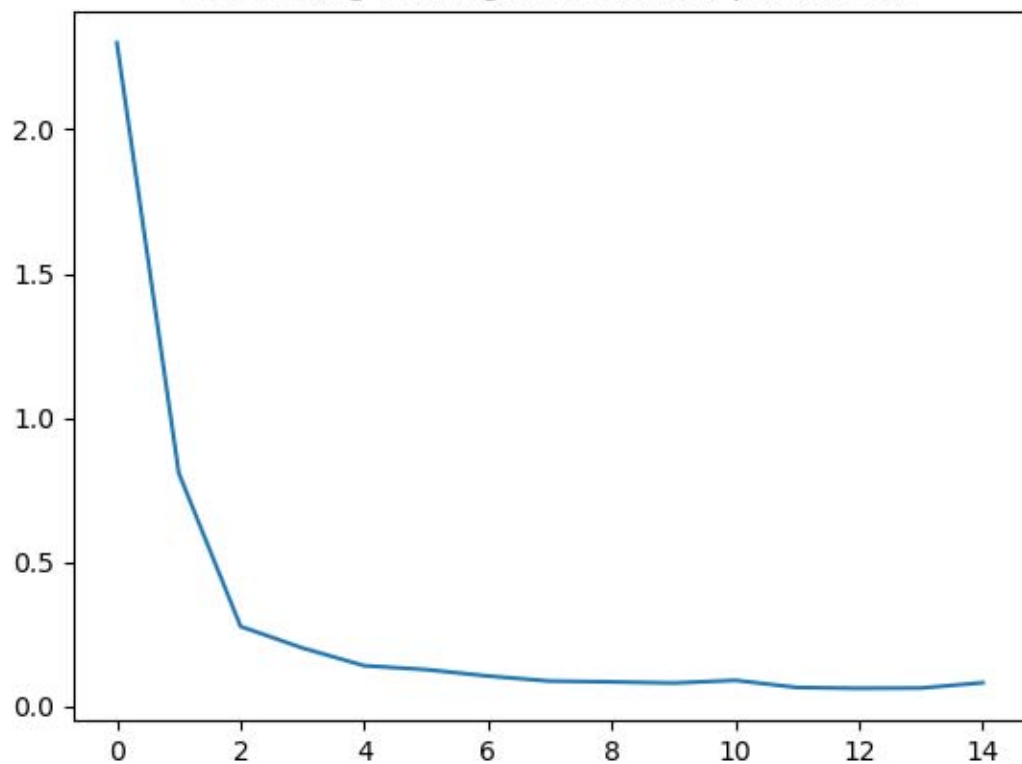```
Training network with best found hyperparameters
Epoch 15 finished. Loss: 0.08. Accuracy: 0.97. Training progress: 100%| | 15/15 [00:49<00:00, 3.28s/it]
Final Parameters: {'batch_size': 64, 'learning_rate': 0.1, 'n_epochs': 15, 'L2_reg': 0.001, 'hidden_layers': 3, 'units_per_layer': 40}
Final Loss: 0.15
Final Test Accuracy: 0.958.

(cs541env) C:\Users\Daniel\Dropbox\CS 541\HW4>python homework4_dpwivagg1.py
Searching for best hyperparameters.
==
Testing configuration: {'batch_size': 64, 'learning_rate': 0.05, 'n_epochs': 5, 'L2_reg': 0.001, 'hidden_layers': 2, 'units_per_layer': 50}
Epoch 5 finished. Loss: 0.21. Accuracy: 0.93. Training progress: 100%| | 5/5 [00:18<00:00, 3.65s/it]
Validation Loss: 0.21
Validation Accuracy: 0.939.
==
Testing configuration: {'batch_size': 128, 'learning_rate': 0.05, 'n_epochs': 10, 'L2_reg': 0.001, 'hidden_layers': 2, 'units_per_layer': 40}
Epoch 10 finished. Loss: 0.17. Accuracy: 0.95. Training progress: 100%| | 10/10 [00:23<00:00, 2.40s/it]
Validation Loss: 0.17
Validation Accuracy: 0.951.
==
Testing configuration: {'batch_size': 256, 'learning_rate': 0.1, 'n_epochs': 15, 'L2_reg': 0.005, 'hidden_layers': 2, 'units_per_layer': 30}
Epoch 15 finished. Loss: 0.11. Accuracy: 0.97. Training progress: 100%| | 15/15 [00:37<00:00, 2.49s/it]
Validation Loss: 0.13
Validation Accuracy: 0.962.
==
Testing configuration: {'batch_size': 64, 'learning_rate': 0.05, 'n_epochs': 15, 'L2_reg': 0.001, 'hidden_layers': 3, 'units_per_layer': 50}
Epoch 15 finished. Loss: 0.07. Accuracy: 0.98. Training progress: 100%| | 15/15 [00:59<00:00, 4.03s/it]
Validation Loss: 0.13
Validation Accuracy: 0.967.
==
Testing configuration: {'batch_size': 64, 'learning_rate': 0.1, 'n_epochs': 15, 'L2_reg': 0.001, 'hidden_layers': 3, 'units_per_layer': 40}
Epoch 15 finished. Loss: 0.06. Accuracy: 0.98. Training progress: 100%| | 15/15 [00:46<00:00, 3.12s/it]
Validation Loss: 0.12
Validation Accuracy: 0.967.
==
Testing configuration: {'batch_size': 128, 'learning_rate': 0.5, 'n_epochs': 15, 'L2_reg': 0.005, 'hidden_layers': 3, 'units_per_layer': 30}
Epoch 15 finished. Loss: 0.08. Accuracy: 0.97. Training progress: 100%| | 15/15 [00:36<00:00, 2.45s/it]
Validation Loss: 0.14
Validation Accuracy: 0.959.
==
Testing configuration: {'batch_size': 64, 'learning_rate': 0.1, 'n_epochs': 10, 'L2_reg': 0.001, 'hidden_layers': 4, 'units_per_layer': 40}
Epoch 10 finished. Loss: 0.18. Accuracy: 0.95. Training progress: 100%| | 10/10 [00:36<00:00, 3.60s/it]
Validation Loss: 0.20
Validation Accuracy: 0.951.
==
Testing configuration: {'batch_size': 64, 'learning_rate': 0.5, 'n_epochs': 15, 'L2_reg': 0.005, 'hidden_layers': 4, 'units_per_layer': 40}
Epoch 15 finished. Loss: 0.08. Accuracy: 0.98. Training progress: 100%| | 15/15 [00:54<00:00, 3.60s/it]
Validation Loss: 0.13
Validation Accuracy: 0.966.
==
Testing configuration: {'batch_size': 64, 'learning_rate': 0.5, 'n_epochs': 15, 'L2_reg': 0.005, 'hidden_layers': 5, 'units_per_layer': 40}
Epoch 15 finished. Loss: 2.30. Accuracy: 0.10. Training progress: 100%| | 15/15 [01:01<00:00, 4.06s/it]
Validation Loss: 2.30
Validation Accuracy: 0.110.
==
Testing configuration: {'batch_size': 64, 'learning_rate': 0.75, 'n_epochs': 25, 'L2_reg': 0.001, 'hidden_layers': 6, 'units_per_layer': 40}
Epoch 25 finished. Loss: 2.30. Accuracy: 0.10. Training progress: 100%| | 25/25 [01:57<00:00, 4.57s/it]
Validation Loss: 2.30
Validation Accuracy: 0.110.
Best hyperparameters found. Configuration is: {'batch_size': 64, 'learning_rate': 0.1, 'n_epochs': 15, 'L2_reg': 0.001, 'hidden_layers': 3, 'units_per_layer': 40, 'L': 0.12314272923855729, 'acc': 0.9674}
==
Training network with best found hyperparameters
Epoch 15 finished. Loss: 0.06. Accuracy: 0.98. Training progress: 100%| | 15/15 [00:48<00:00, 3.17s/it]
Final Parameters: {'batch_size': 64, 'learning_rate': 0.1, 'n_epochs': 15, 'L2_reg': 0.001, 'hidden_layers': 3, 'units_per_layer': 40}
Final Loss: 0.14
Final Test Accuracy: 0.966.

(cs541env) C:\Users\Daniel\Dropbox\CS 541\HW4>_
```

Loss during training with the final parameters

Accuracy during training with the final parameters