



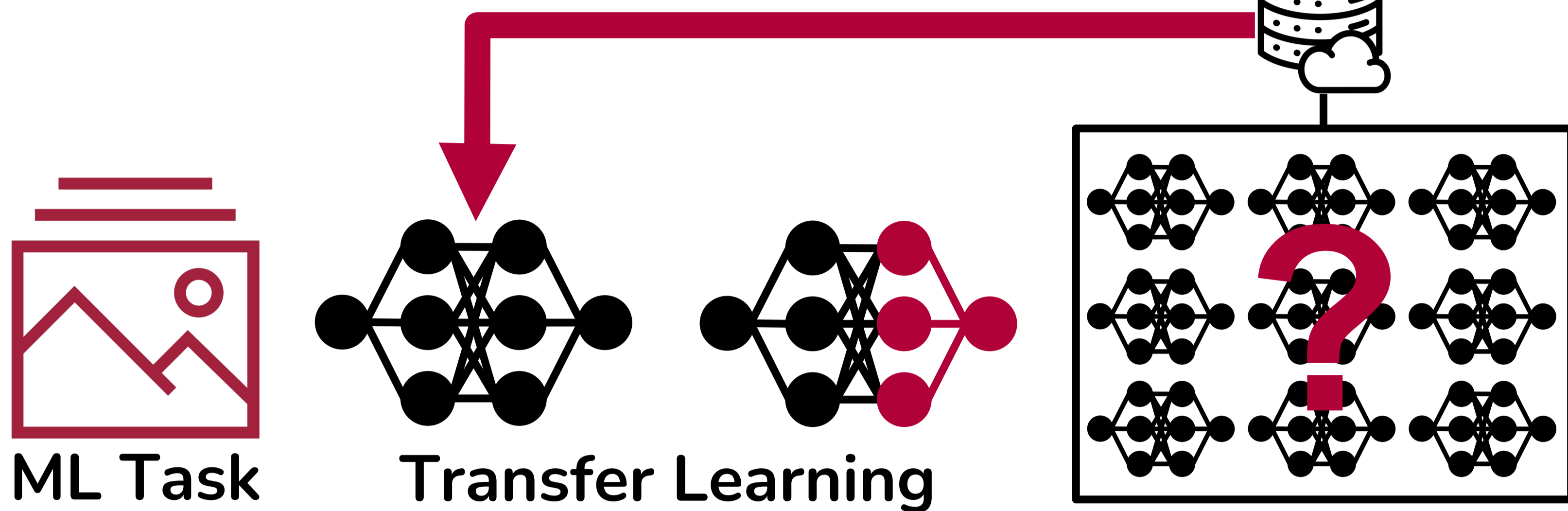
Alsatian: Optimizing Model Search for Deep Transfer Learning

SIGMOD 2025 | 22nd - 27th of June | Berlin, Germany

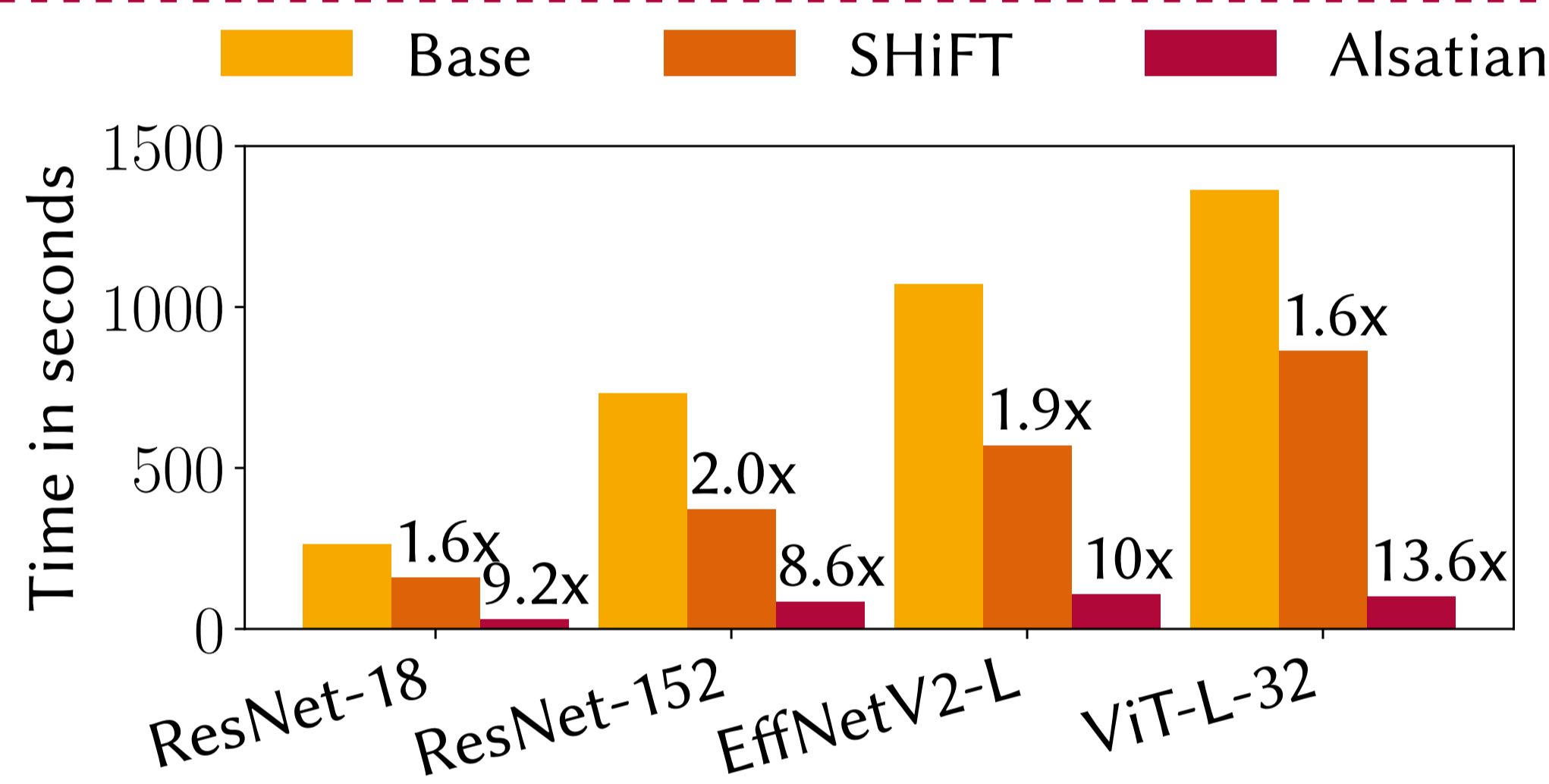
Nils Strassenburg, Boris Glavic, Tilmann Rabl



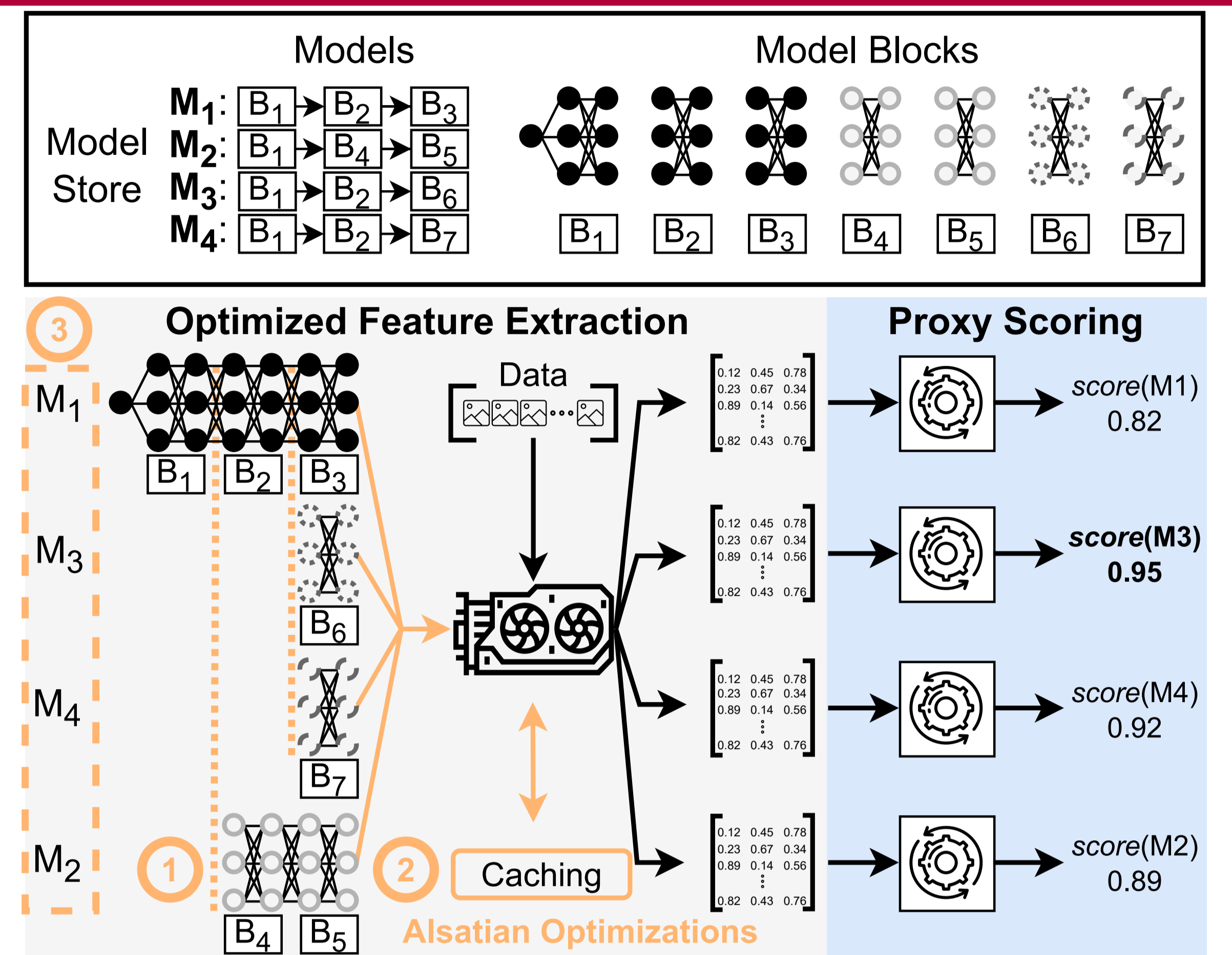
Which Base Model to Choose for Transfer Learning?



Problem: Transfer learning relies on selecting a suitable base model, but searching through candidate models is computationally expensive.



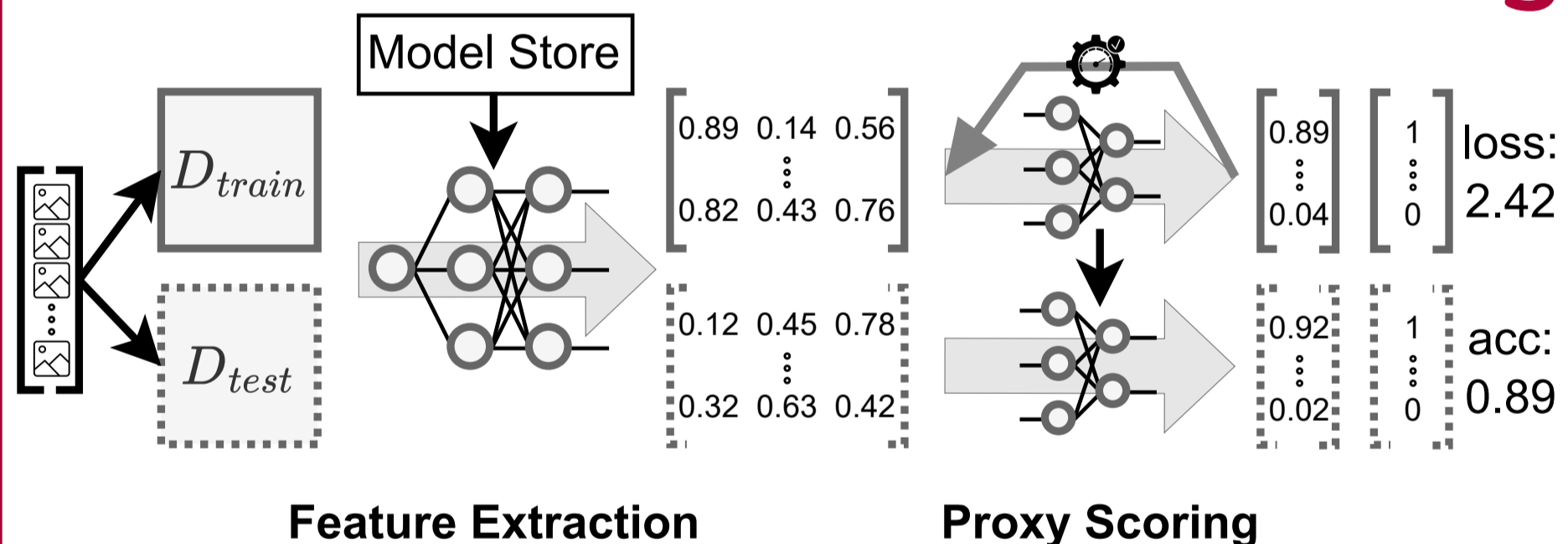
Results: Alsatian achieves up to 14x speedup over baseline approaches on computer vision and NLP tasks.



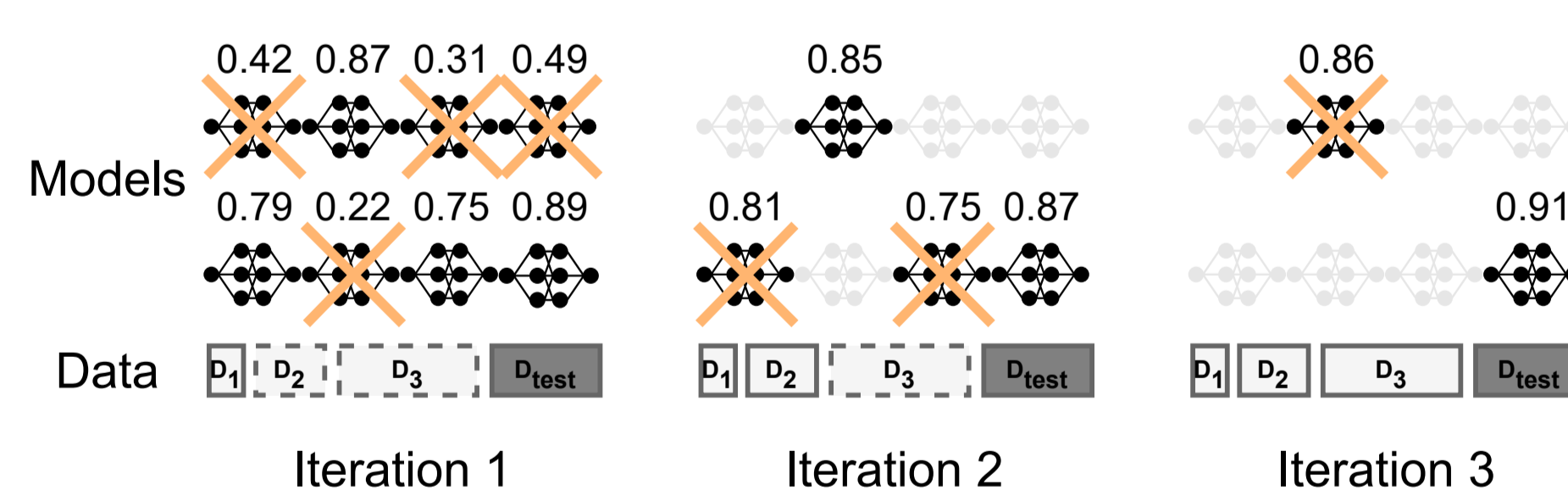
Solution: Alsatian accelerates model search by exploiting overlap between models by implementing: (1) partial model access, (2) intermediate result caching, and (3) execution planning to maximize reuse.

Background

Feature Based Model Scoring

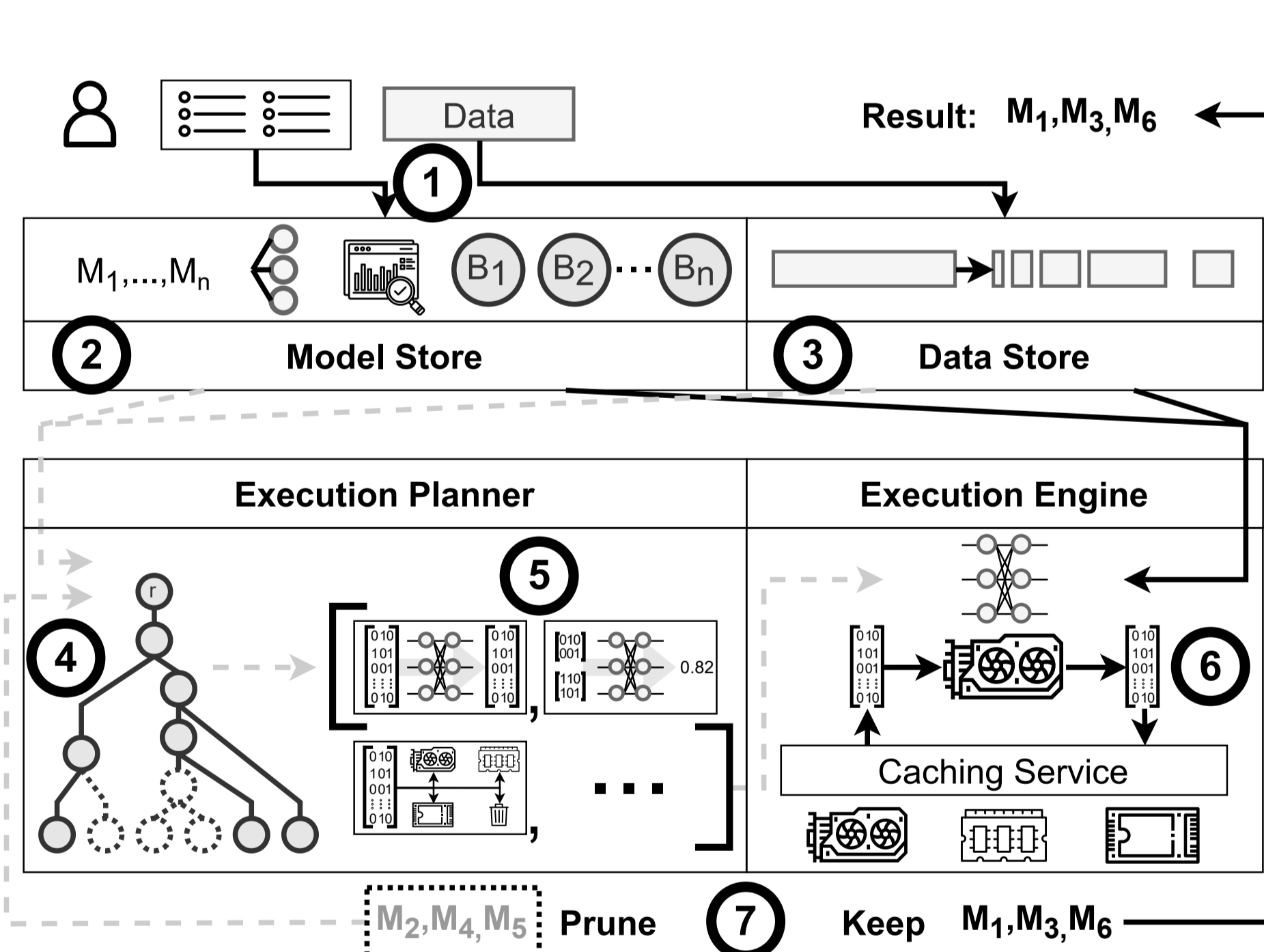


Successive Halving

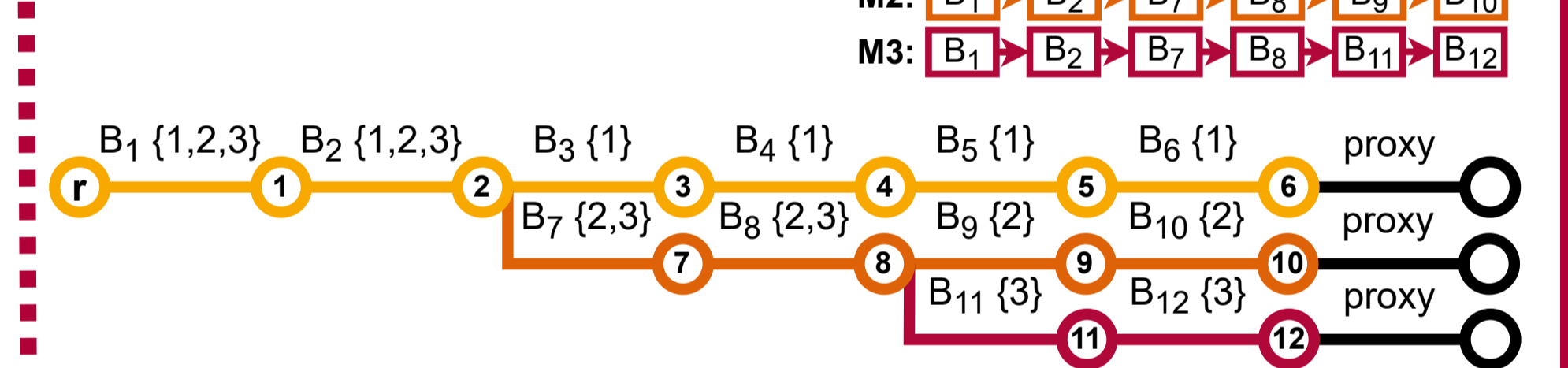


Alsatian

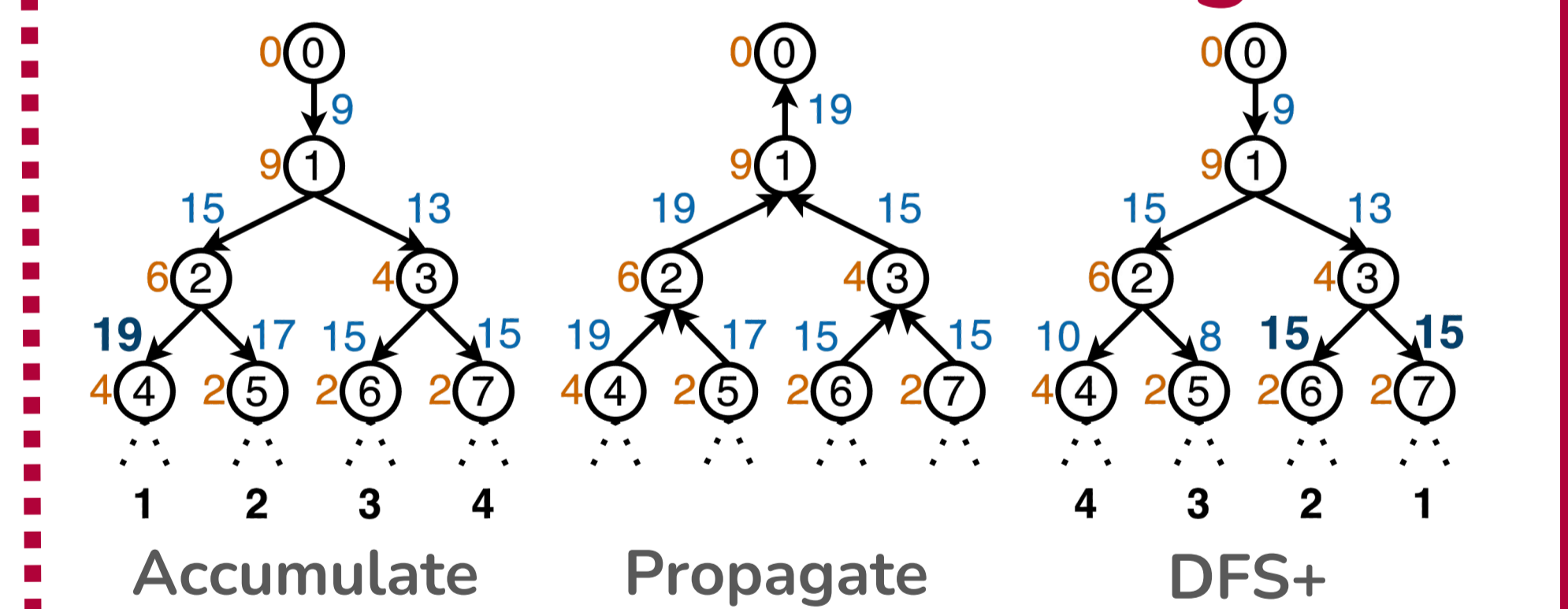
Architecture



Task Tree

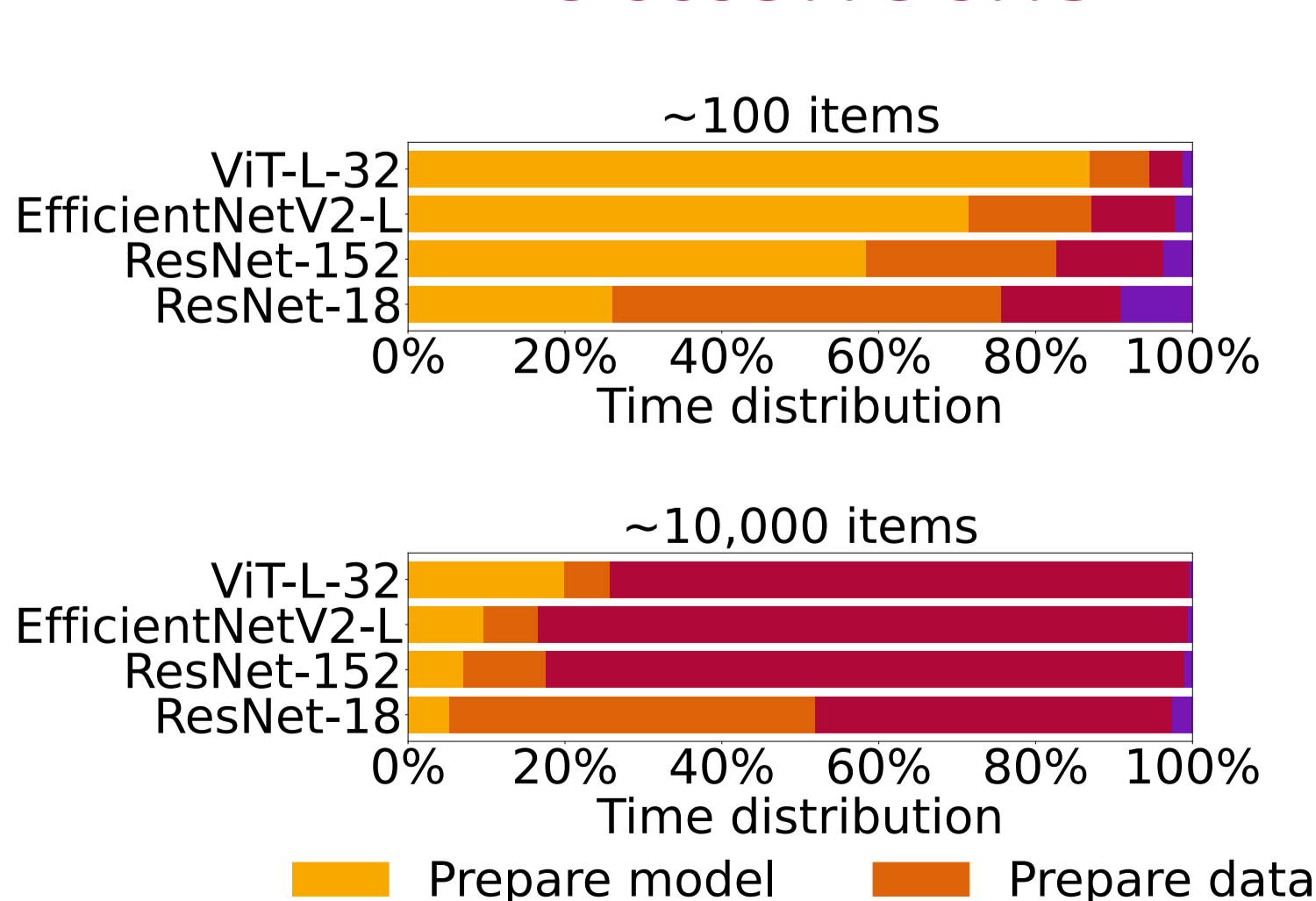


Execution Planning

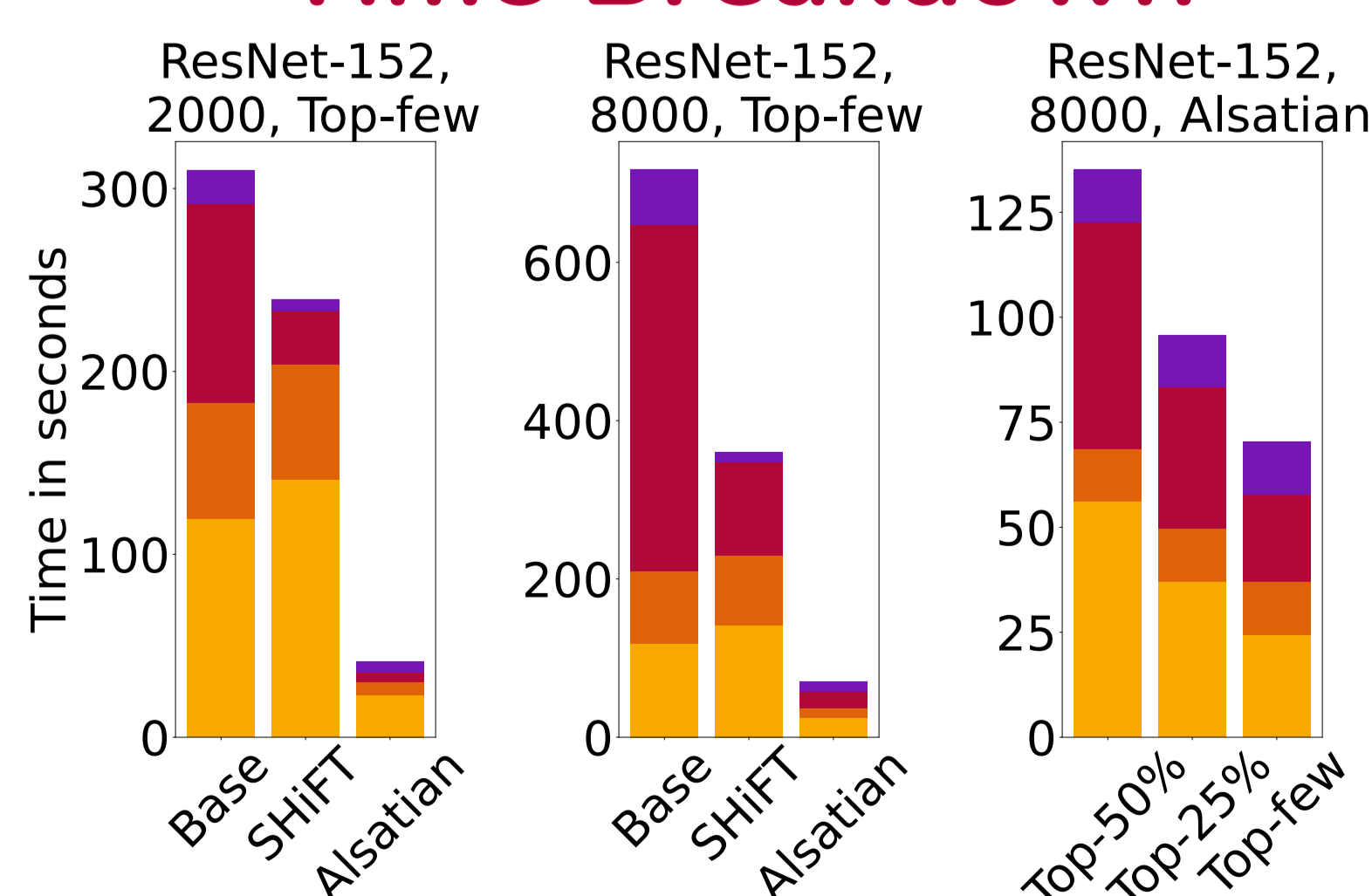


Evaluation

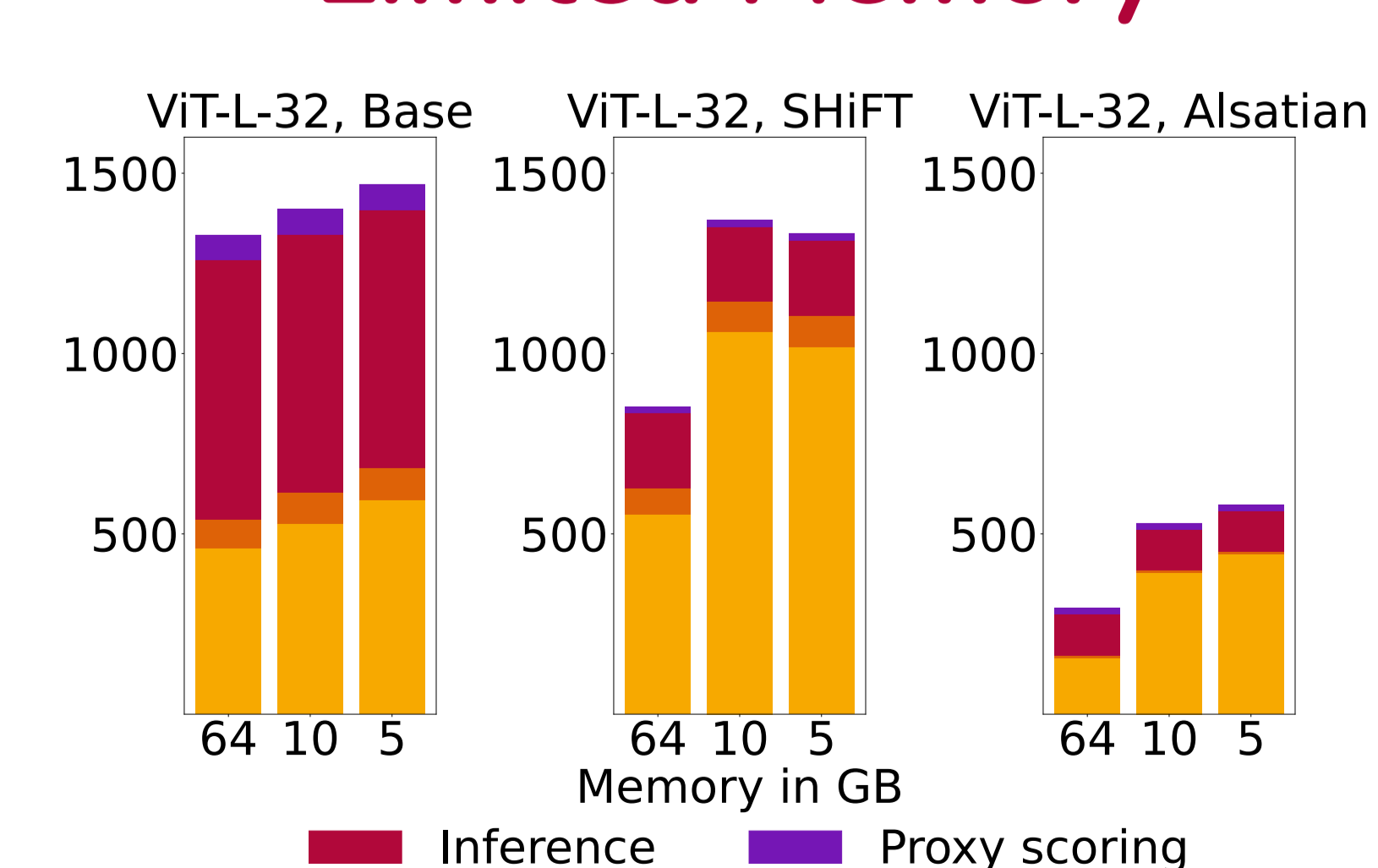
Bottlenecks



Time Breakdown



Limited Memory



HF Models

