

Hyperparameters

02457 Machine Learning Operations

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DTU Compute

Why do we optimize hyperparameters



<https://paperswithcode.com/>

Many reasons

1. Get a working model
2. Get a more robust model
3. Get better performance
4. Something else...



Image Classification

Edit Task

Computer Vision

1483 papers with code 50 benchmarks 104 datasets

About


Edit

Image Classification is a fundamental task that attempts to comprehend an entire image as a whole. The goal is to classify the image by assigning it to a specific label. Typically, Image Classification refers to images in which only one object appears and is analyzed. In contrast, object detection involves both classification and localization tasks, and is used to analyze more realistic cases in which multiple objects may exist in an image.

Source: [Metamorphic Testing for Object Detection Systems](#)

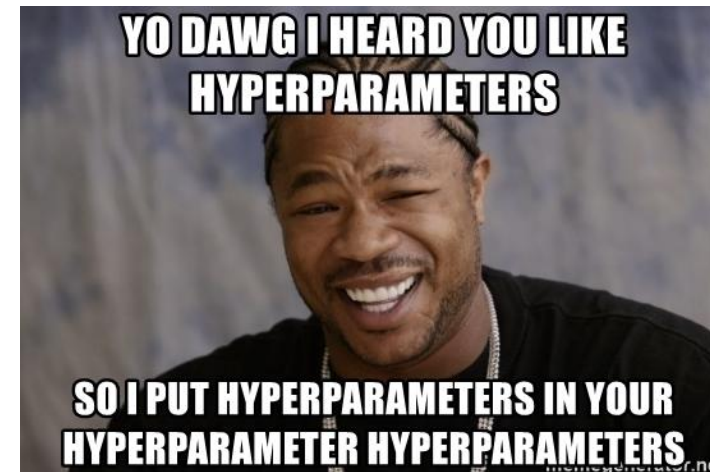
Benchmarks

Add a Result

TREND	DATASET	BEST METHOD	PAPER TITLE	PAPER	CODE	COMPARE
	ImageNet	🏆 Meta Pseudo Labels (EfficientNet-L2)	Meta Pseudo Labels			See all
	CIFAR-10	🏆 EffNet-L2 (SAM)	Sharpness-Aware Minimization for Efficiently Improving Generalization			See all
	CIFAR-100	🏆 EffNet-L2 (SAM)	Sharpness-Aware Minimization for Efficiently Improving Generalization			See all
	STL-10	🏆 Wide-ResNet-101 (Spinal FC)	SpinalNet: Deep Neural Network with Gradual Input			See all

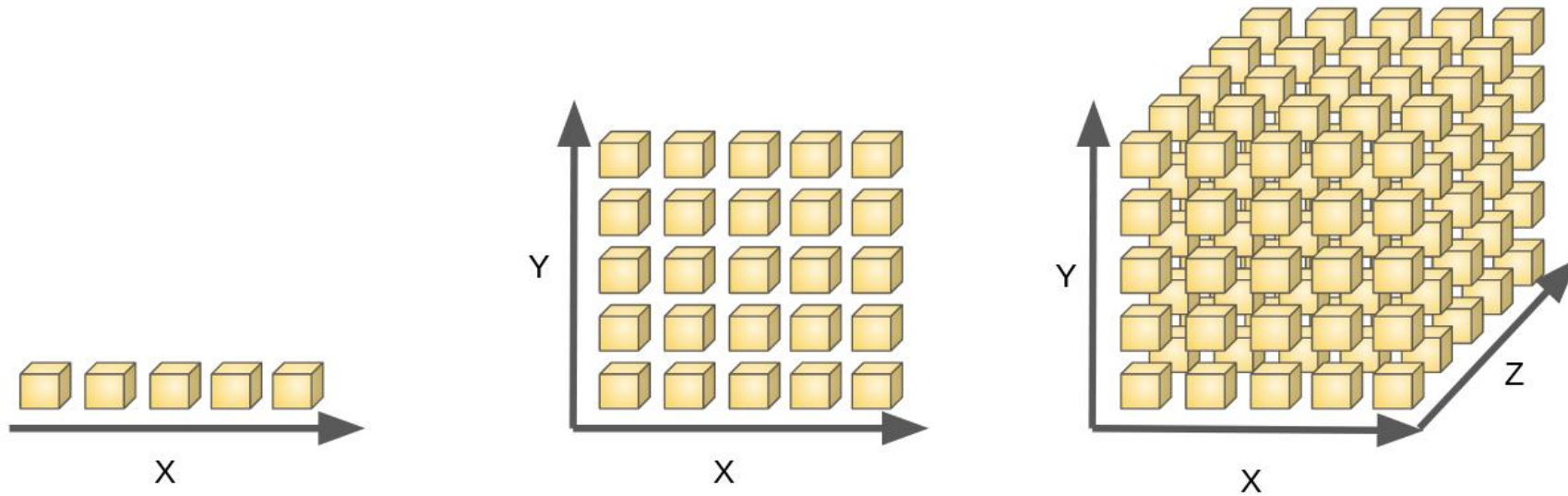
What is considered a hyperparameter?

- Everything that effects training:
 - Model architecture
 - Optimizer structure
- Question: Is the following a hyperparameter?
 - Dataset
 - Seed



What about doing grid search?

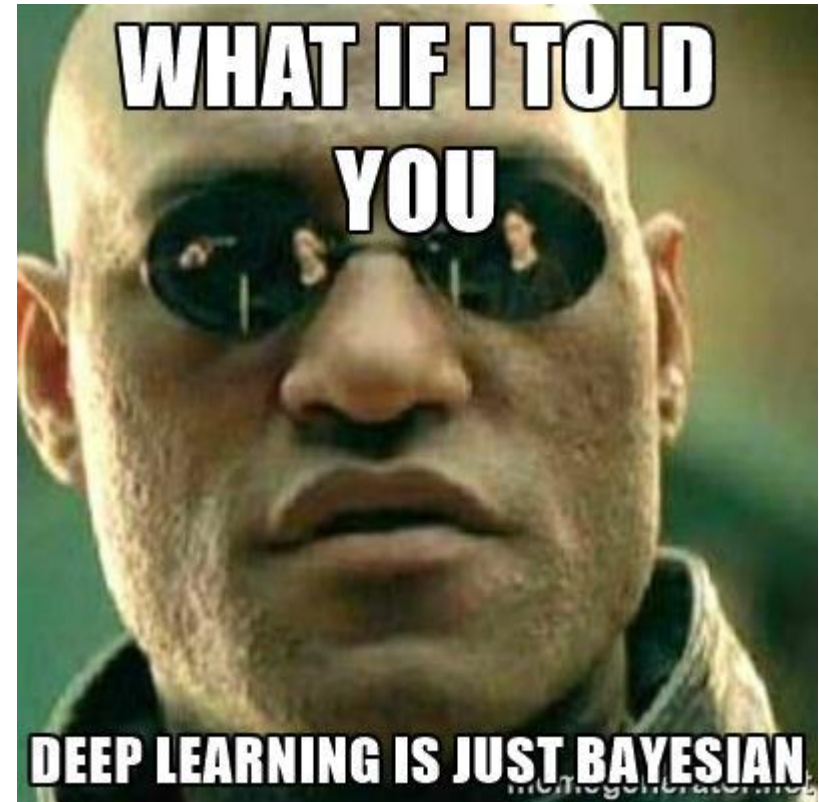
Curse of dimensionality?



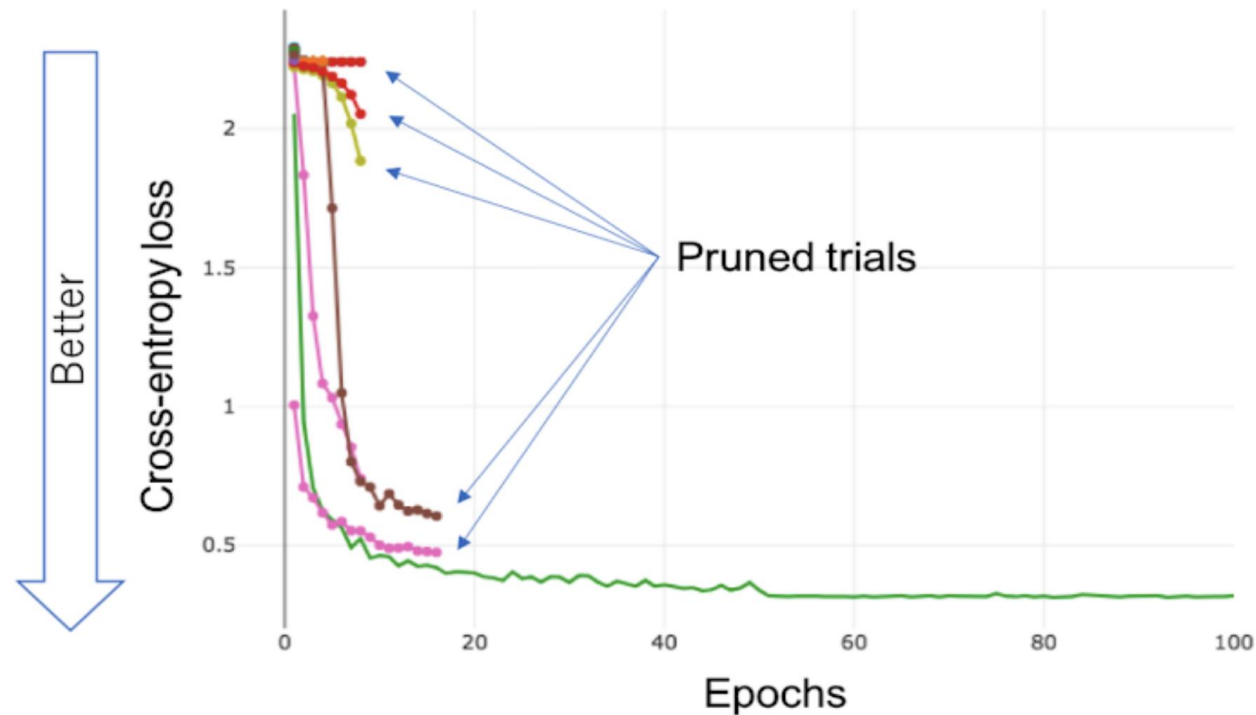
The number of combinations grows exponentially in the number of parameters we try to optimize.

Baysian to the rescue

- fafa



Pruning



Be carefull with over-pruning as you may loose some performance on the floor

Hyperparameter framework



OPTUNA

<https://optuna.readthedocs.io/en/stable/>

Meme of the day

