources like code and data
- Presentation: A short report to demonstrate your understanding and findings

All of this will be submitted electronically via a link to a GitHub repository and a PDF copy of the presentation.

Tips for success:

- Understand the project objectives: Ensure a clear understanding of the project's goals and objectives
- Familiarize yourself with the dataset: take some time to explore and understand the CIFAR-10 dataset
- Document your process: Maintain detailed documentation of your analysis procedures and findings throughout the project.

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How will I know I have Succeeded? You will meet expectations when you follow the criteria in the rubric below.

Formatting	- A GitHub repo (and cloud storage folder if necessary) containing all materials - Submit a link to the repo - Everything is contained in the repo or linked to it if appropriate. - PDF Presentation - About 7 slides - PDF format for submission to collab
GitHub Repository	- <u>Goal</u>: Complete documentation of your project, so future researchers are able to down this repository and produce the same conclusions. - README.md: An orientation to everyone who comes to your repository, it should enable them to get their bearings. Use markdown headers to divide content. - SRC FOLDER: Contains all the source code for your project. Include all the scripts you used. - DATA FOLDER: Contains all of the data for this project. Must include initial data and final analysis data. - OUTPUT FOLDER: Contains all of the output generated by your project, e.g. figures, tables, etc.
Presentation	- <u>Goal</u>: Present your findings in a clear and concise manner. Be able to demonstrate your analysis plan and the conclusions you made from the analysis - About 7 slides - Structure - Title & Outline - Motivation and Modeling Approach - Restate Hypothesis, Research Question, and Modeling Approach - Tricky Analysis Decision - Think about a judgment call you had to make in your project and describe why it matters and why it was tricky. - Bias and Uncertainty Validation - Results/Conclusions

	- Should be mostly figures and then you will expand on them once you present o Next Steps - What can we do now that we have your conclusions? o References/Resources/Acknowledgements