Case Study Rubric

DS 4002 – Spring 2024
Due: TBD
Submission format: Upload link to GitHub repository to Canvas
Type: Individual Assignment

Why am I doing this? This is your opportunity to showcase your technical and conceptual skills through image analysis. This case study will allow you to leverage your data science knowledge through object detection analysis for camouflaged and non-camouflaged images. As you work through this assignment, you will be exposed to ways object detection analysis can be applied in real-world situations.

What am I going to do? Using your technical and conceptual data science skills, you will have the opportunity to conduct an independent case study. You will ultimately provide a deliverable that covers all requirements and walks you through the entire image analysis process. This deliverable will include:

- A github repository containing all materials used including code, necessary data, and results

Tips for success:

- You will be working in Python and RStudio. Familiarize yourself with both languages to perform analysis more efficiently.
- Explore object detection models: this project will provide you with resources to perform object detection with MobileNetSSD. However, there are many different machine learning algorithms designed for object detection. If another model suits your needs better, work with that one instead. Be sure to explain why you chose the model you did.
- Be careful with naming files: if you choose to use other images from the original dataset, be sure to double check you rename the file name accordingly.

How will I know I have Succeeded? You will meet expectations on CS3 Create Case Study when you follow the criteria in the rubric below.

Formatting	● One GitHub Repository (submitted via link on Canvas) o Create a new GitHub repository for the assignment titled 'CS - Camouflaged Image Analysis' that contains the following: ▪ README.md ▪ LICENSE.md ▪ Data Folder ▪ Scripts Folder ▪ Results Folder
README.md	● Goal: Provide a summary of your case study ● Brief summary of what you've produced in the case study and contents of your repository ● Provides sufficient information to guide people through your repository and is displayed in an organized manner

LICENSE.md	● Goal: Explains the terms under which a visitor can use and site your repository ● Select an appropriate license from the GitHub Options list on repository creation (Typically, the MIT license is appropriate).
Data Folder	● Goal: Include all data used for this project. ● Include the initial data and final data analyzed if it fits in GitHub. ● Include any produced csv files if writing any results into a csv or xlsx file. ● A Data Appendix file saved as a PDF, which includes a data appendix, exploratory data analysis, and any other relevant information on your data set.
Scripts Folder	● Goal: Include all code used for the project ● Code must have appropriate comments throughout. ● Include scripts used to execute object detection analysis on your data set ● Include scripts used to produce any tables, graphs, or other relevant output illustrating the results.
Results Folder	● Goal: Display your findings and lessons learned ● The results folder should include the following ○ Output.pdf: Show all relevant output, including any tables, graphs, or figures generated by your project, that are clearly labeled. ○ Summary.pdf: In no more than one to two pages, summarize the initial problem and plans to meet the deliverable, including simple graphics outlining your analysis plan. ○ Results.pdf: In no more than one to two pages, discuss the results of your study and the significance of these results in greater context. Include relevant figures if necessary. ○ Reflection.pdf: In no more than one to two pages, reflect on the case study, explaining lessons learned, challenges faced and how you overcame them, and next steps. ○ References.pdf: List all references used in this project, including a link to your acquired dataset.