

| Model                | Settings  | LearningRate Multiplier 1 | Epochs 1 | BatchSize 1 | LearningRate Multiplier 2 | Epochs 2 | BatchSize 2 |
|----------------------|-----------|---------------------------|----------|-------------|---------------------------|----------|-------------|
| Gemini 1.5 Flash 001 | Setting 4 | 0.5                       | 1        | 8           | 2                         | 1        | 4           |

**Before Fine Tuning**

Overall Accuracy: 35.00%

Correct Cases: 7/20

**Setting1**

Overall Accuracy: 20.00%

Correct Cases: 4/20

**Loss Curve:**

- Loss decreases quickly during the initial phase (0–0.2 epoch) but stabilizes early with minimal fluctuations.
- Final loss converges around **50**, indicating stable but insufficient optimization.

**Analysis:**

- The learning rate is too small, resulting in slow optimization. While the curve is stable, the model fails to effectively learn features from the dataset.
- This under-optimization reflects in the poor accuracy (20%).



Setting2

Overall Accuracy: 35.00%

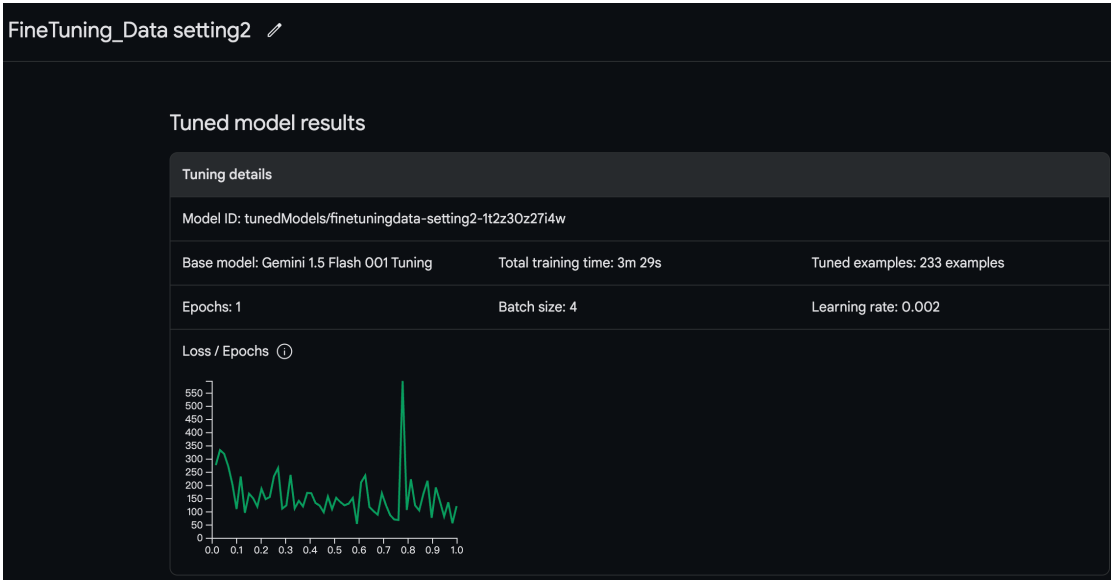
Correct Cases: 7/20

Loss Curve:

- Loss drops rapidly in the early phase (0–0.2 epoch), but significant fluctuations occur later, with peaks reaching nearly 550.
- Final loss converges at a value similar to Setting 1, but with much higher volatility during training.

Analysis:

- The learning rate of 0.002 is too high, leading to instability in the optimization process. The large parameter updates cause fluctuations and hinder effective convergence.
- This instability results in no improvement in accuracy (35%), as the model likely overfits or struggles to generalize.



Overall Result

| A     | B  | C           | D                         | E                                | F                                | G                                | H | I | J |
|-------|--|-------------|---------------------------|----------------------------------|----------------------------------|----------------------------------|---|---|---|
| Case# | Patient Conditions   | Test Result | Result Before Fine-tuning | Result After Fine-tuning (Set 1) | Result After Fine-tuning (Set 2) | Result After Fine-tuning (Set 2) |   |   |   |
| 1     | 62-year-old male with no symptoms. Suspect: Influenza                                      | Correct     | Influenza                 | Correct                          | Influenza                        | Correct                          |   |   |   |
| 2     | 72-year-old female whose symptoms include Dysphagia secondary to esophageal adenocarcinoma | Wrong       | Dysphagia                 | Correct                          | Dysphagia                        | Correct                          |   |   |   |
| 3     | 60-year-old female, Gastroenteritis, type 1, with abdominal pain and diarrhea              | Wrong       | Gastroenteritis           | Correct                          | Gastroenteritis                  | Correct                          |   |   |   |
| 4     | 47-year-old male, Sepsis, type 1, with abdominal pain and diarrhea                         | Wrong       | Sepsis                    | Correct                          | Sepsis                           | Correct                          |   |   |   |
| 5     | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 6     | 40-year-old male, type 1 diabetes mellitus, with abdominal pain and diarrhea               | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 7     | 70-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 8     | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 9     | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 10    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 11    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 12    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 13    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 14    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 15    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 16    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 17    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 18    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 19    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |
| 20    | 60-year-old female, type 1 diabetes mellitus, with abdominal pain and diarrhea             | Wrong       | Diabetes Mellitus         | Correct                          | Diabetes Mellitus                | Correct                          |   |   |   |