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Projects Proposals

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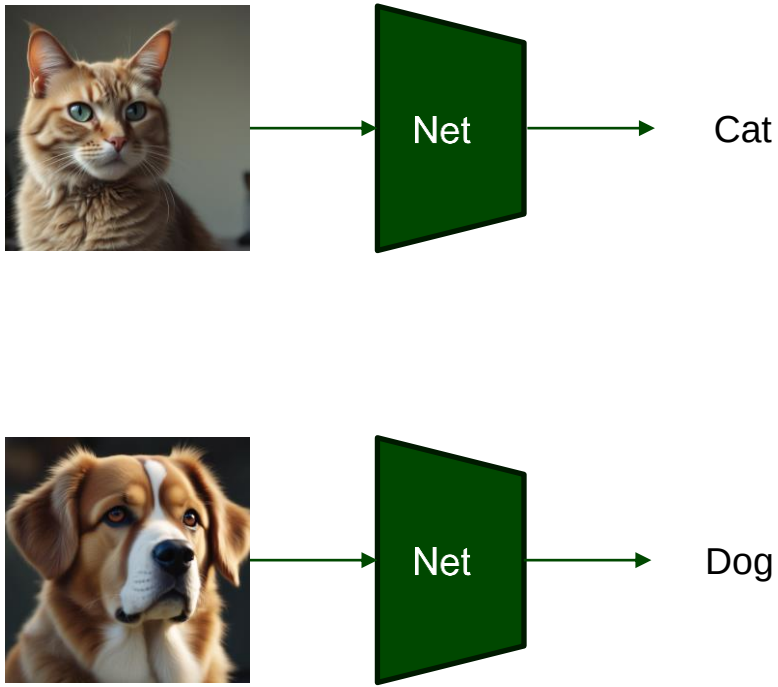
Image Classification using CNNs on the CompCars Dataset

- **Reference paper:** Yang, Linjie, et al. "A large-scale car dataset for fine-grained categorization and verification." CVPR. 2015.

Image Classification

Image classification is the task that involves categorizing images into a predefined set of classes.



Dataset

CompCars is a comprehensive dataset containing 163 car makes, divided in 1716 car models for a total of 136,726 images capturing the entire cars and 27,618 images capturing the car parts.

The dataset is well-structured and it allows to tackle multiple tasks of increasing complexity.

Possible tasks

1. Car make classification
2. Car model classification
3. Car part classification
4. Car make verification (harder)
5. Car model verification (harder)

All tasks can be made simpler/harder by considering subsets of the dataset or the ‘in the wild scenario’.

Suggestions for the project

1. As the main architecture try to implement complex CNN models such as ResNet or Inception.
2. Try different losses (e.g. focal loss for class imbalance).
3. Try contrastive losses and siamese neural networks for the verification task.