Other SMBO Algorithms

Bayesian Optimization

- Maximize (or minimize) an unknown (black-box) objective function *f(x)*
  - ✓ where x are the hyperparameters.
  - ✓ f(x) is costly to compute
- Approximate f(x) with a surrogate
  - ✓ Gaussian Processes (Section 6)
  - ✓ Random Forests (SMAC) and GBMs
- TPE, non-standard Bayesian optimization

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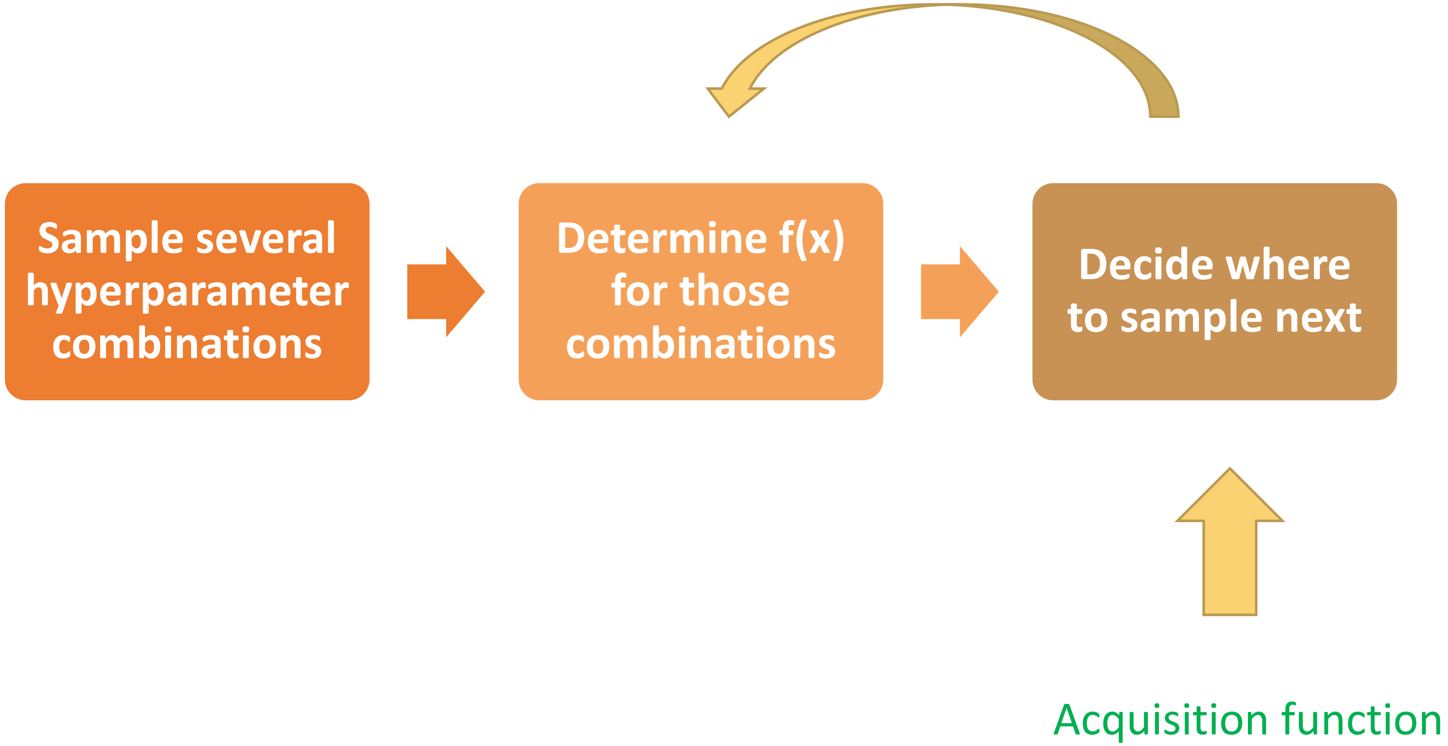
SMBO


Sample several hyperparameter combinations
Determine f(x) for those combinations
Decide where to sample next
Acquisition function

In this section:

- SMAC (random forests as surrogate of f(x))
  - *GBMs as surrogates*
- TPE, non-standard Bayesian optimization
- Acquisition functions adaptations
- Wrap up Bayesian and Basic search methods

THANK YOU

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