Me
Computer Science Department, Western Washington University

Abstract

Motivation: Current services that offer hyper parameter optimization are unwieldy or prohibitively expensive.

Goal: Create a tool that is free, intuitive to use, and offers support for multiple optimization methods.

Background

- Hyperparameters are settings of a machine learning algorithm that cannot be trained
- Configurations of these hyperparameters can dictate the efficacy of a model
- PICTURE OF LEARNING RATE VS COST GOES HERE
- Heuristic tuning is slow and requires expert level intuition

Grid Search

Grid search splits the parameter space into a grid of points. These points are then exhaustively sampled. GRID SEARCH PICTURE GOES HERE

Random Search

Random search selects configurations at random from their selected ranges. It has been found to outperform heuristic tuning as well as Grid Search. RANDOM SEARCH PICTURE GOES HERE

Bayesian Optimization

Bayesian Optimization takes in all previous evaluations and creates a multivariate Gaussian Process to model the hyper parameter space. It uses a mix of exploration and exploitation to generate future configurations with minimal use of expensive training evaluations. GUASSIAN PICTURE GOES HERE

Our Product

Tinker is a web service that allows clients to utilize the aforementioned optimization algorithms without need for implementation. ARCHITECTURE GOES HERE CLIENT API GOES HERE

Future Work

We plan on implementing other state of the art optimization methods such as HORDE and Tree of Parzen's Estimators.

References