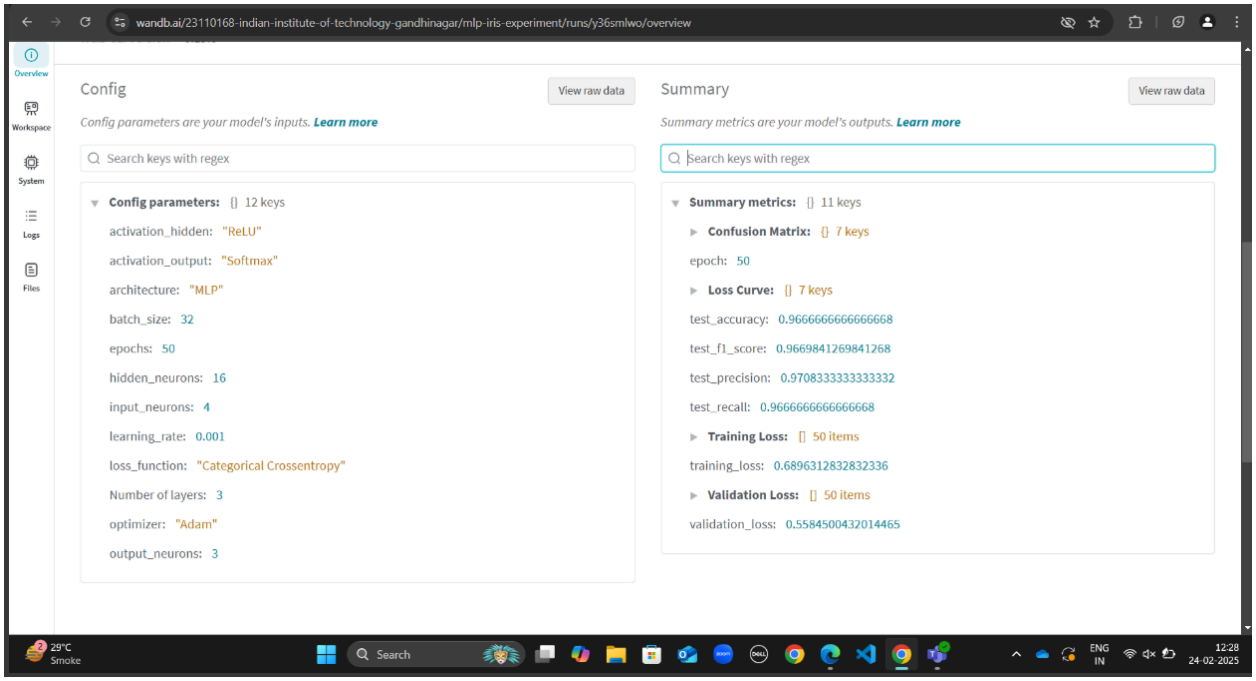
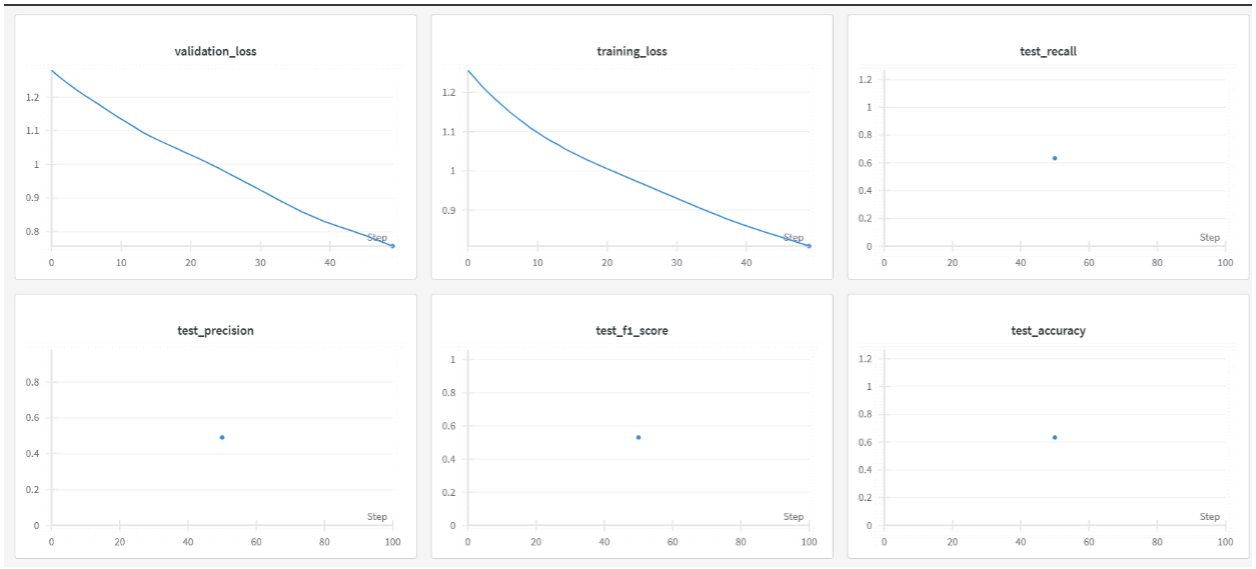
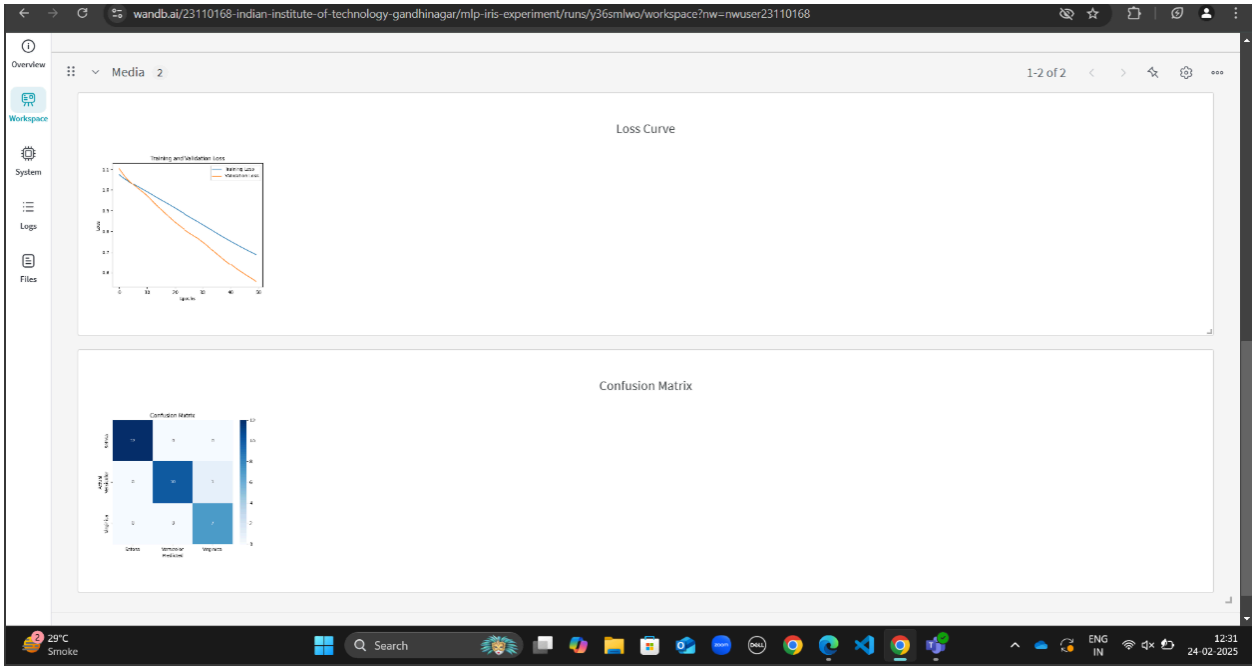
Git repo-

Screenshots of the W&B dashboard







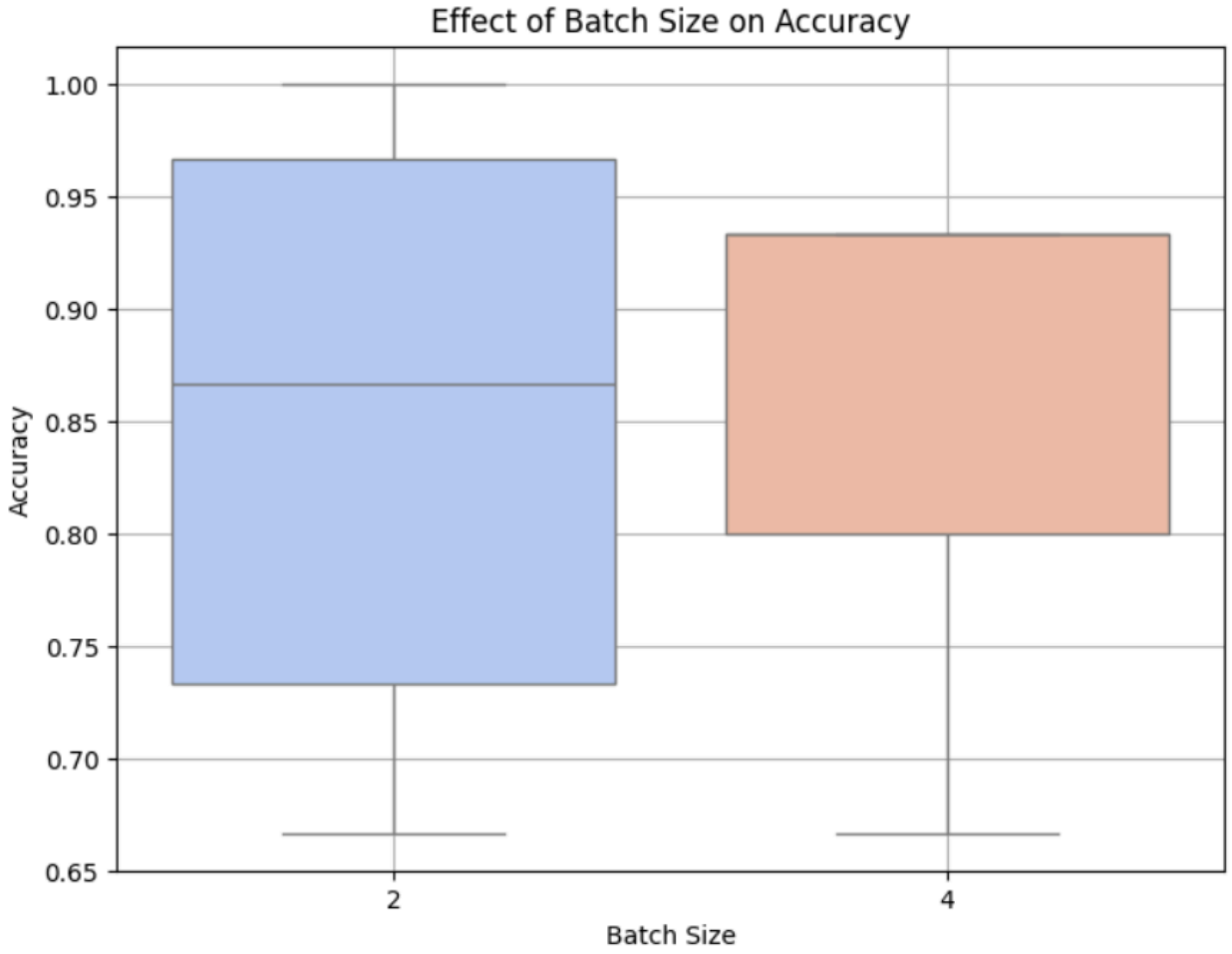
Perform hyperparameter optimization using AutoGluon

- Plot the scatter plot for training vs validation loss.

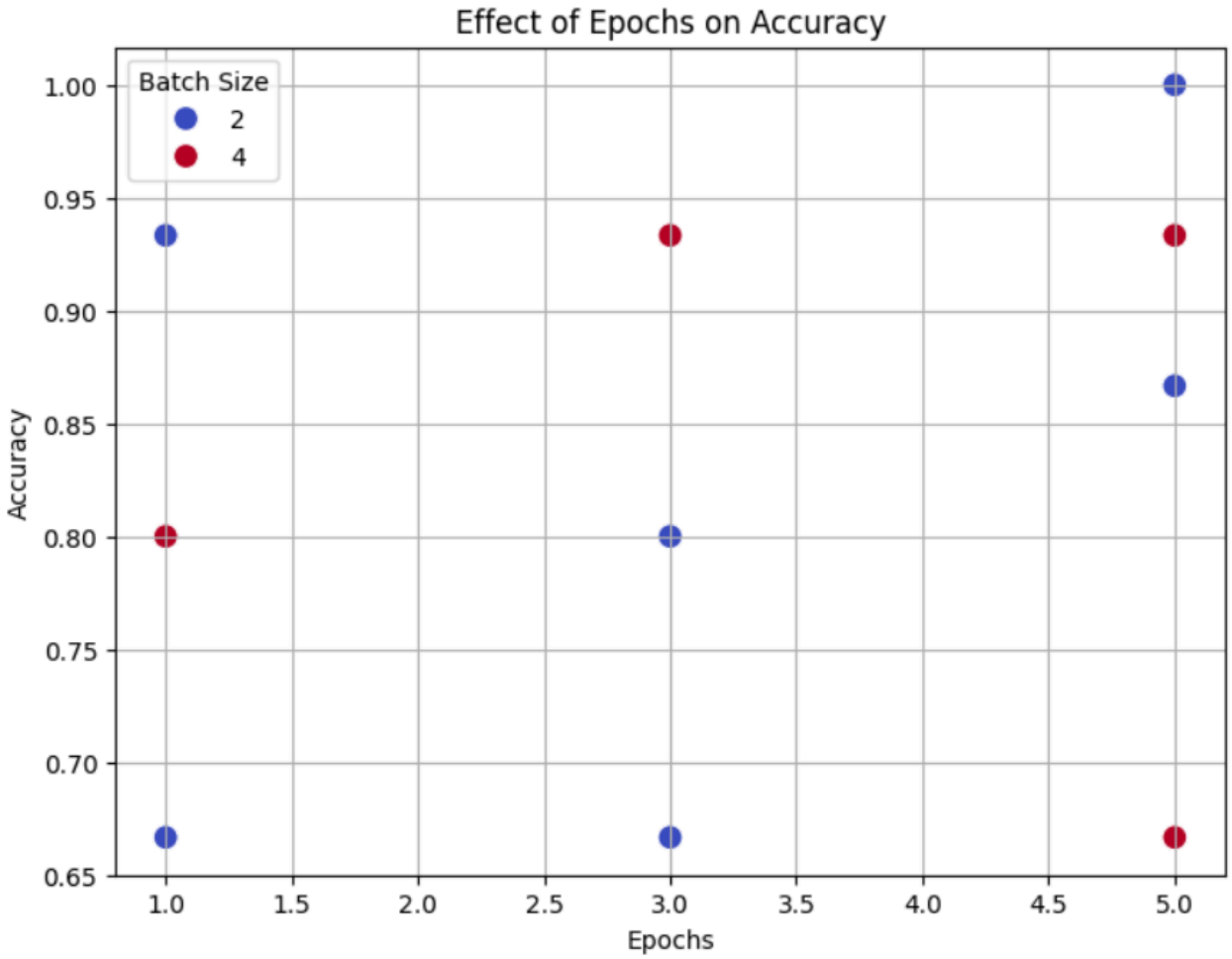
  There in the colab notebook

- A relation (direct or inverse) between the hyperparameters and their impact on the performance (Hypothetically, epoch is directly proportional to performance, but batch size is inversely proportional).
- Describe the performance for each hyperparameter combination over accuracy and F1.

  We can see the relationship between the hyperparameters and their impact on the performance from the metrics data.



We observe that a lower batch size results in a better accuracy implying that batch size varies inversely with the performance.



We observe that increasing the number of epochs would increase the accuracy.

Performance Summary:

	model	accuracy	epochs	batch_size	learning_rate
1	NeuralNetTorch/688d8_00001	1.000000	3	4	0.00100
2	NeuralNetTorch/688d8_00002	1.000000	3	2	0.00100
3	NeuralNetTorch/688d8_00003	1.000000	5	2	0.00100
10	NeuralNetTorch/688d8_00010	0.958333	1	2	0.00100
9	NeuralNetTorch/688d8_00009	0.916667	1	2	0.00001
0	NeuralNetTorch/688d8_00000	0.875000	1	2	0.00100
11	NeuralNetTorch/688d8_00011	0.833333	1	4	0.00001
6	NeuralNetTorch/688d8_00006	0.708333	3	2	0.00001
7	NeuralNetTorch/688d8_00007	0.666667	5	4	0.00001
4	NeuralNetTorch/688d8_00004	0.625000	1	4	0.00001
5	NeuralNetTorch/688d8_00005	0.333333	1	4	0.00001
8	NeuralNetTorch/688d8_00008	0.333333	1	4	0.00001

We observe that for this dataset, a lower learning rate is better but no conclusion

can be given about learning rate as it is dependent on the type of dataset.

Compare manual tuning vs. automated search

- Which approach is better and why? (At most five lines of explanation)

  Automated search is better than manual tuning because it explores many hyperparameter combinations much faster. Unlike manual tuning, which depends on intuition and experience, automated search avoids bias and ensures a more objective selection of parameters. It also finds better-performing models by testing a wider range of possibilities. Additionally, automated tuning scales well for complex models, whereas manual tuning becomes too time-consuming and impractical.

- Plots for the training vs validation loss for each hyperparameter configuration.

  There in the colab notebook