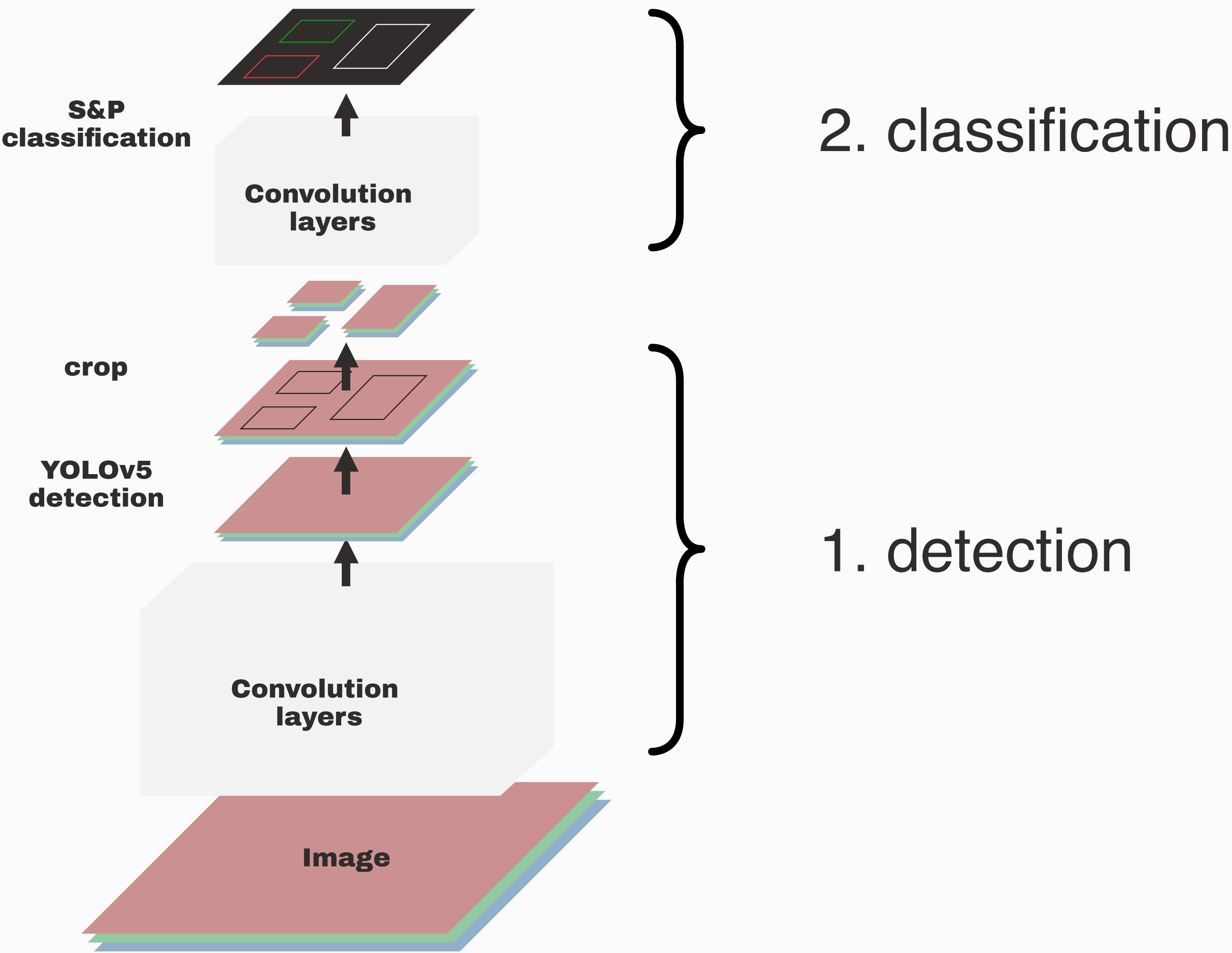




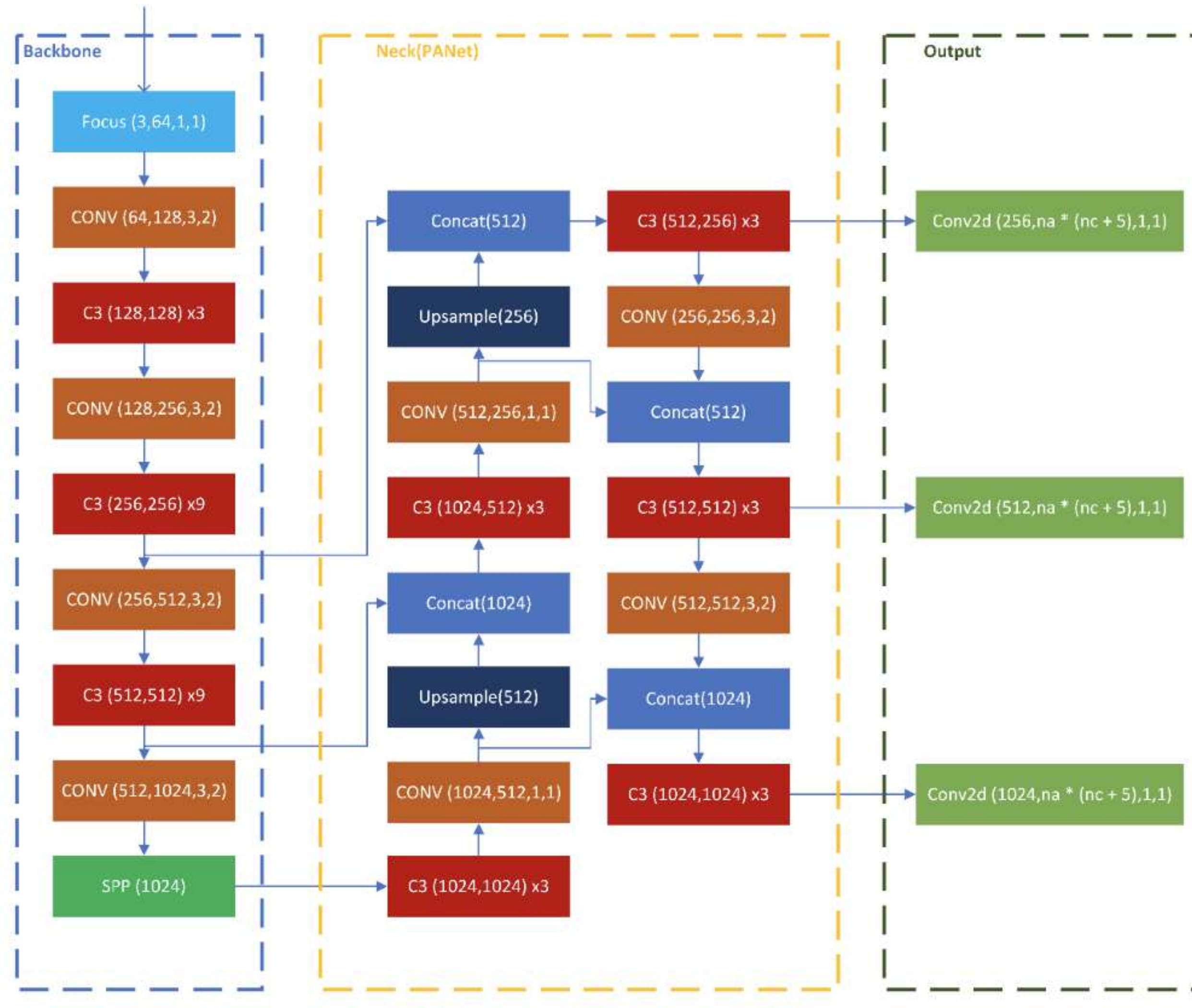
S&P TEAM

Traffic light detection and classification

Model

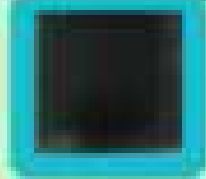


(In_channel,out_channel,kernel_size,stride); (In_channel,out_channel); (out_channel)



YOLOv5s

class = 9 for traffic lights



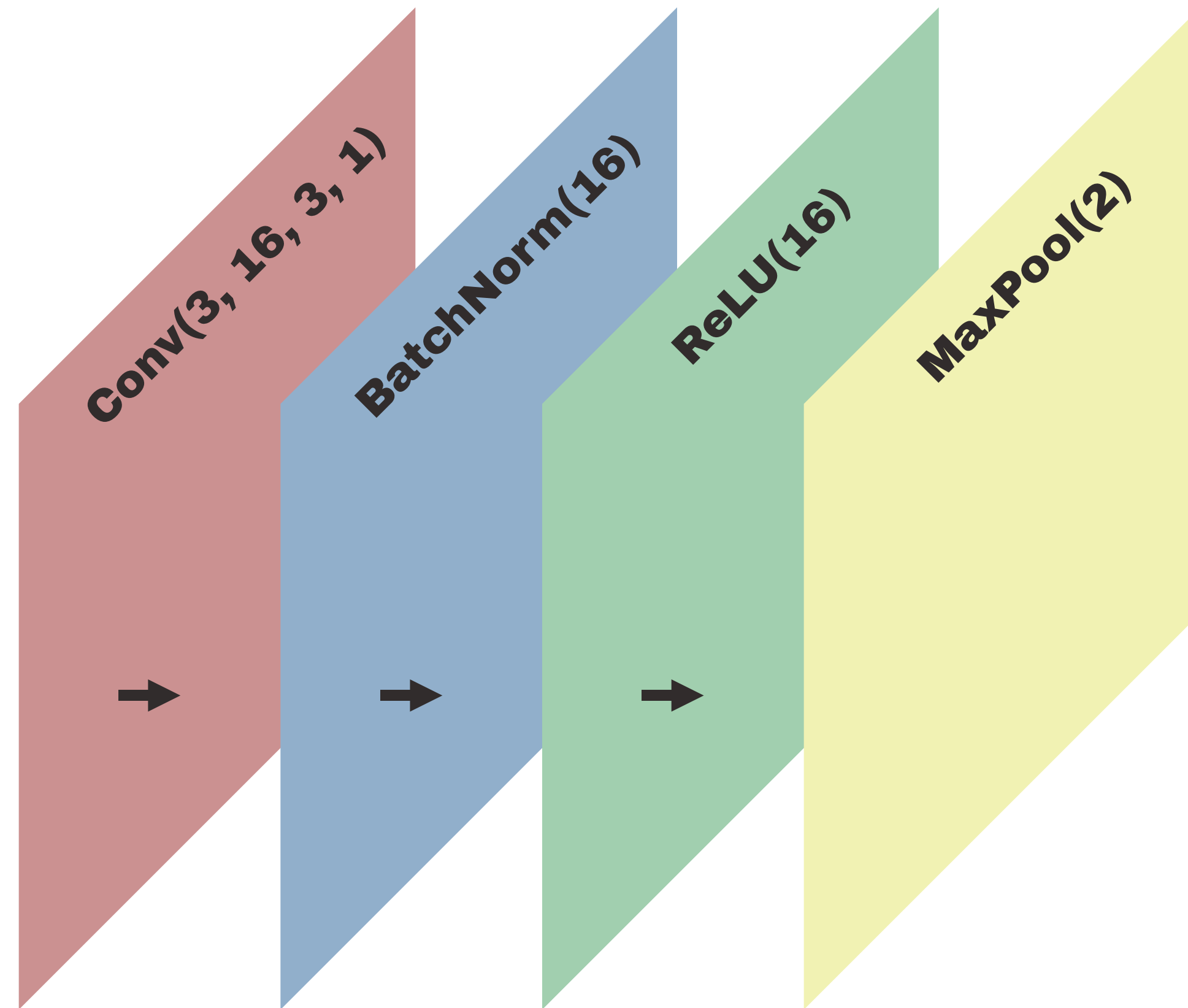
traffic light 0.56

traffic light 0.56

traffic light 0.76

traffic light 0.30
traffic light 0.40





Own architecture

4 convolutional blocks
+ 1 hidden layer



LISA dataset

training set: 24 683 images

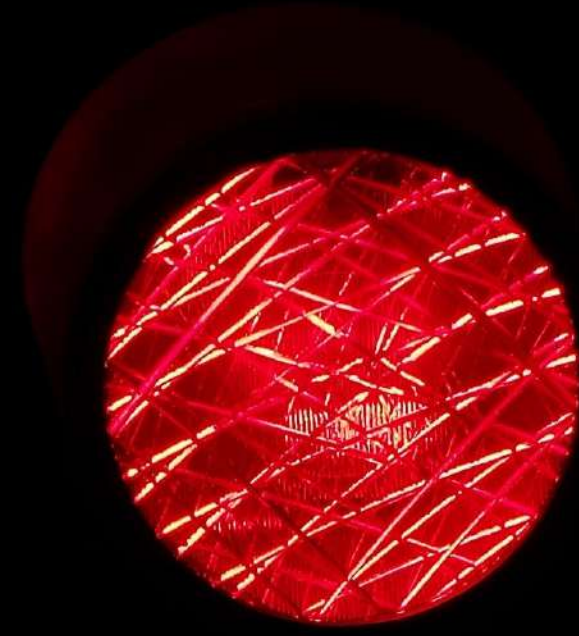
test set: 13 127 images

13 daytime clips

5 nighttime clips

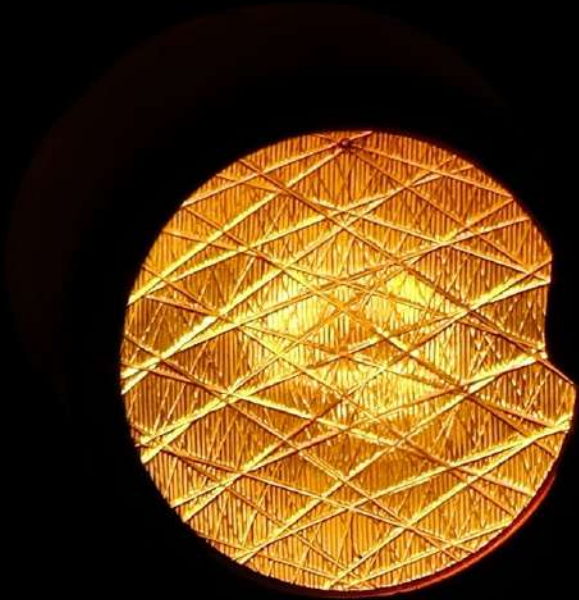
resolution 1280 x 960

San Diego, California, USA

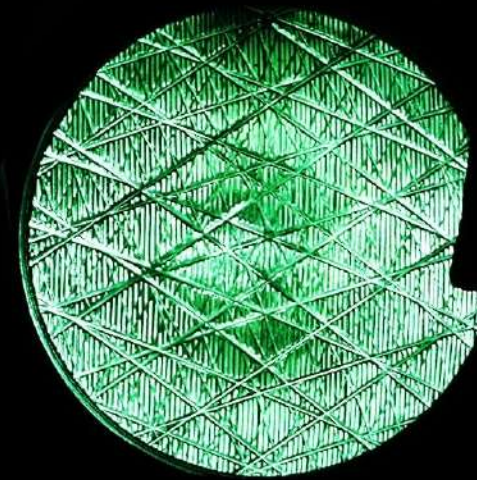


Augmentations

Images were cropped by bbox
and then resized to 64x32



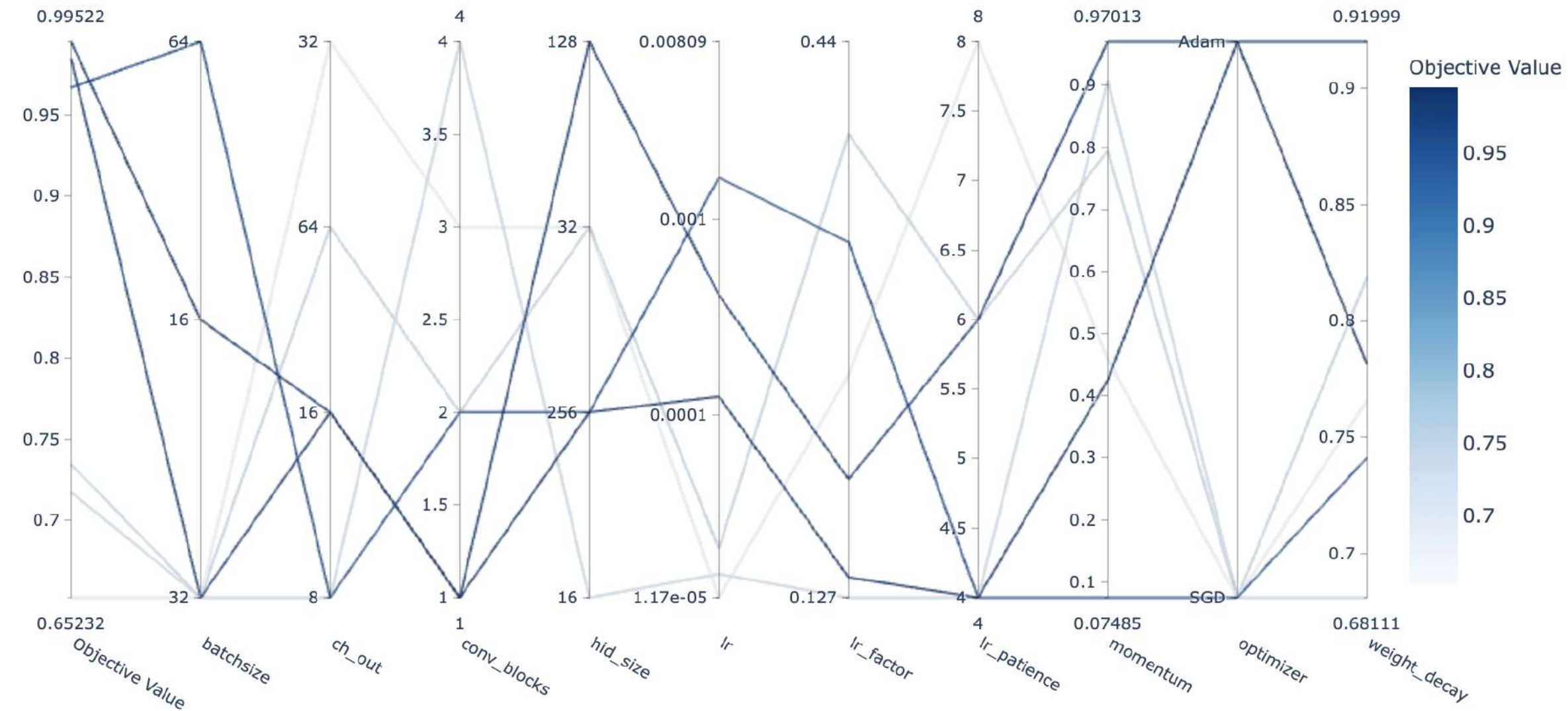
ToTensor()
RandomHorizontalFlip



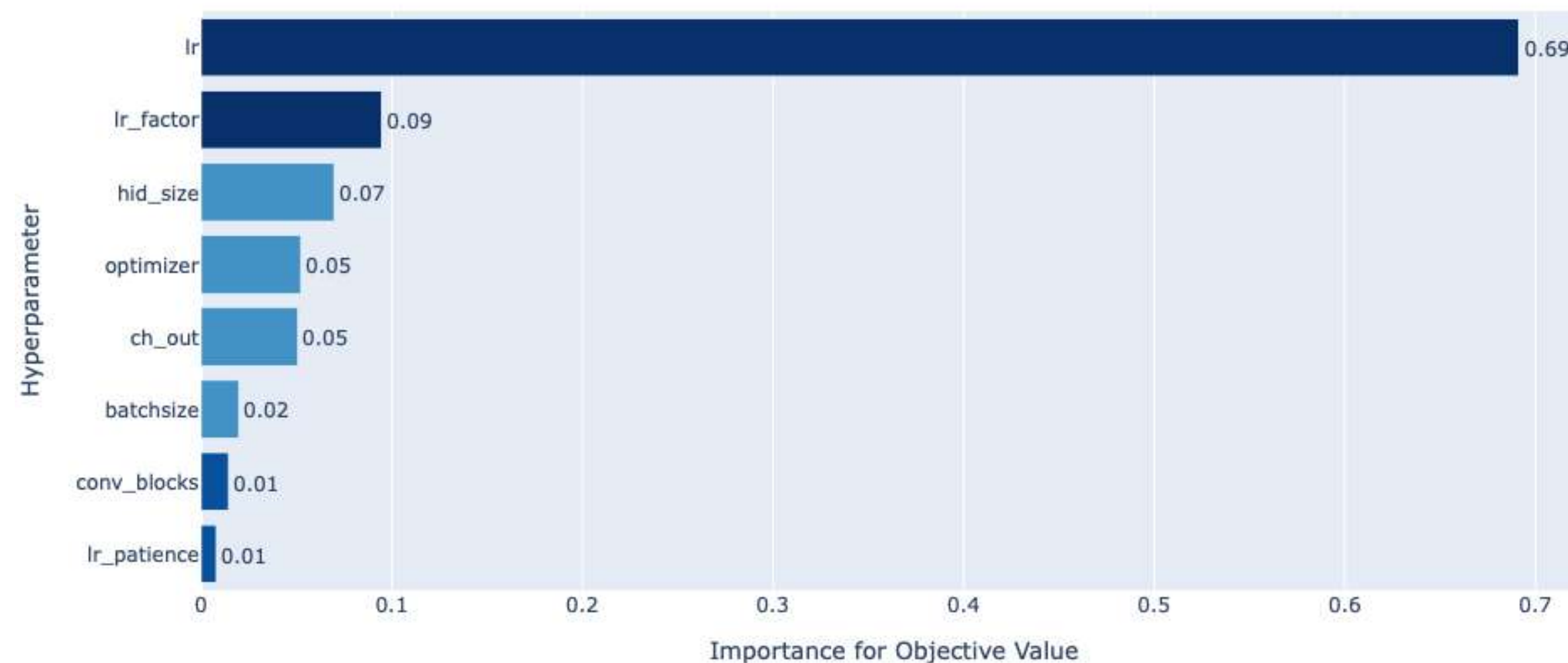
Specifications

batch size = 16
lr = 0.0001

Parallel Coordinate Plot



Hyperparameter Importances



Optuna optimization

- amount of convolutional blocks: 1
- amount of out channels: 16
- size of hidden layer: 256
- batchsize: 16
- learning rate: 0.0001248
- learning factor: 0.1332548
- learning patience: 4
- optimizer: Adam

