

OBOE: Collaborative Filtering for AutoML Initialization

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Goal: Select models for a new dataset within time budget.

Given: Model performance and runtime on previous datasets.

Approach:

- ▶ **low rank** dataset-by-model collaborative filtering matrix
- ▶ **predict model runtime** using polynomials
- ▶ **classical experiment design** for cold-start
- ▶ missing entry imputation for model performance prediction

Performance:

- ▶ cold-start: high accuracy
- ▶ model selection: fast and perform well