AutoML: Practical Considerations

Introduction

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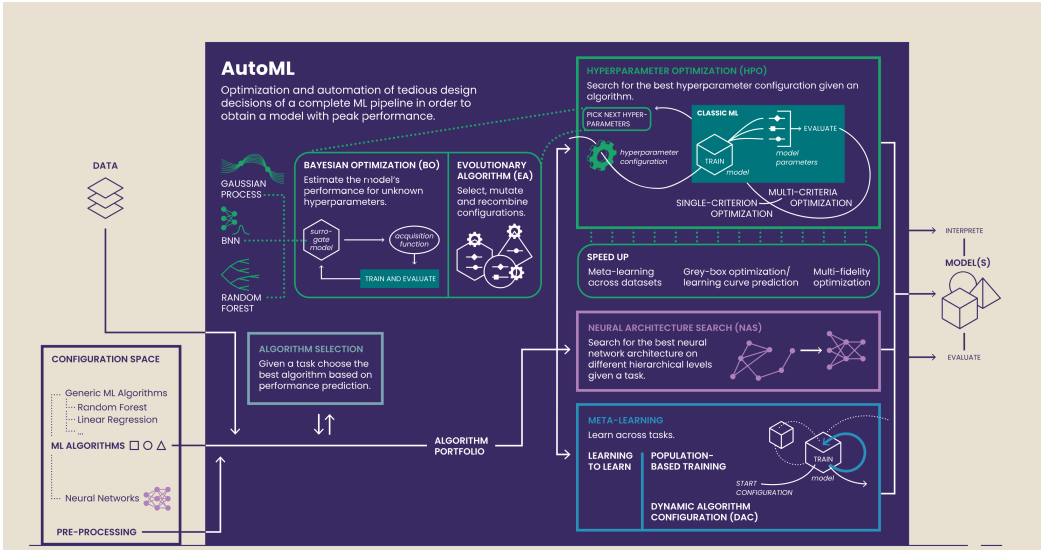
From HPO to AutoML

So far we covered

- HPO as black-box optimization
  - Grid- and random search, EAs, BO
- Speedup techniques for HPO
  - Multi-fidelity, meta-learning, ...
- Multi-objective HPO
  - NSGA-II, ParEGO, ...
- Neural Architecture Search (NAS)
  - One-Shot approaches, DARTS, ...

$\longrightarrow$ So far we haven't talked (much) about practical considerations.

From HPO to AutoML



What is missing?

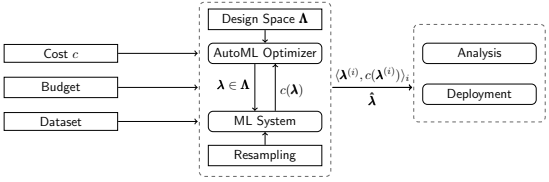
What do I need to know as an AutoML user?

- ~~Nothing, because it is automatic.~~
- Understand limitations of AutoML and framework.
- Know how to interpret the results.
- Maybe: Data cleaning and feature extraction.

Ingredients to implement an AutoML system?

- HPO algorithm
- ML / Pipeline framework
- Parallelization / Multi-fidelity
- Process encapsulation and time capping

Practitioners view:



Academic view: