Neural Architecture Search using Deep Neural Networks and Monte Carlo Tree Search

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Motivation

Methodology

1. MCTS agent
   - Selection: traverse down with UCB.
   - Expansion: add a new node into the tree.
   - Evaluation: value function predictions and training.
   - Back-propagation: back-tracks to update #visits and value

Experiment Results

1. NASBench evaluations

2. In practice
   - Cifar10

3. Design validations
   - Transfer learning in training:
     - NASBench evaluations
     - In practice

4. Ablations of predictors

Applications

1. Neural style transfer:
   - VGG
   - AlphaX

2. Object detection:
   - MobileNet
   - AlphaX