Seeing What Matters:

Automating Dog Breed Recognition for Real-World Impact

Hook & Scenario:

Imagine you're working a shift at a busy Charlottesville animal shelter. A new dog arrives, and it is anxious, underweight, and without any paperwork. The staff gathers around, debating whether it might be a German Shepherd mix... or maybe a Belgian Malinois... or some new mixed breed entirely. Determining the breed quickly matters because factors like medical risks, behavioral expectations, and adoption pathways all depend on it.

Now imagine you're the one who can build a tool to help them.

In this case study, you will step into the role of a data scientist tasked with creating an image-based dog breed recognition system.

Your goal isn't just academic because this is rooted in real problems shelters, veterinary clinics, and rescue organizations face daily. Being able to classify dog breeds more rapidly and accurately can influence treatment decisions, resource allocation, and even how quickly a dog finds a home.

Your Deliverable & Mission:

You'll use a curated image dataset of dog breeds and apply computational techniques to explore, analyze, and model visual patterns. Your job is to determine whether preexisting computer vision can meaningfully support staff in identifying breeds that often get miscategorized. You will produce a final deliverable that demonstrates your reasoning, methodological choices, and insights but the specifics of what to produce are defined in the rubric. This project invites you to make technical decisions, interpret results, and reflect on how machine learning systems behave when applied to real-world, high-stakes contexts involving animals and their care.

Ready to find the materials?

All materials for your case study are available here:

GitHub Repository: https://github.com/hildj/CS3-Case-Study-Create-Component-1