

## Learning Multiple Tasks using Shared Hypotheses

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In this work we consider a setting where we have a very large number of related tasks with few examples from each individual task. Rather than either learning each task individually (and having a large generalization error) or learning all the tasks together using a single hypothesis (and suffering a potentially large inherent error), we consider learning a small pool of *shared hypotheses*. Each task is then mapped to a single hypothesis in the pool (hard association). We derive VC dimension generalization bounds for our model, based on the number of tasks, shared hypothesis and the VC dimension of the hypotheses class. We conducted experiments with both synthetic problems and sentiment of reviews, which strongly support our approach.

This is a joint work with Koby Cremer.