AutoML: Practical Considerations
## Introduction

Bernd Bischl   Frank Hutter   Lars Kotthoff
Marius Lindauer   Janek Thomas   Joaquin Vanschoren

From HPO to AutoML

So far we covered

- Mechanisms to select ML algorithms for a data set (algorithm selection)
- HPO as black-box optimization
  - ▸ Grid- and random search, EAs, BO
- HPO as a grey box problem
  - ▸ Hyperband, BOHB
- Neural Architecture Search (NAS)
  - ▸ One-Shot approaches, DART
- Dynamic algorithm configuration (learning to learn)
  - ▸ Adapt configuration during training

From HPO to AutoML
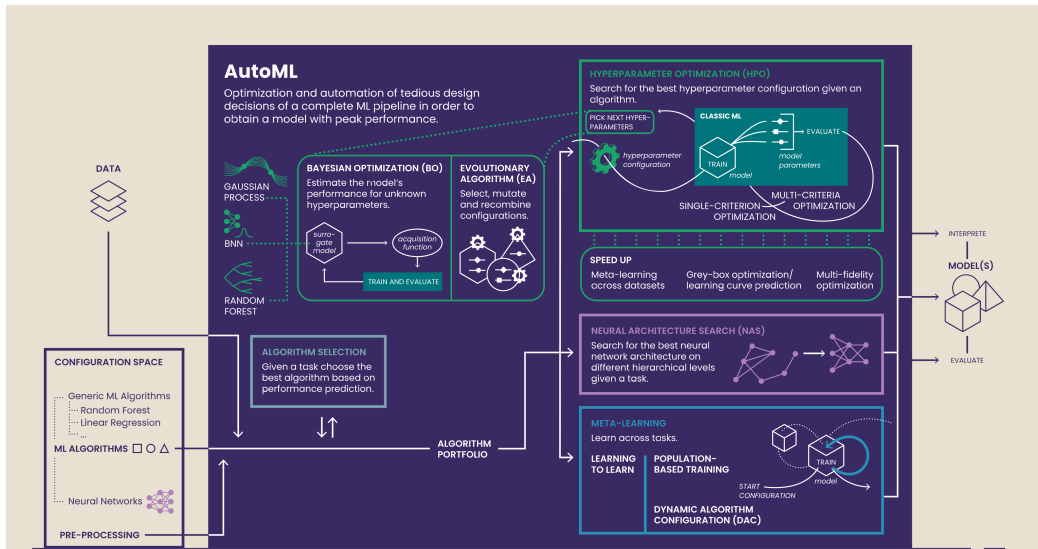
What is missing?

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 / Multifidelity
- Process encapsulation and time capping

Academic view:

Practitioners view: