Tiny ImageNet Challenge
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Motivation: We want to achieve the best training error on the but also get more insight on how the different components of a convnet contribute to its performance.

Disassembling a convnet
Starting with a simple architecture, we add features one after each other and train a network

Current data augmentation
Mirror
Crop

Architecture of best network

Performance

Pros:
- Smooth and discriminative weights
- Architecture with relatively high capacity
- Fast training

Cons:
- Considerable overfitting, despite dropout
- Large filter size for the first two layers (tried to replace by several layers with smaller filters; no improvement yet)

Analysis

Next steps
Fighting against overfitting:
- Adding more data augmentation (more cropping, color jittering, …)
- Dropout after each stage: according to Srivastava et al., this should help, if done carefully (normalization, etc.)

Improving performance:
- Model ensembles
- Image preprocessing (different color space / PCA)

Visualization of first layer

• Softmax
• Leaky ReLU (negative slope: 0.01)
• Max pool after each conv. Layer
• Gaussian initialization