transfer learning

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Abstract

Transfer learning is the reuse of what was learned on one learning task to solve another learning task, typically one with fewer labeled data points. A common form starts from a deep net trained on a large dataset, keeps the features computed by its early layers, and adapts the remaining model parameters to the new task by fine-tuning on the small dataset. The two tasks may differ in their probability distribution of data points, in their labels, or in both; transfer helps when the features useful for the first task remain useful for the second. For example, a deep net trained on natural images is fine-tuned on a small medical imaging dataset to detect tumors.

Definition

Transfer learning aims at leveraging information obtained while solving an existing learning task to solve another learning task. For example, a deep net trained on a large natural-image dataset such as ImageNet can be fine-tuned on a smaller medical imaging dataset to detect tumors, transferring learned visual features to the new task.

Cross References

learning task, multitask learning

References

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