Car Recognition Model Deep Dive

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Unveiling the Mystery: How Neural Networks Spot Cars

The Quest:

- Demystifying the Machine: I will dive deep into the inner workings of a neural network, peering into the secret lives of its individual nodes to understand how they collectively identify cars.
- Shaping Up for Recognition: Is it the sleek silhouette, the gleaming headlights, or the iconic logos that capture the network's attention? We'll uncover the visual cues that scream "car!" to these digital sleuths.
- Beyond the Surface: Will the network's car-detecting prowess reveal hidden trends in automotive design? We'll explore how analyzing its decision-making process might offer insights into the future of cars.

Stanford cars dataset overview

Size and Scope:

- 16,185 images: Representing 196 unique car classes, from iconic classics to modern marvels.
- Balanced split: Train (8,144 images) and test (8,041 images) sets ensure robust evaluation.
- Diverse representation: Images depict cars from various viewpoints, conditions, and backgrounds.

Content and Focus:

- Rear-view focus: Images capture cars primarily from the rear, simulating a common perspective in traffic situations.
- Make, Model, Year level: Car classes typically represent specific combinations of make, model, and year, offering granular detail.
- Challenges and diversity: Variations in lighting, weather, and image quality provide realistic training scenarios.

EDA findings

There is little to no correlation to be made between the numerical points of data

Next steps

- Fit the data to a model
- Show to model data that is outside the scope of the model (any car after 2012)
- Gather insights from the predictions