Transfer Learning

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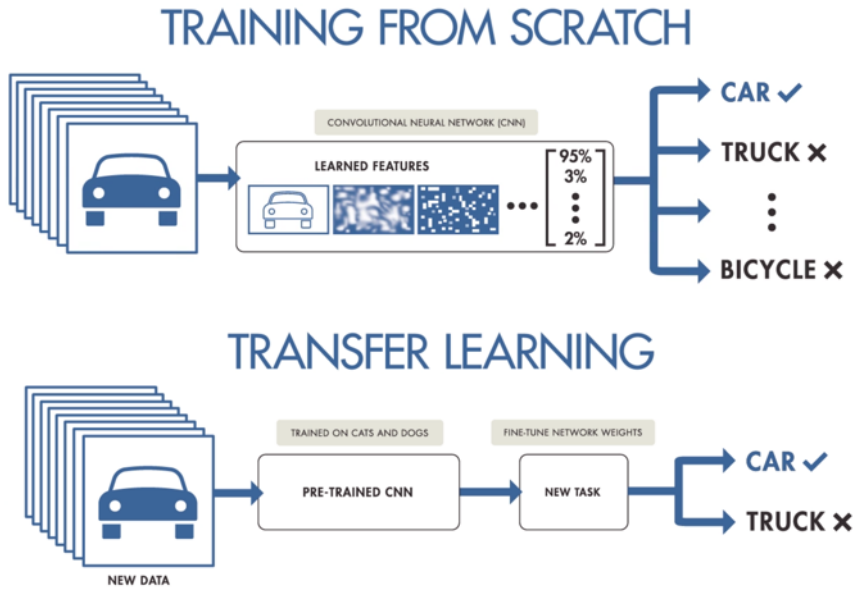
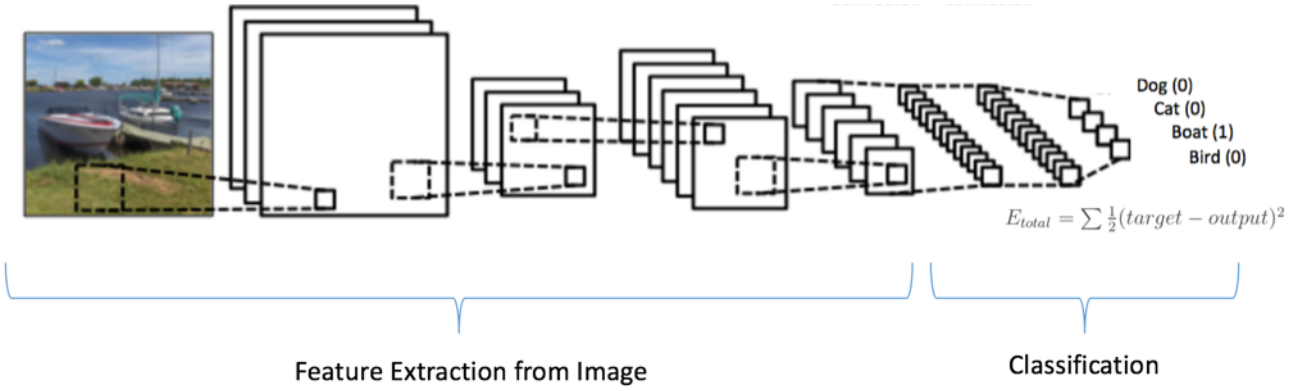
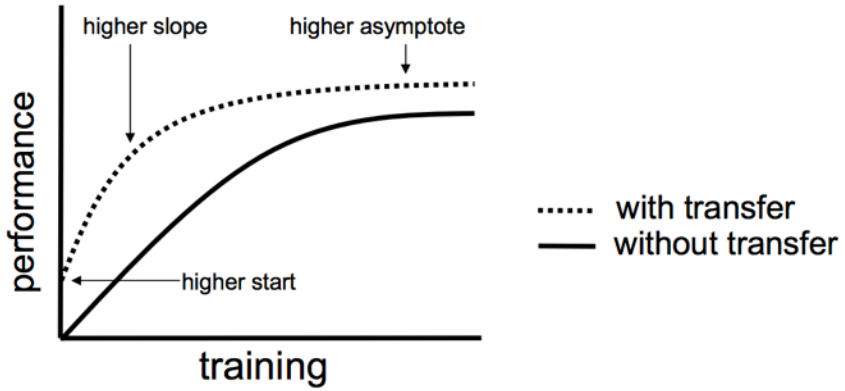
Why Transfer Learning?

- Model capacity constrained mainly by the amount of samples in our dataset.
- This constrain can be bent if we employ a model trained for a similar task using a different dataset.
- The “borrowed” model can be fully or partially employed to solve our specific problem.
- Problem: we need a model to borrow!







Transfer Learning for Clustering

- Pre-trained models research:
  - ImageNet based models (14M+ samples).
    - GoogLeNet (ILSVRC 2014).
  - Montgomery based models (we already have it!).
- Employ the model as is (no fine tuning).
- Use classification results to identify potential clusters.
- Problem:
  - Input mismatch (3k x 3k vs 224 x 224 image size).
    - Resizing at first.
    - Multi-classification per image.
  - Output mismatch: (2 vs 1,000 classes).
    - Per output node values distribution.
    - Distinct output nodes ≈ distinct clusters.