

Computer Vision Codebase

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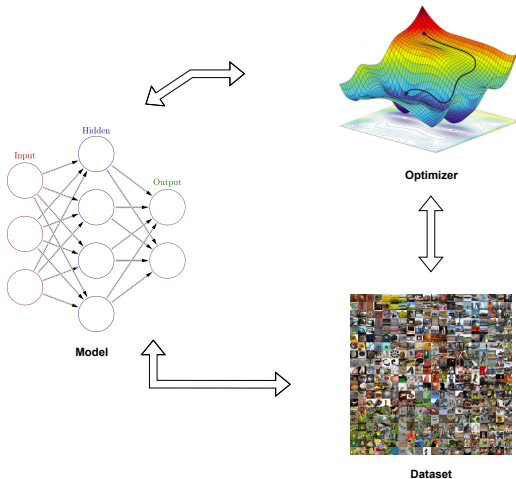
Deep Learning Development @ZIB · April 24, 2024

The aim of the repository?

- Offer a user-friendly codebase for initiating 2D Computer Vision tasks
- Primarily based on robustness experiments on images
 - White-box adversarial attacks
 - Extensible to explainability (XAI) of classifiers, counterfactual generation (CFE), etc
- Prevent negative conference reviews by ensuring complete experiments

What does it contain?

- Train deep learning **models** on various **datasets** utilizing a range of **optimizers**



Datasets, Models, and Optimizers included

- Datasets
 - 1 CIFAR10
 - 2 CIFAR100
 - 3 MNIST
 - 4 NIPS2017
 - 5 ImageNet
- Models
 - 1 Basic MLP
 - 2 Basic CNN
 - 3 Small CNN
 - 4 WideResNet
 - 5 LeNet
 - 6 ResNet18
 - 7 ResNet20
 - 8 ResNet50
 - 9 VGG19
- Optimizers
 - 1 SGD
 - 2 AdaGrad
 - 3 Adam
 - 4 NAG

Note

- Not an exhaustive list of datasets, models, and optimization algorithms (!)
- Check carefully conference requirements

Tips

- Sometimes results on a certain dataset do not transfer to another dataset

Tips

- Experiment with a different optimizer (!)
 - Tune the hyperparameters to find the best combination for your problem
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- Use built-in classes in PyTorch for other optimizers
- ```
optimizer = torch.optim.RMSprop(model.parameters(), lr=0.01)
```
- Performance of these algorithms depends on the dataset and model architecture

# Where do I find the repository?

- Currently

<https://github.com/shsad/computervision-codebase>

- Eventually will be available at

<https://git.zib.de/IOL/vision-codebase>

- Train a ResNet20 model on CIFAR10 dataset using the Adam optimizer with a batch size of 64 along with max epochs of 10

```
[] python main.py --model 'ResNet20' --dataSet 'CIFAR10' --optim 'Adam'
 --maxIterations 10 --batchSize 64 --numWorkers 2 --saveModel 1 --ver 1
```