AutoAugment

From EfficientNet

Abstract

- Searching for best combination of augmentation policies
- Augmentation policies = subpolicy of two
- Uses Reinforcement Learning PPO
- Also uses LSTM for RNN controller
- Transferrable
- Better results promising for all classification task / models

Intro

- CIFAR 10 : Horizontal flipping effective

- MNIST : Horizontal flipping not effective

→Augmentation suited for particular datasets
→Need for automatically learned data augmentation

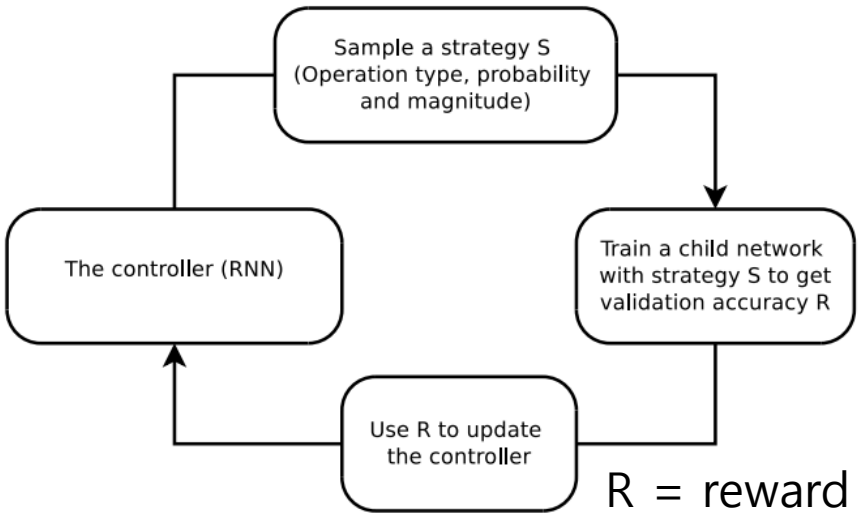
Related Work - History

- Common data aug for datasets :
  - MNIST: elastic distortions, scale, translation, rotation
  - CIFAR10: randomcrop, image mirroring, colorshifting, whitening

- Learned data aug
  - Smart Augmentation: automatic generation of augmented data
  - Bayesian approach to generate data
  - ...
  - GAN to generated augmented but similar data
  - GAN to genereate sequences of data augmentations

Searching

Search algorithm



S = ?

R = reward = val acc

R not differentiable
→ update by **PPO**

Changing PPO to other algorithm may improve performance

sample

5 subpolicies

Subpolicy

2 operations

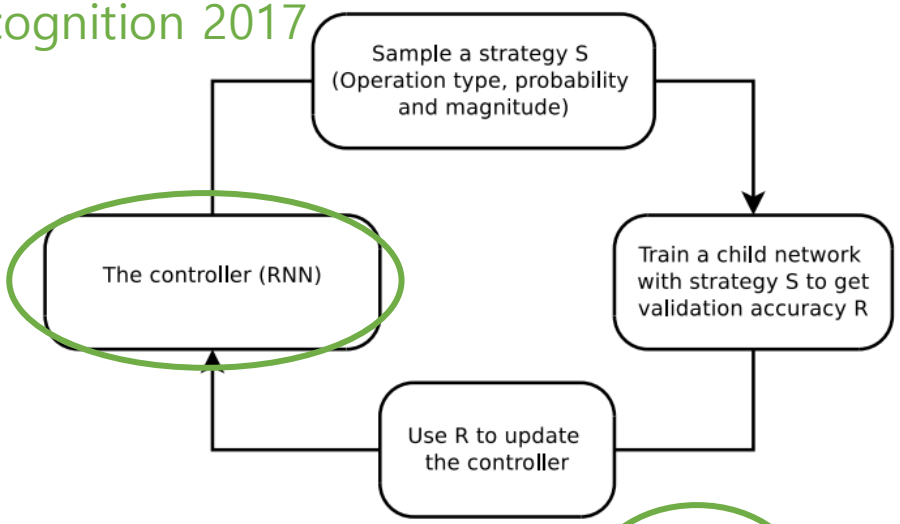
Search Space

16 operations
11 probabilities
10 magnitudes

(16 * 11 * 10) **2 **5

Further Works to Read

Learning transferable architectures for scalable image recognition 2017



PPO

Proximal policy optimization algorithm 2017