control_experiment_5G_A2_recent

May 29, 2025

```python
[12]: import importlib
      import src.plots

      importlib.reload(src.plots)
```
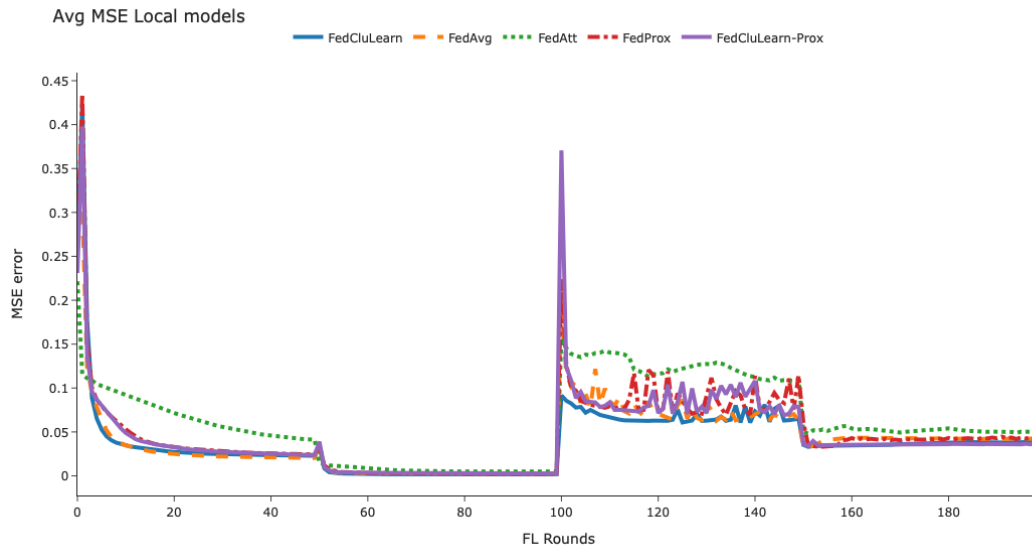
```
[12]: <module 'src.plots' from '/Users/milenaangelova/git-
      repo/FedCluLearn/src/plots.py'>
```

```python
[13]: from src.plots import plot_plotly, preprocessing_results
```
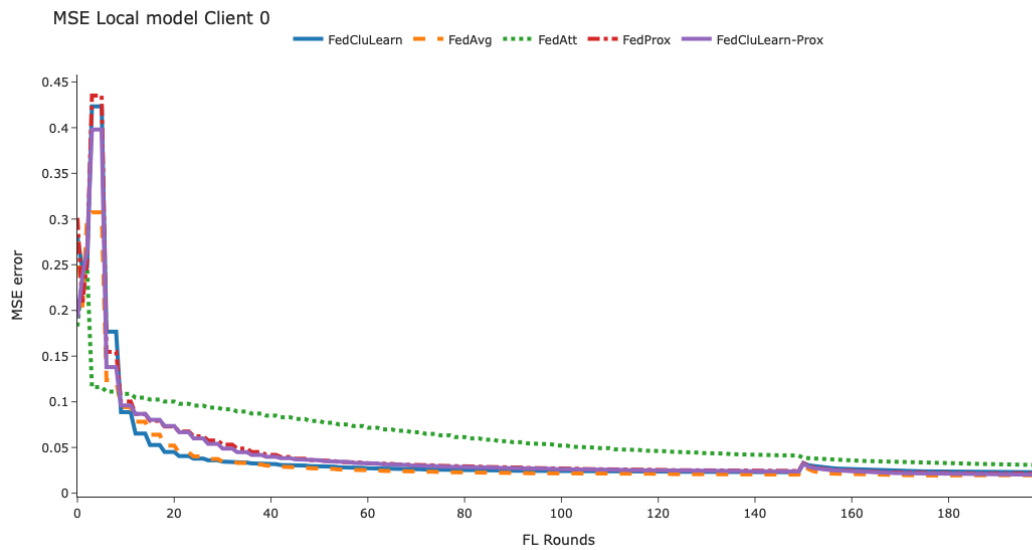
```python
[14]: local_FedAtt = 'results/results_FedAtt_2025-02-26 13:25:19.867217.txt'
      global_FedAtt = 'results/global_model_evaluation_FedAtt_2025-02-26 13:25:19.
       ↪867217.txt'
      local_FedProx = 'results/results_FedProx_2025-02-26 13:25:13.689653.txt'
      global_FedProx = 'results/global_model_evaluation_FedProx_2025-02-26 13:25:13.
       ↪689653.txt'
      local_FedAvg = 'results/results_FedAvg_2025-02-26 13:29:55.229671.txt'
      global_FedAvg = 'results/global_model_evaluation_FedAvg_2025-02-26 13:29:55.
       ↪229671.txt'
      local_FedCluLearn = 'results/results_FedCluLearn_2025-02-26 13:46:34.610555.txt'
      global_FedCluLearn = 'results/global_model_evaluation_FedCluLearn_2025-02-26 13:
       ↪46:34.610555.txt'
      local_FedCluLearn_Prox = 'results/results_FedCluLearn_Prox_2025-02-26 13:47:10.
       ↪790761.txt'
      global_FedCluLearn_Prox = 'results/
       ↪global_model_evaluation_FedCluLearn_Prox_2025-02-26 13:47:10.790761.txt'
```
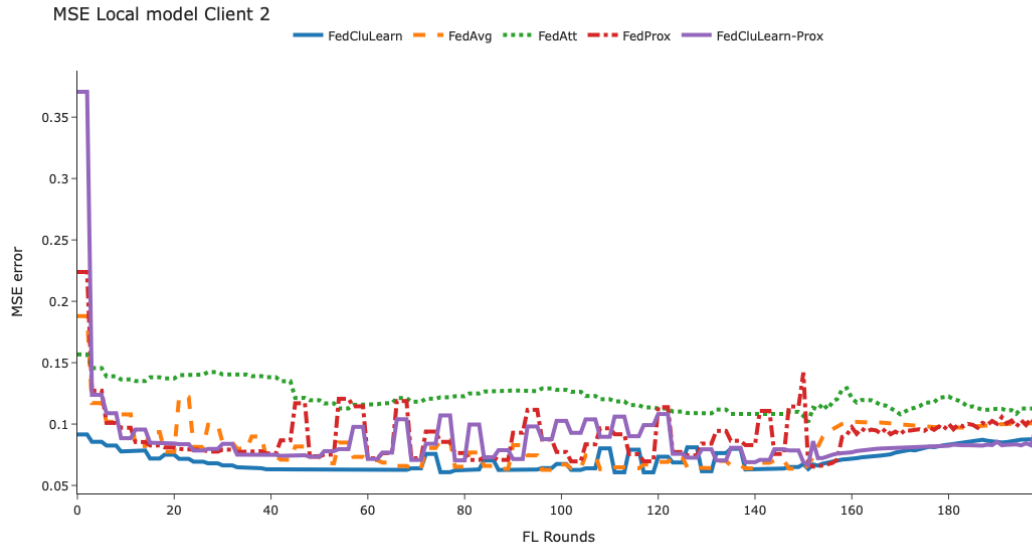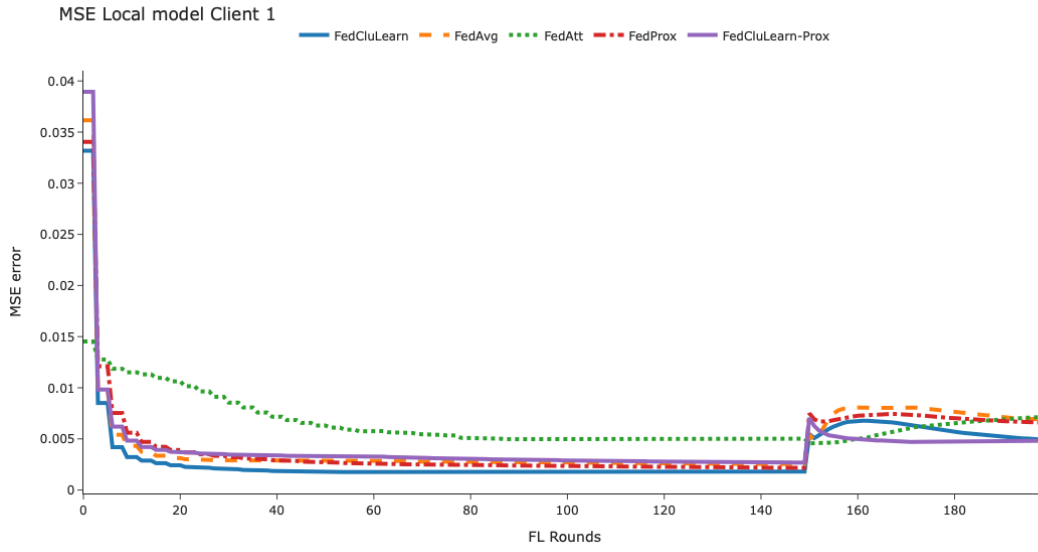
```python
[15]: local_filenames = [local_FedCluLearn, local_FedAvg, local_FedAtt,␣
       ↪local_FedProx, local_FedCluLearn_Prox]
      global_filenames = [global_FedCluLearn, global_FedAvg, global_FedAtt,␣
       ↪global_FedProx, global_FedCluLearn_Prox]
```

```python
[16]: mse_column = 'mse'
      n_rounds, y = preprocessing_results(filenames=local_filenames,␣
       ↪mse_column=mse_column)
      plot_plotly(n_rounds, y, title='Avg MSE Local models',␣
       ↪y_axis_title=f'{mse_column.upper()} error', y_axis_max=0.3)
```

Avg MSE Local models

FedCluLearn — — FedAvg ···· FedAtt —··— FedProx —— FedCluLearn-Prox


```
[17]: for client_id in [0,1,2]:
          n_rounds, y = preprocessing_results(filenames=local_filenames,␣
      ↪client_id=client_id, mse_column='mse')
          plot_plotly(n_rounds, y, title=f'MSE Local model Client {client_id}',␣
      ↪y_axis_title='MSE error')
```

MSE Local model Client 0

FedCluLearn — — FedAvg ···· FedAtt —··— FedProx —— FedCluLearn-Prox

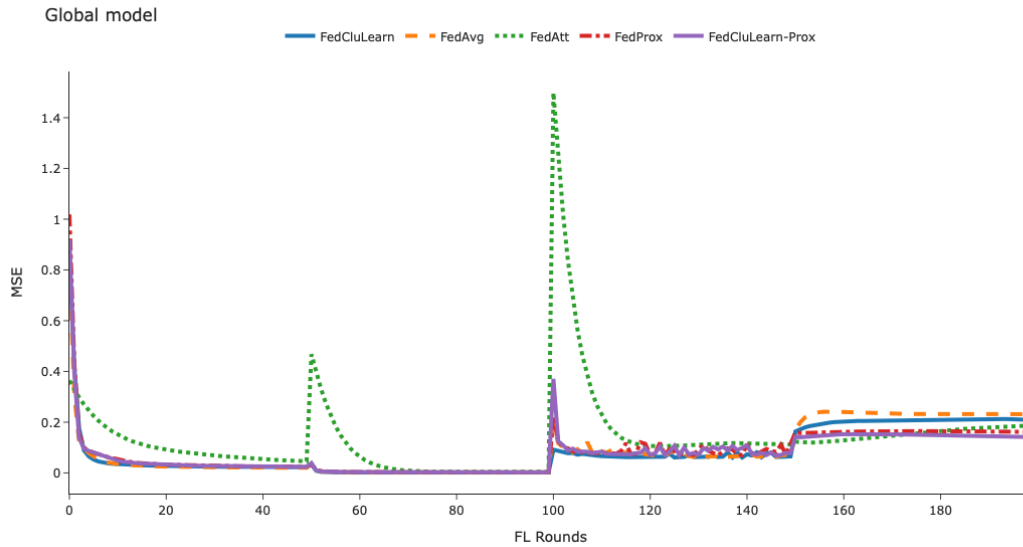MSE Local model Client 1

MSE Local model Client 2

```
[18]: mse_column = 'mse'
      # n_rounds, y = preprocessing_results(filenames=[global_FedCluLearn,␣
      ↪global_FedCluLearn_recent, global_FedCluLearn_percentage, global_FedAvg,␣
      ↪global_FedAtt, global_FedProx, global_FedCluLearn_Prox,␣
      ↪global_FedCluLearn_Prox_recent, None], mse_column=mse_column)
      # global_filenames = [global_FedCluLearn, global_FedAvg, global_FedAtt,␣
      ↪global_FedProx, global_FedCluLearn_Prox]
```

```
global_filenames = [global_FedCluLearn, global_FedAvg, global_FedAtt,␣
 ↪global_FedProx, global_FedCluLearn_Prox]
n_rounds, y = preprocessing_results(filenames=global_filenames,␣
 ↪mse_column=mse_column)
#Avg {mse_column.upper()} Global model
plot_plotly(n_rounds, y, title=f'Global model', y_axis_title=f'{mse_column.
 ↪upper()}', y_axis_max=1)
```
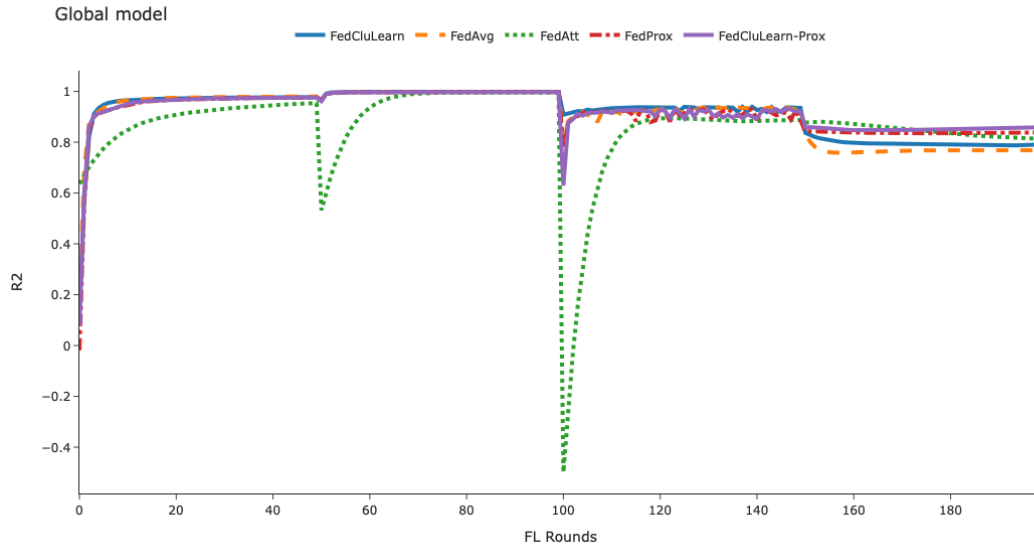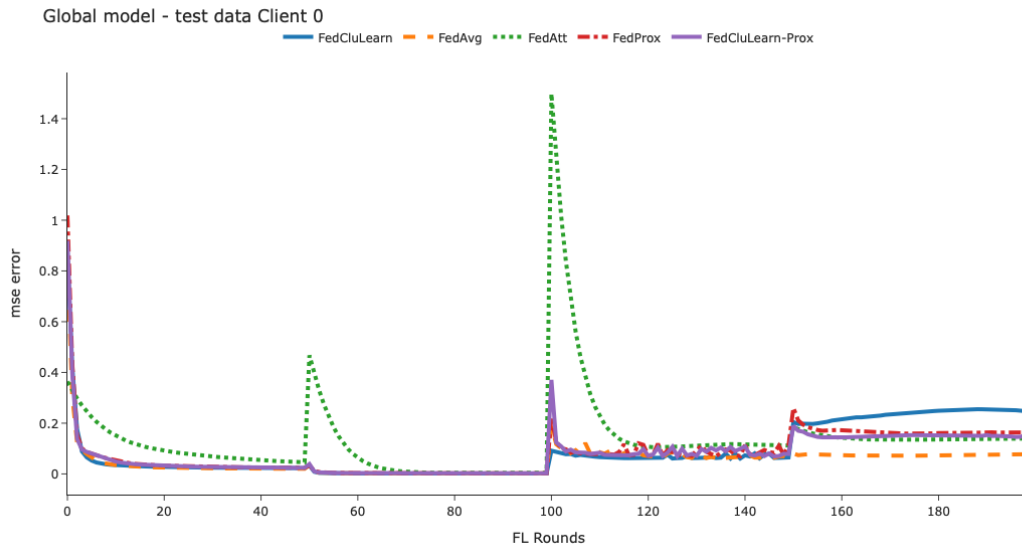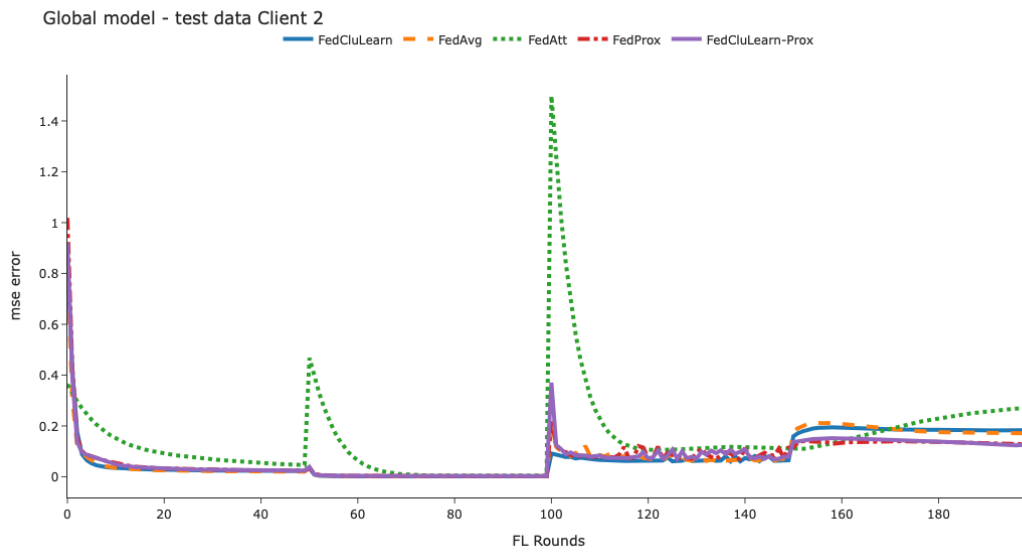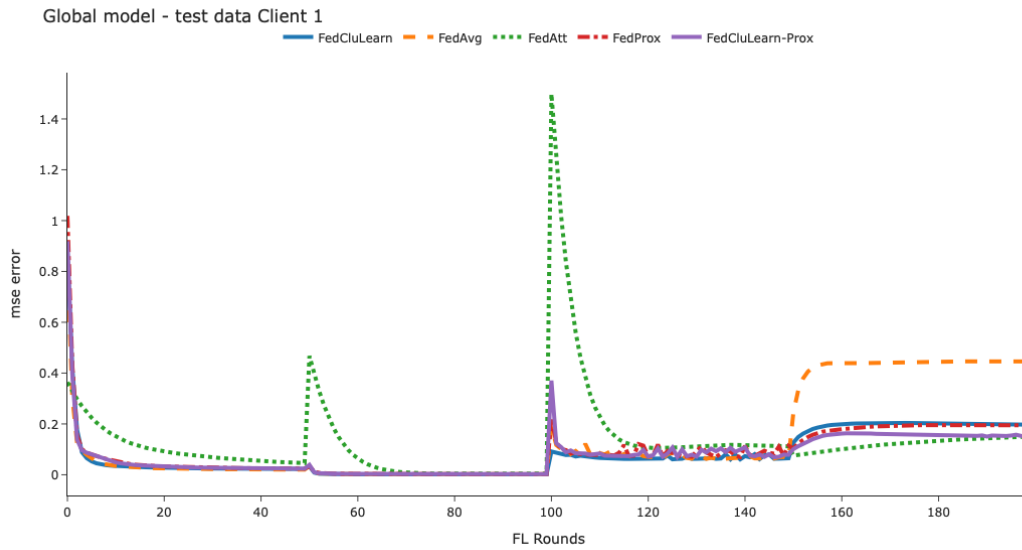


```
[19]: mse_column = 'r2'
global_filenames = [global_FedCluLearn, global_FedAvg, global_FedAtt,␣
 ↪global_FedProx, global_FedCluLearn_Prox]
n_rounds, y = preprocessing_results(filenames=global_filenames,␣
 ↪mse_column=mse_column)
plot_plotly(n_rounds, y, title=f'Global model', y_axis_title=f'{mse_column.
 ↪upper()}', y_axis_max=1)
```
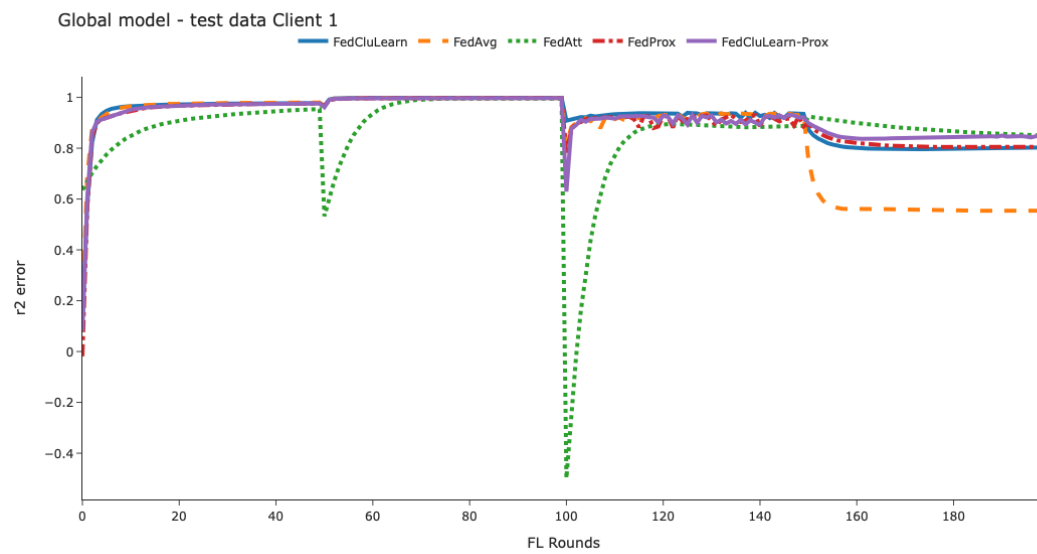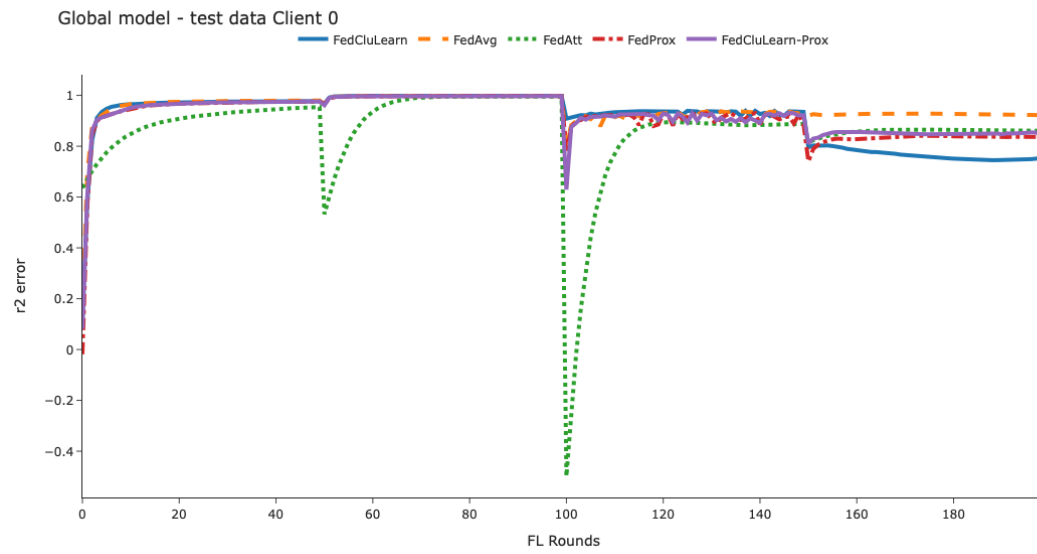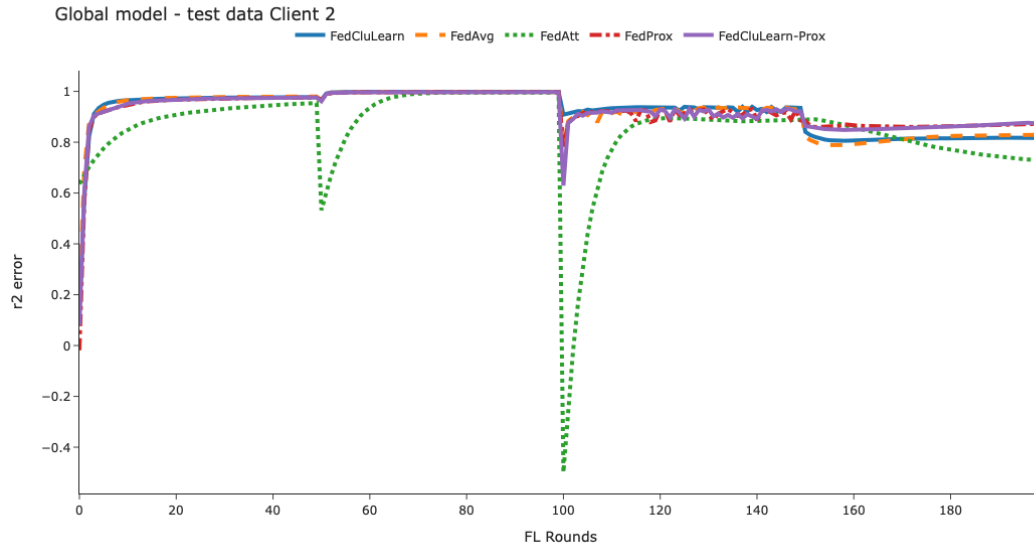
Global model


```
[20]: mse_column='mse'
      for client_id in [0,1,2]:
          n_rounds, y = preprocessing_results(filenames=global_filenames,⏎
      ↪client_id=client_id,mse_column=mse_column)
          plot_plotly(n_rounds, y, title=f'Global model - test data Client⏎
      ↪{client_id}', y_axis_title=f'{mse_column} error')
```

Global model - test data Client 0

Global model - test data Client 1

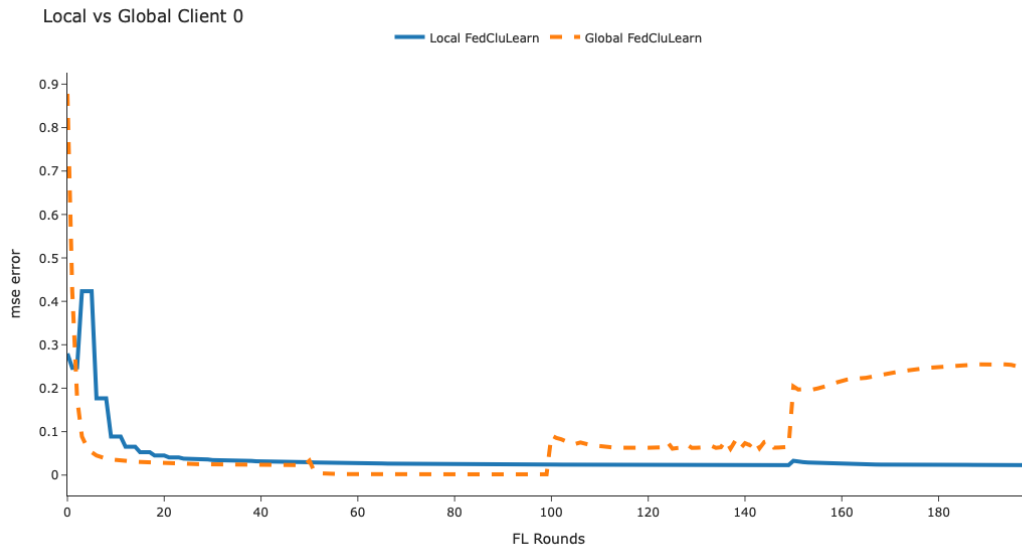

Global model - test data Client 2

```
[21]: mse_column='r2'
      for client_id in [0,1,2]:
          n_rounds, y = preprocessing_results(filenames=global_filenames,␣
       ↪client_id=client_id,mse_column=mse_column)
          plot_plotly(n_rounds, y, title=f'Global model - test data Client␣
       ↪{client_id}', y_axis_title=f'{mse_column} error')
```

Global model - test data Client 0

FedCluLearn — FedAvg — FedAtt — FedProx — FedCluLearn-Prox

Global model - test data Client 1

FedCluLearn — FedAvg — FedAtt — FedProx — FedCluLearn-Prox
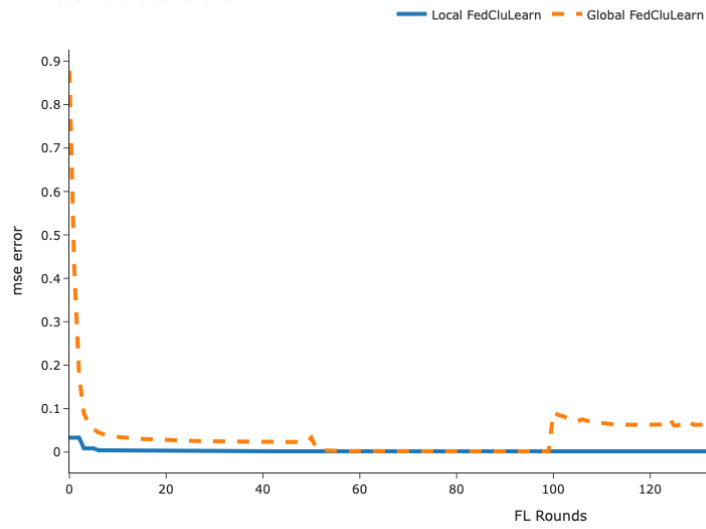
Global model - test data Client 2

```
[22]: mse_column='mse'
      for client_id in [0,1,2]:
          n_rounds, y = preprocessing_results(filenames=[local_FedCluLearn,↵
      ↪global_FedCluLearn, None, None, None],↵
      ↪client_id=client_id,mse_column=mse_column)
          plot_plotly(n_rounds, y, title=f'Local vs Global Client {client_id}',↵
      ↪y_axis_title=f'{mse_column} error', algo_name1='Local FedCluLearn',↵
      ↪algo_name4='Global FedCluLearn')
```


Local vs Global Client 0

Local vs Global Client 1

Local vs Global Client 2