

Pet Breed Classification Case Study Rubric

DS 4002 – Spring 2025 – Anvitha Bandam

Due: Monday, April 28th

Individual Assignment

General Description: Submit to Canvas a link to your GitHub repository for this project.

Why am I doing this? This case study assignment is designed to help you solidify your data science and machine learning skills by building a project from start to finish using image classification and transfer learning. You'll work with the Oxford-IIIT Pet Dataset to train a ResNet50 model and evaluate its performance using metrics like accuracy, loss, and confusion matrices. Through this, you will deepen your knowledge of reproducible workflows, structured repositories, and communicating technical work clearly to others.

- Course Learning Objective: Implement a CNN with transfer learning for image classification
- Course Learning Objective: Structure, document, and publish your analysis in a reproducible format for a technical audience

What am I going to do? You'll build a well-organized GitHub repository with all code, data, and documentation needed to replicate your results. You'll then visualize your results, and summarize your findings in a one page paper. The GitHub repository for this case study can be found at <https://github.com/AnvithaB04/CS3-DS4002>.

Deliverables include:

- GitHub repository containing your scripts, models, documentation, and results

Tips for success:

- Don't be afraid to simplify your workflow—clarity matters more than complexity
- Ask for feedback from peers, TAs, or instructors as you go
- Use the CS3 rubric to double-check that all required elements are included

How will I know I have succeeded? You will meet expectations on your case study when you follow the criteria in the rubric below.

Spec Category	Spec Details
Formatting	<ul style="list-style-type: none"> ● One Github Repository (submitted via link on Canvas) ● To ensure reproducibility, the repository will adapt parts of the TIER Protocol 4.0. In a nutshell, the top level page of the repository should contain: <ul style="list-style-type: none"> ○ A README.md file (which auto displays) ○ A LICENSE.md file (use MIT as default) ○ A SCRIPTS folder ○ A DATA folder ○ AN OUTPUT folder ○ A summary file
README.md	<ul style="list-style-type: none"> ● Goal: This file serves as an orientation to everyone who comes to your repository, it should enable them to get their bearings. ● Use markdown headers to divide content. ● Make an H2 (##) section explaining the contents of the repository ● Section 1: Software and platform section <ul style="list-style-type: none"> ○ The type(s) of software you used for the project. ○ The names of any add-on packages that need to be installed with the software. ○ The platform (e.g., Windows, Mac, or Linux) you used. ● Section 2: A Map of your documentation <ul style="list-style-type: none"> ○ In this section, you should provide an outline or tree illustrating the hierarchy of folders and subfolders contained in your Project Folder, and listing the files stored in each folder or subfolder.
LICENSE.md	<ul style="list-style-type: none"> ● Goal: This file explains to a visitor the terms under which they may use and cite your repository. ● Select an appropriate license from the GitHub options list on repository creation. ● Usually, the MIT license is appropriate
SCRIPTS folder	<ul style="list-style-type: none"> ● Goal: This folder contains all the source code for your project. <ul style="list-style-type: none"> ○ Your code should contain some sort of visualization, whether it be for exploratory data analysis or reporting your results ● Try to name your scripts meaningfully and document with informational comments

OUTPUT folder	<ul style="list-style-type: none"> ● Goal: This folder contains all of the output generated by your project, e.g. figures, tables, etc. ● The content here can be in progress when MI3 is complete. It should be finished during MI4 though. ● Importantly, any information like tables, figures shown in your presentation should be here. ● Use informative names for your files.
References	<ul style="list-style-type: none"> ● All references should be listed at the end of the document ● Use IEEE Documentation style

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