

AutoML Pipeline for Vision Data

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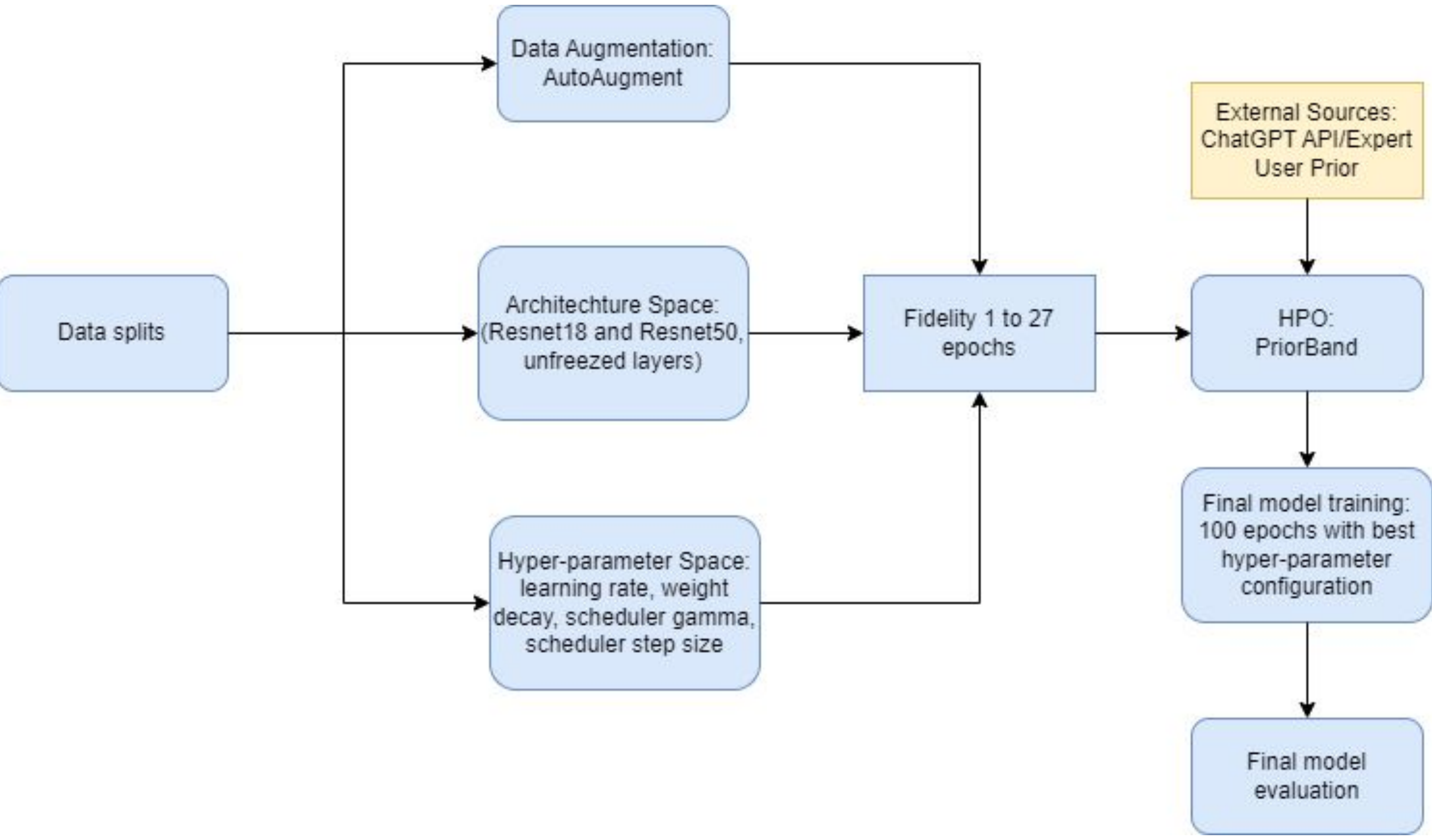
Modality 2

Introduction

The aim of this project is to develop a robust and efficient automated machine learning system that, given a vision dataset, outputs a trained and tuned model that achieves high results on image classification tasks. We utilized multifidelity HPO techniques to fine-tune a pre-trained model.

Our Approach

Pipeline



Priors

- Manual expert priors through console input
- Prompting LLM - gpt4o-mini
Input:
 - Task context
 - Configuration space
 - Dataset metadataOutput:
 - Mean and confidence of prior distribution

- Week 1
- Week 2
- Week 3
- Week 4
- Week 5
- Week 6
- Week 7
- Week 8
- Week 9
- Week 10
- Bonus
- Literature

Resources Used

For development:

- 1 RTX3060 6GB GPU
- AMD Ryzen 5 CPU
- Apple M1 Pro CPU
- Total compute estimate: 250 CPU, GPU-h

For AutoML:

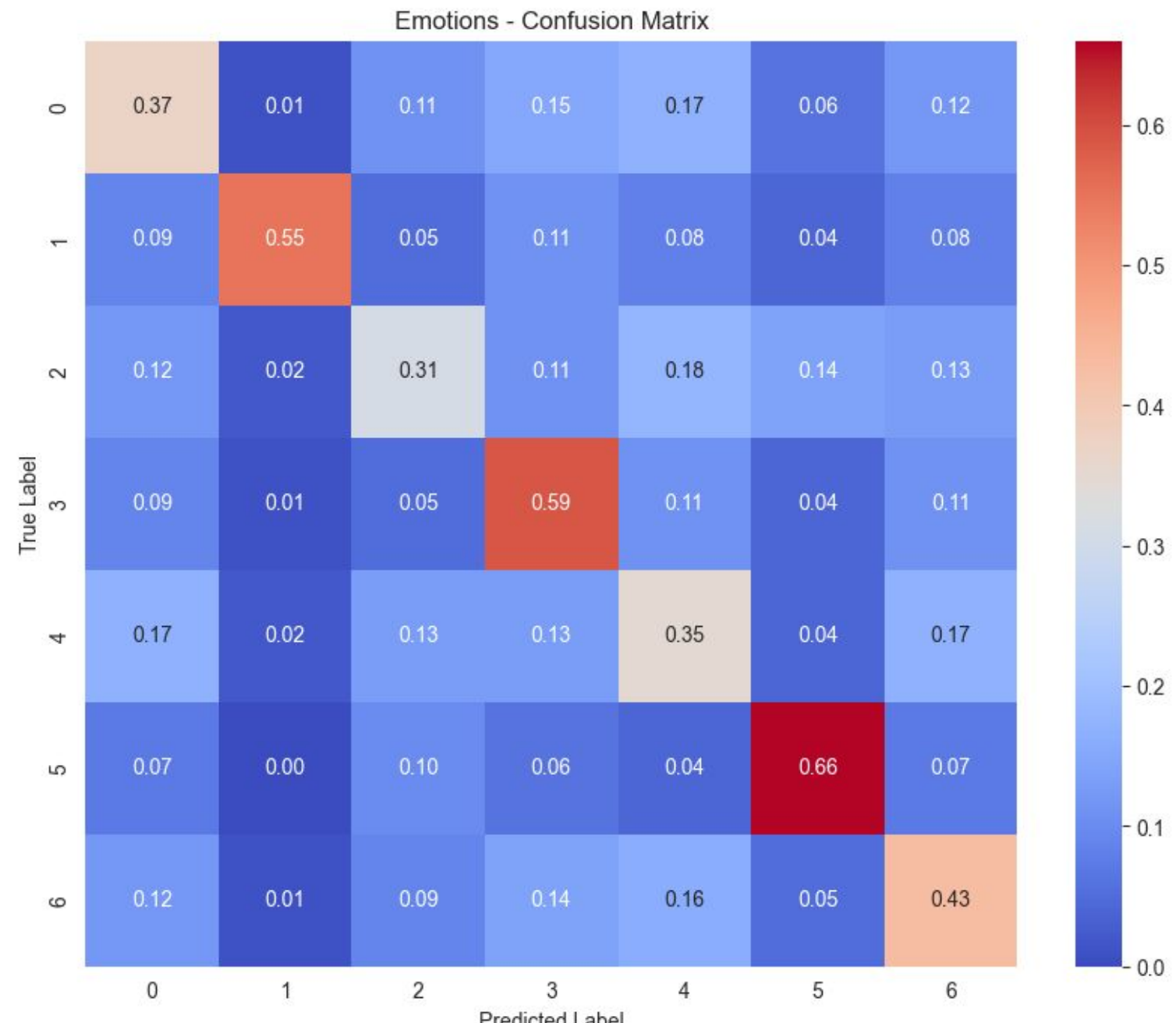
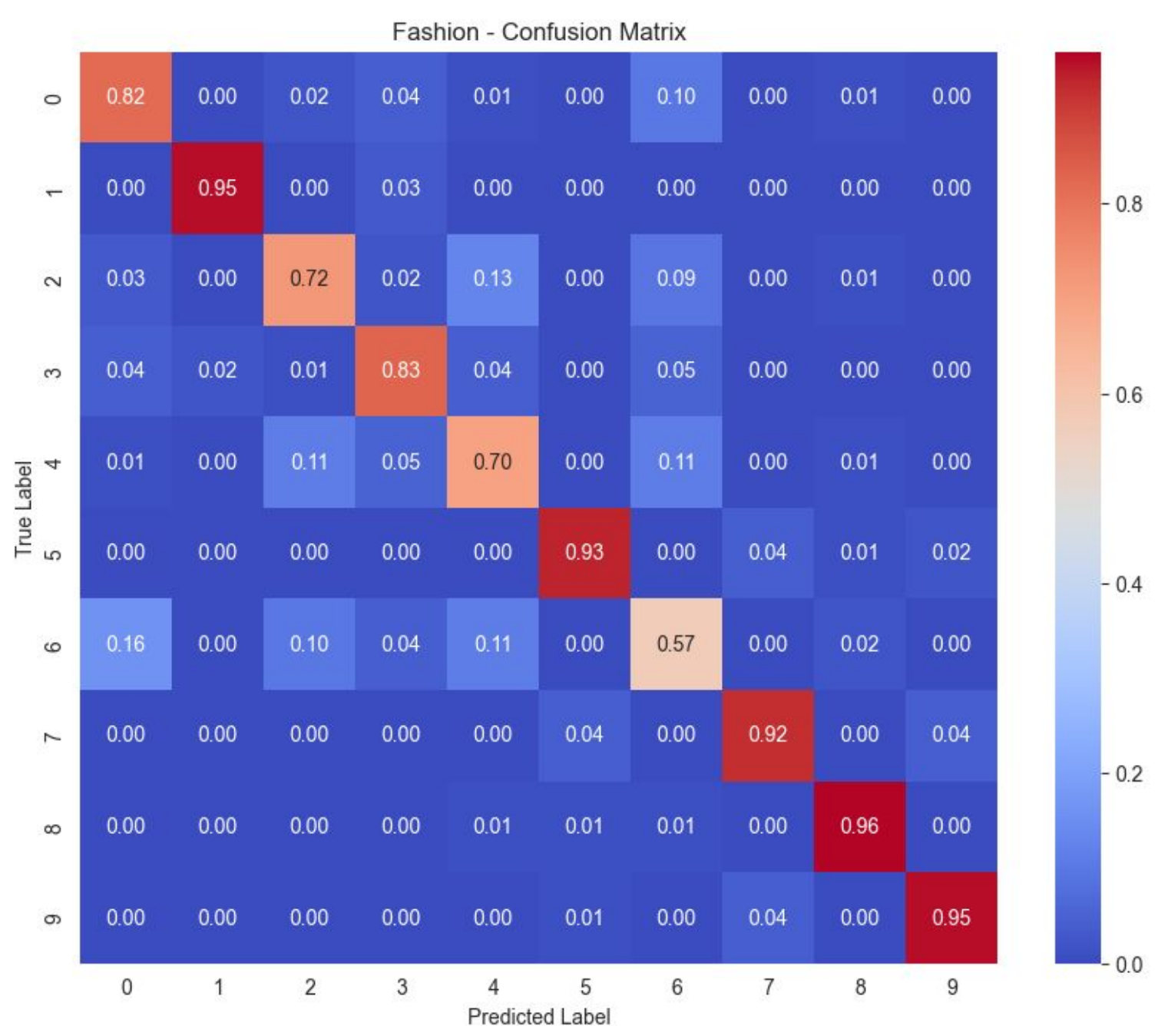
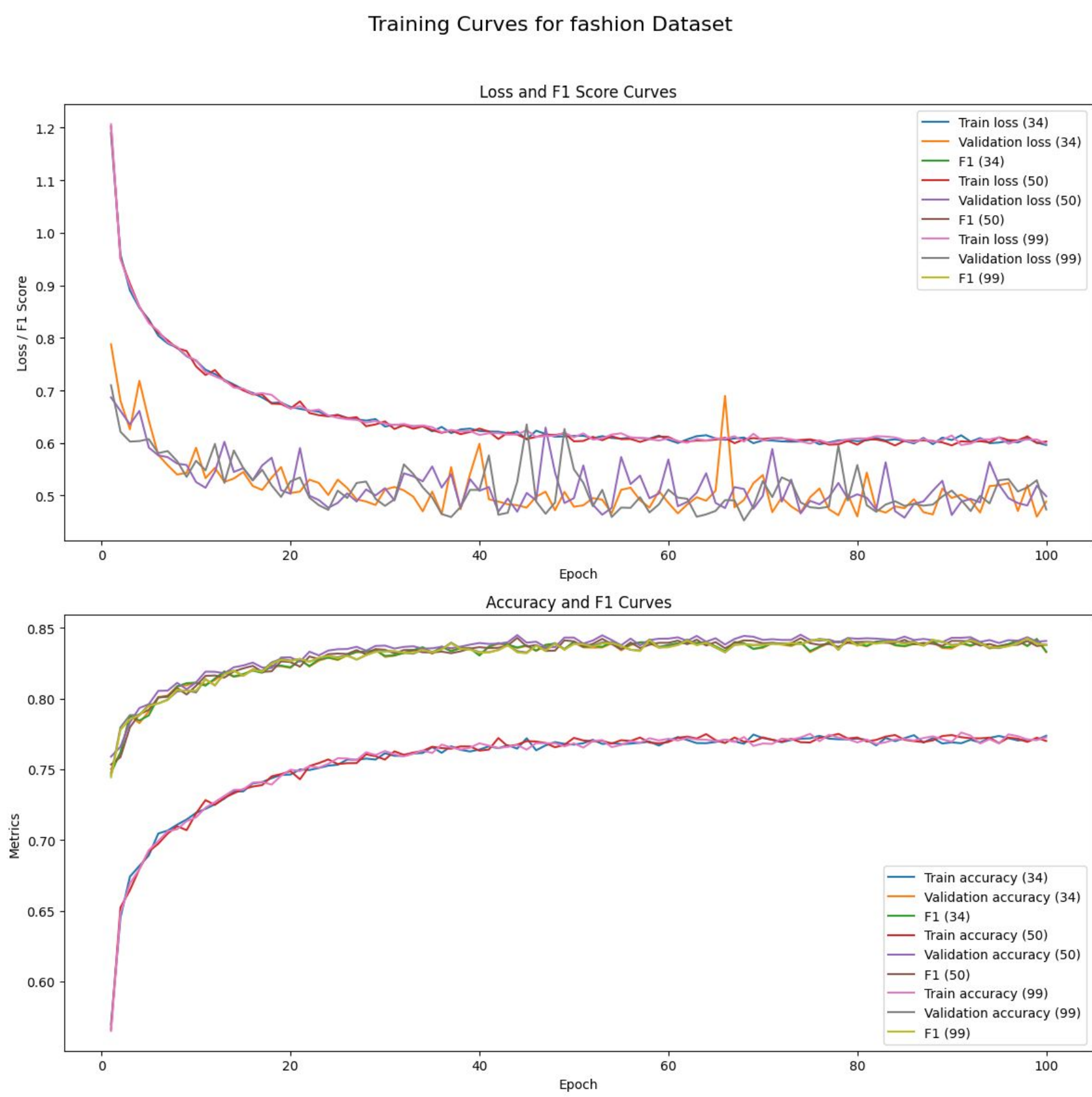
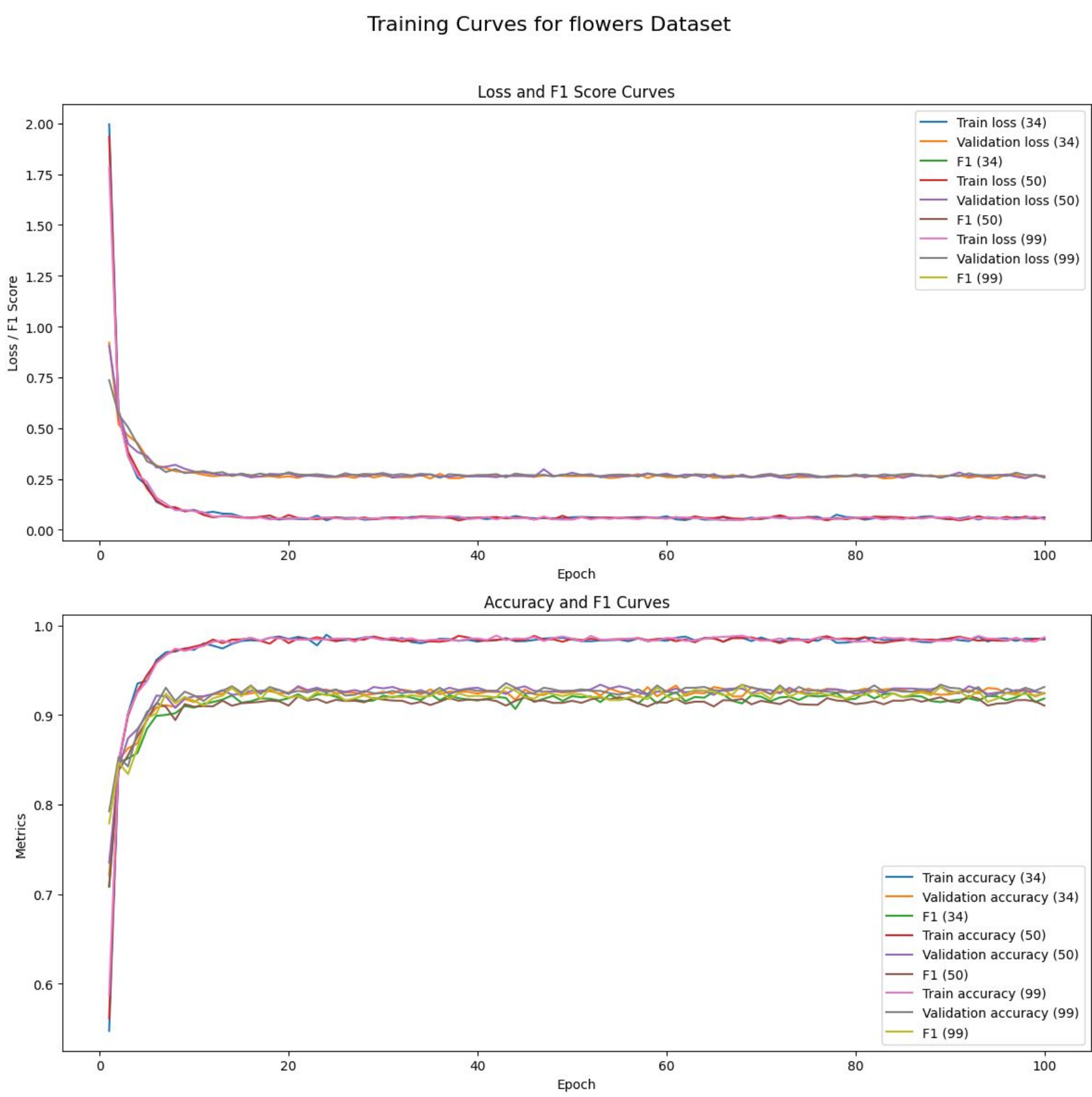
- 1 RTX3060 6GB GPU
- Kaggle
- 20h

Workforce:

- 1 full week on average

Number of queries for test score generation: 1

Empirical Results



Metrics for skin cancer dataset	accuracy	precision_micro	f1_micro
Values	0.7667221297836938	0.6284537621681887	0.6074206010136345

