control_experiment_5G_A1_recent

June 8, 2025

```python
[1]: import sys
     import os

     src_path = os.path.abspath(os.path.join(os.getcwd(), "..", "src"))
     results_path = os.path.abspath(os.path.join(os.getcwd(), "..", "results"))
     if src_path not in sys.path:
         sys.path.insert(0, src_path)
         sys.path.insert(1, results_path)

     from plots import plot_plotly, preprocessing_results
```

```python
[2]: local_FedCluLearn = 'results/results_FedCluLearn_2025-02-07_13_40_27.170073.txt'
     global_FedCluLearn = 'results/
      ↪global_model_evaluation_FedCluLearn_2025-02-07_13_40_27.170073.txt'

     local_FedAvg = 'results/results_FedAvg_2025-02-05_11_02_59.570648.txt'
     global_FedAvg = 'results/global_model_evaluation_FedAvg_2025-02-05_11_02_59.
      ↪570648.txt'

     local_FedAtt = 'results/results_FedAtt_2025-02-15_14_24_24.188745.txt'
     global_FedAtt = 'results/global_model_evaluation_FedAtt_2025-02-15_14_24_24.
      ↪188745.txt'

     local_FedProx = 'results/results_FedProx_2025-02-16_08_55_52.957901.txt'
     global_FedProx = 'results/global_model_evaluation_FedProx_2025-02-16_08_55_52.
      ↪957901.txt'

     local_FedCluLearn_Prox = 'results/results_FedCluLearn_Prox_2025-02-26_12_07_09.
      ↪049414.txt'
     global_FedCluLearn_Prox = 'results/
      ↪global_model_evaluation_FedCluLearn_Prox_2025-02-26_12_07_09.049414.txt'
```
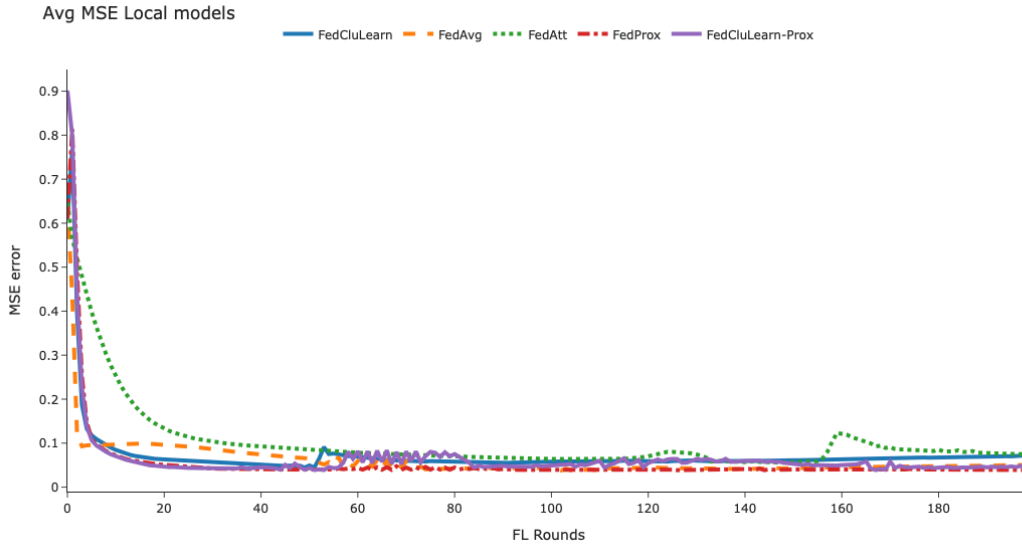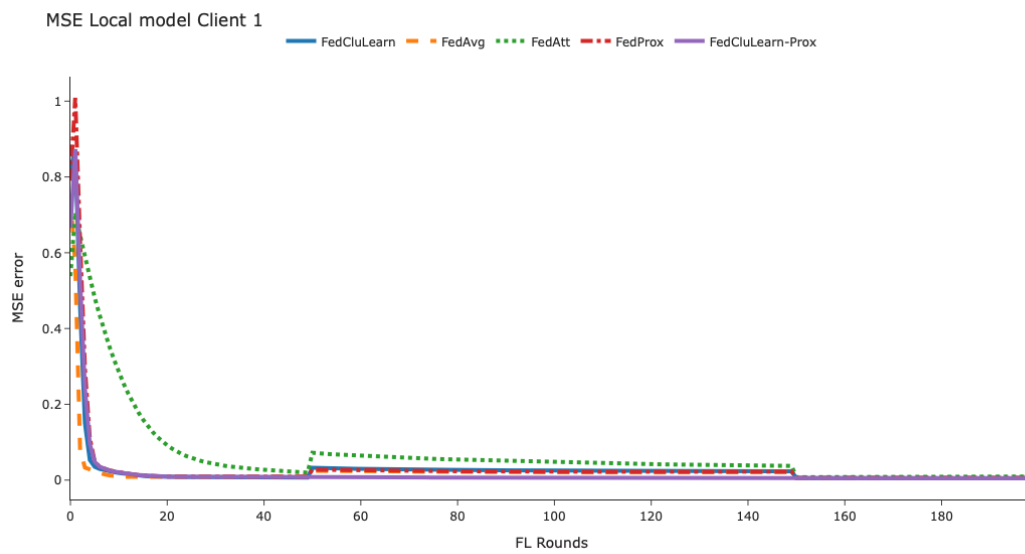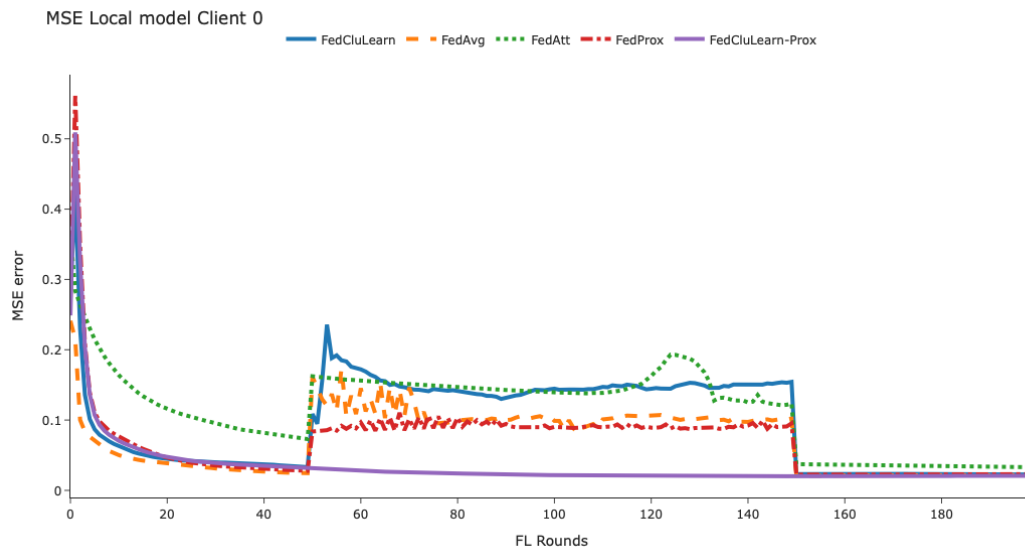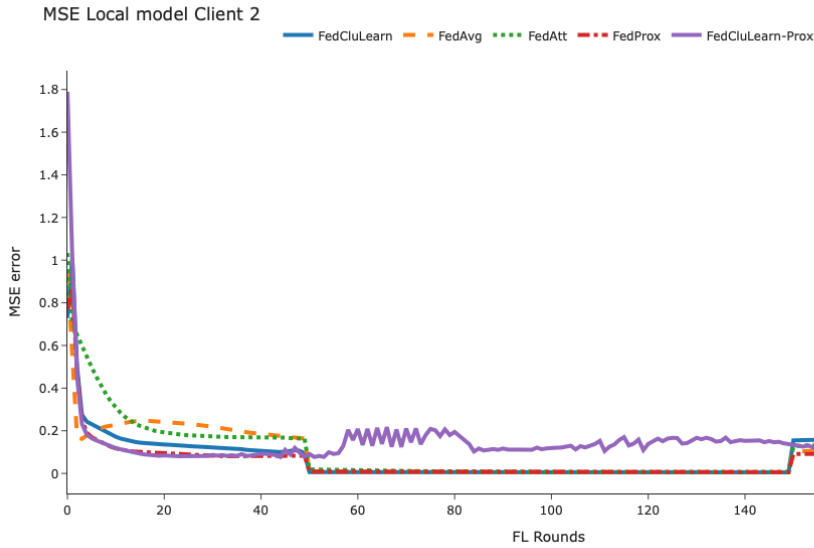
```python
[3]: local_filenames = [local_FedCluLearn, local_FedAvg, local_FedAtt,
      ↪local_FedProx, local_FedCluLearn_Prox]
     global_filenames = [global_FedCluLearn, global_FedAvg, global_FedAtt,
      ↪global_FedProx, global_FedCluLearn_Prox]
```

```
[4]: 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

```
[5]: 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

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

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MSE Local model Client 2

```
[6]: 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)
```

```
[7]: 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)
```

```
[8]: 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)
```

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```
    plot_plotly(n_rounds, y, title=f'Global model - test data Client␣
 ↪{client_id}', y_axis_title=f'{mse_column} error')
```

[9]:
```
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')
```
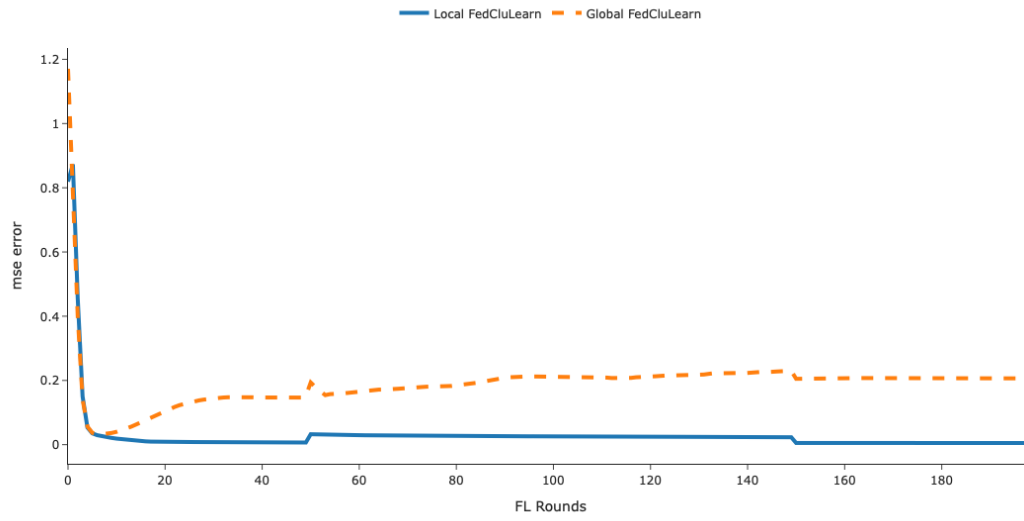
[10]:
```
mse_column='mse'
for client_id in [0,1,2]:
    n_rounds, y = preprocessing_results(filenames=[local_FedCluLearn,␣
 ↪global_FedCluLearn, None, None, None],␣
 ↪client_id=client_id,mse_column=mse_column)
    plot_plotly(n_rounds, y, title=f'Local vs Global Client {client_id}',␣
 ↪y_axis_title=f'{mse_column} error', algo_name1='Local FedCluLearn',␣
 ↪algo_name4='Global FedCluLearn')
```
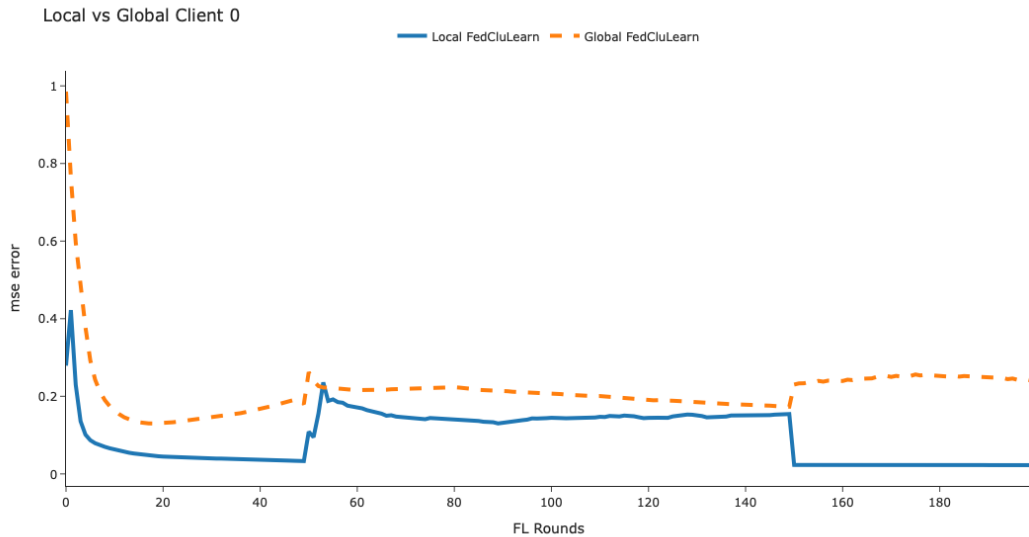
Local vs Global Client 1

Local vs Global Client 2