

CSE 144 Final Project

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Network Backbone

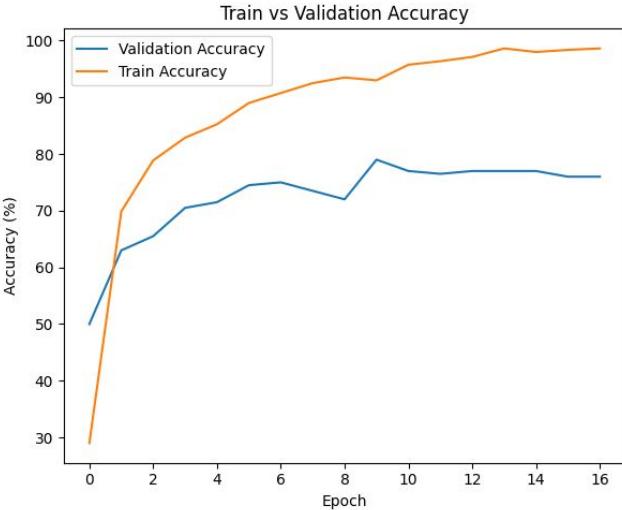
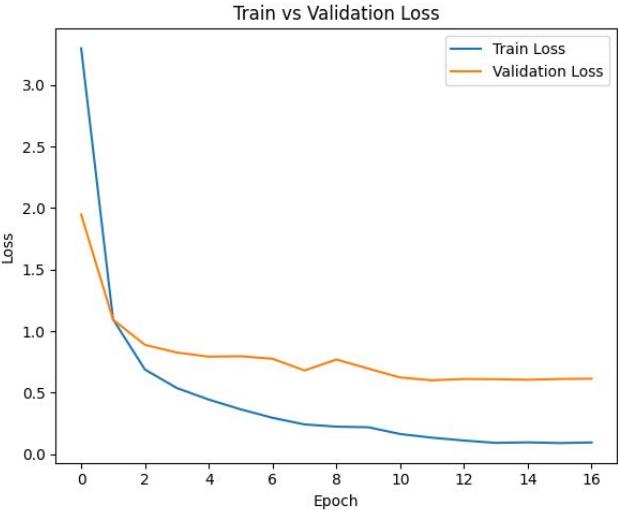
- Model:
 - Vision transformer L16 (ViT-L16)
 - L: large model size (24 transformer layers)
 - 16: uses 16x16 patch sizes for tokenization
 - Pretrained on ImageNet-21k
- Modifications:
 - replaced last layer to output 100 classes

Training Pipeline

- Data Preparation:
 - Split data into training and validation
- Augmentation:
 - Horizontal and Vertical Flip, ColorJitter, GaussianBlur, GreyScale
- Training Loop:
 - Step LR scheduler
 - Early stopping
 - AdamW optimizer

Current Results

- **Train loss:** 0.0973 **Train acc:** 98.25%
- **Validation loss:** 0.5717 **Validation acc:** 81.50%
- Kaggle: 0.81939
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Epoch 1/17
Train Loss: 3.3887, Train Accuracy: 28.12%
Validation Loss: 1.8935, Validation Accuracy: 54.00%
Epoch 2/17
Train Loss: 1.1739, Train Accuracy: 67.75%
Validation Loss: 1.1245, Validation Accuracy: 67.00%
Epoch 3/17
Train Loss: 0.8066, Train Accuracy: 73.75%
Validation Loss: 0.9091, Validation Accuracy: 71.50%
Epoch 4/17
Train Loss: 0.5458, Train Accuracy: 82.12%
Validation Loss: 0.7358, Validation Accuracy: 79.50%
Epoch 5/17
Train Loss: 0.4643, Train Accuracy: 86.25%
Validation Loss: 0.7396, Validation Accuracy: 75.50%
Epoch 6/17
Train Loss: 0.3868, Train Accuracy: 87.50%
Validation Loss: 0.6932, Validation Accuracy: 73.50%
Epoch 7/17
Train Loss: 0.3353, Train Accuracy: 88.75%
Validation Loss: 0.7790, Validation Accuracy: 77.50%
Epoch 8/17
Train Loss: 0.2935, Train Accuracy: 90.00%
Validation Loss: 0.7607, Validation Accuracy: 76.00%
Epoch 9/17
Train Loss: 0.2426, Train Accuracy: 92.25%
Validation Loss: 0.7385, Validation Accuracy: 77.50%
Epoch 10/17
Train Loss: 0.2362, Train Accuracy: 92.38%
Validation Loss: 0.6409, Validation Accuracy: 81.00%
Epoch 11/17
Train Loss: 0.1437, Train Accuracy: 96.62%
Validation Loss: 0.6128, Validation Accuracy: 81.00%
Epoch 12/17
Train Loss: 0.1218, Train Accuracy: 97.62%
Validation Loss: 0.5761, Validation Accuracy: 81.50%
Epoch 13/17
Train Loss: 0.1134, Train Accuracy: 97.50%
Validation Loss: 0.5608, Validation Accuracy: 80.50%
Epoch 14/17
Train Loss: 0.1142, Train Accuracy: 97.00%
Validation Loss: 0.5714, Validation Accuracy: 80.50%
Epoch 15/17
Train Loss: 0.1101, Train Accuracy: 97.62%
Validation Loss: 0.5545, Validation Accuracy: 80.00%
Epoch 16/17
Train Loss: 0.0985, Train Accuracy: 98.50%
Validation Loss: 0.5565, Validation Accuracy: 82.00%
Epoch 17/17
Train Loss: 0.0973, Train Accuracy: 98.25%
Validation Loss: 0.5717, Validation Accuracy: 81.50%

What's Next?

- Increase model accuracy
 - More augmentations
 - Generate more training data
 - Add fine-tuning