

AutoML: Introduction

How is Everything connected?

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Building a Successful AutoML Tool

↪ There is not a single way for building successful AutoML tools, but there are well established ideas.

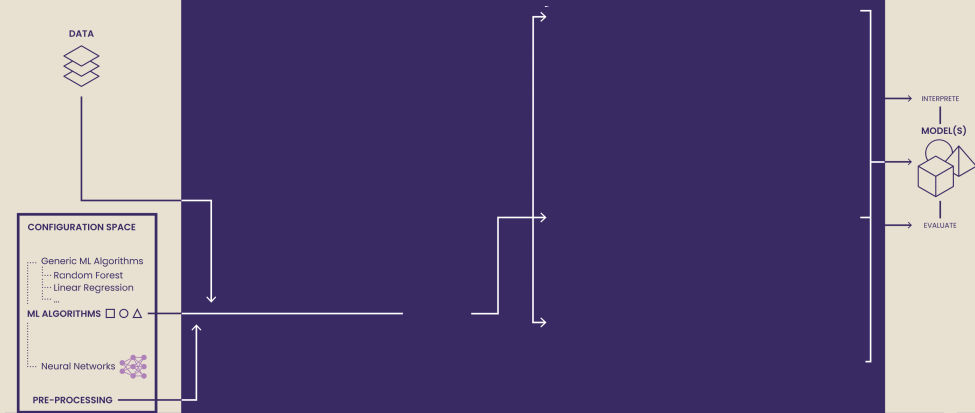
- Hyperparameter optimization
- Neural architecture search
- Model and algorithm selection
- Dynamic approaches

↪ But how can we combine all of these?

AutoML

AutoML

Optimization and automation of tedious design decisions of a complete ML pipeline in order to obtain a model with peak performance.



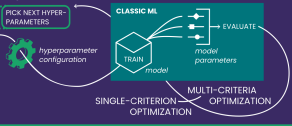
AutoML + HPO

AutoML

Optimization and automation of tedious design decisions of a complete ML pipeline in order to obtain a model with peak performance.

HYPERPARAMETER OPTIMIZATION (HPO)

Search for the best hyperparameter configuration given an algorithm.



DATA



CONFIGURATION SPACE

... Generic ML Algorithms
... Random Forest
... Linear Regression
...

ML ALGORITHMS □ ○ △

... Neural Networks



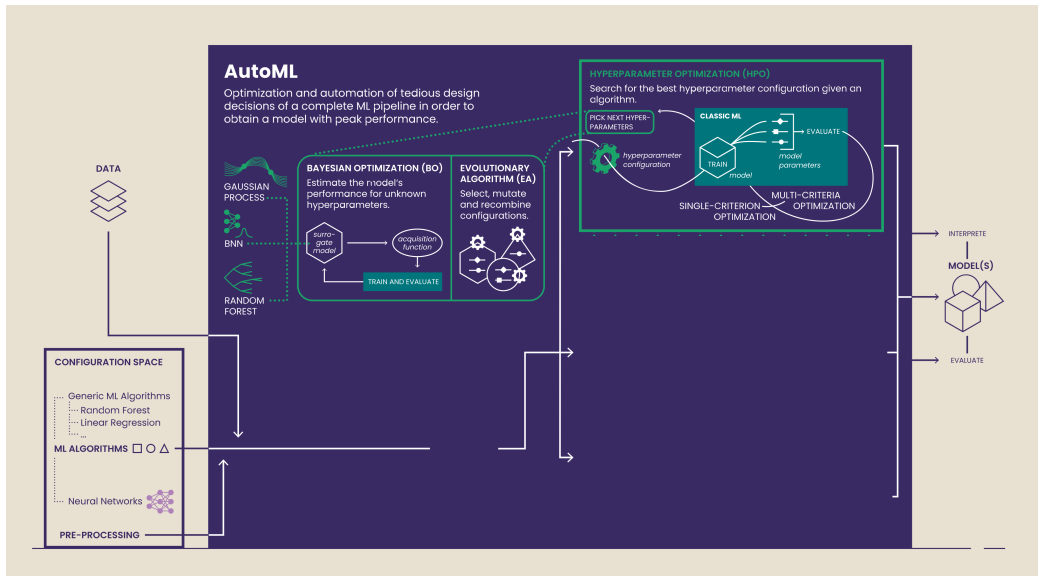
PRE-PROCESSING

INTERPRETE

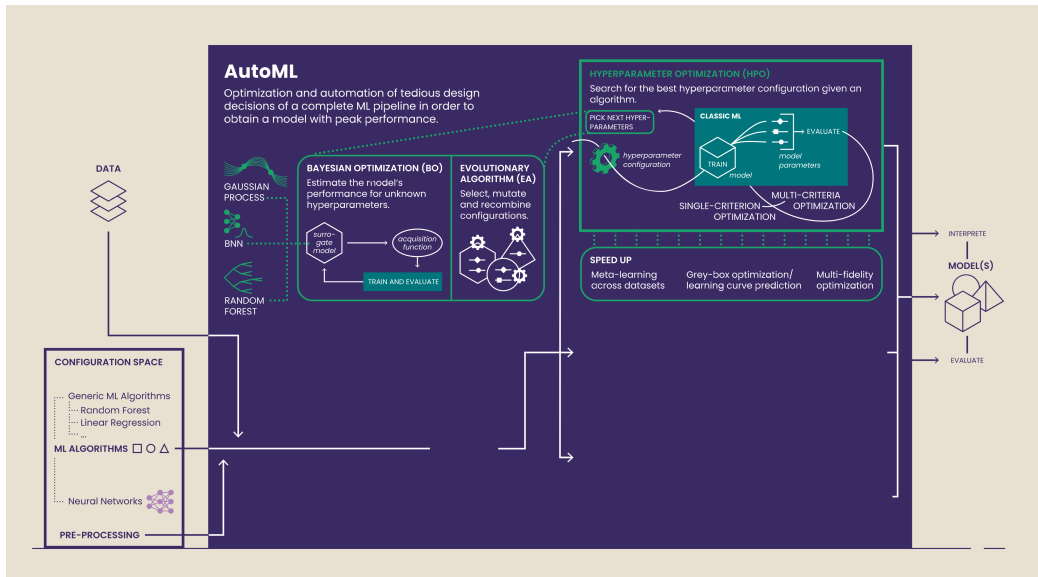
MODEL(s)

EVALUATE

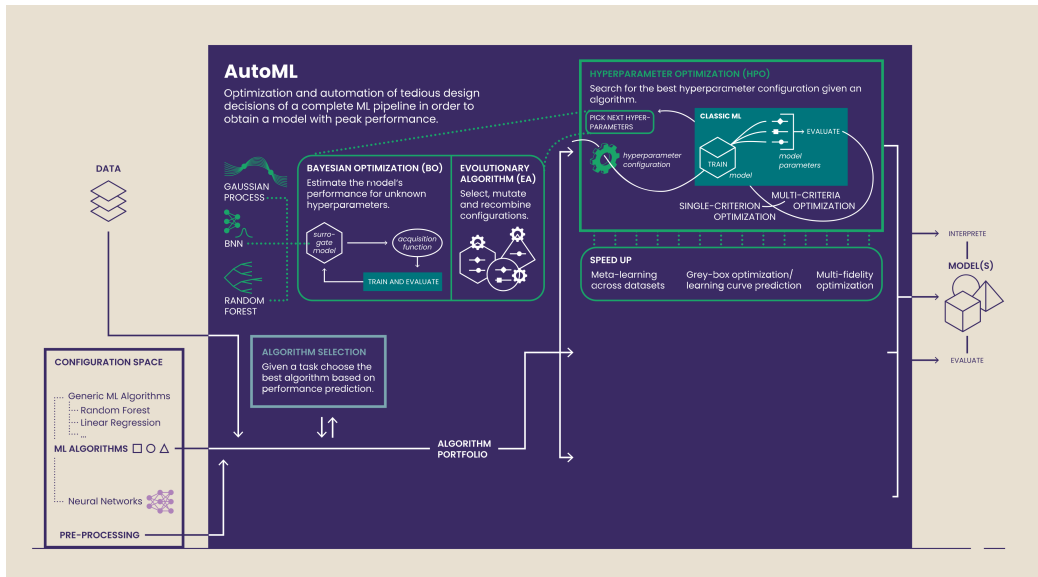
AutoML + HPO + BO



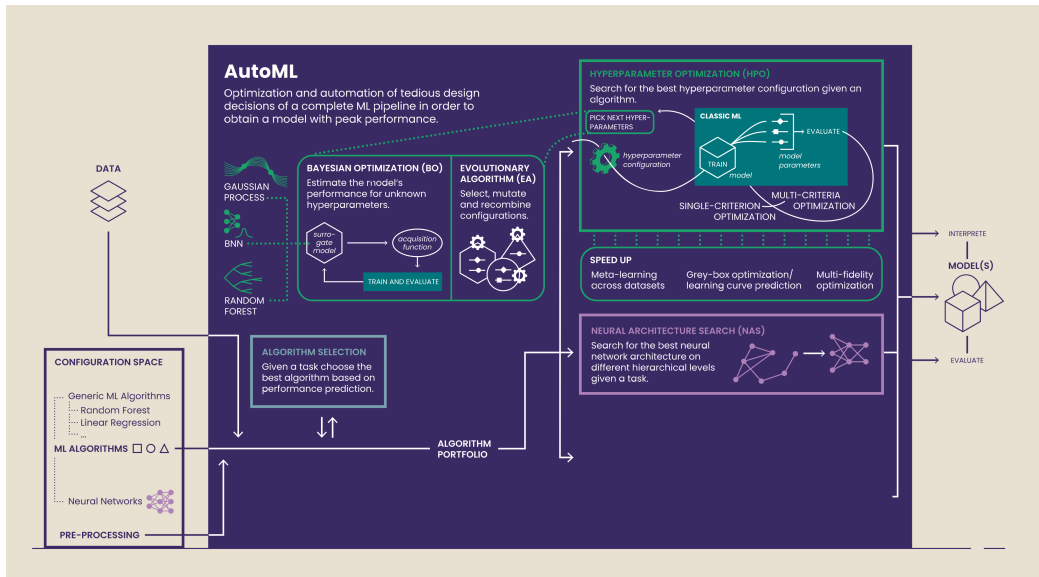
AutoML + HPO + BO + Speed up



AutoML + HPO + BO + Speed up + AS



AutoML + HPO + BO + Speed up + AS + NAS



AutoML + HPO + BO + Speed up + AS + NAS + Dynamic

