control_experiment_5G_A1_percentage

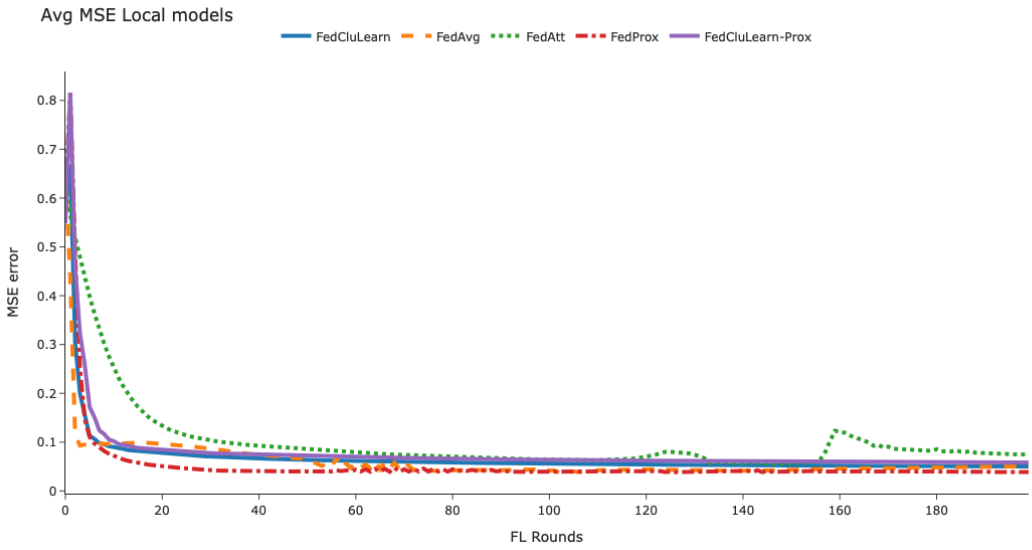
June 8, 2025

[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
```

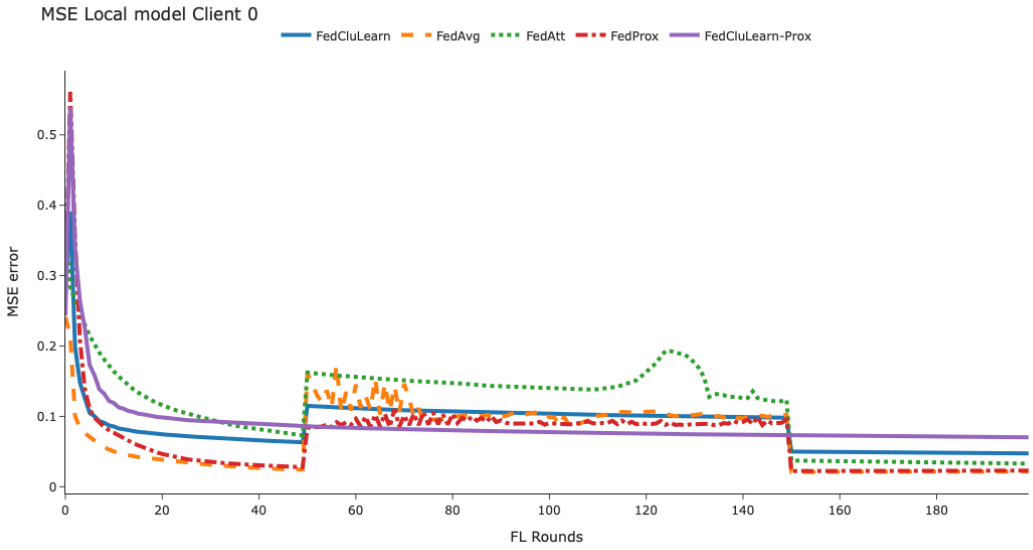
[2]:
```
local_FedAvg = 'results/results_FedAvg_2025-02-05_11_02_59.570648.txt'
global_FedAvg = 'results/global_model_evaluation_FedAvg_2025-02-05_11_02_59.
 ↪570648.txt'

local_FedCluLearn = 'results/results_FedCluLearn_2025-02-07_16_25_15.308613.txt'
global_FedCluLearn = 'results/
 ↪global_model_evaluation_FedCluLearn_2025-02-07_16_25_15.308613.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_39.
 ↪756286.txt'
global_FedCluLearn_Prox = 'results/
 ↪global_model_evaluation_FedCluLearn_Prox_2025-02-26_12_07_39.756286.txt'
```

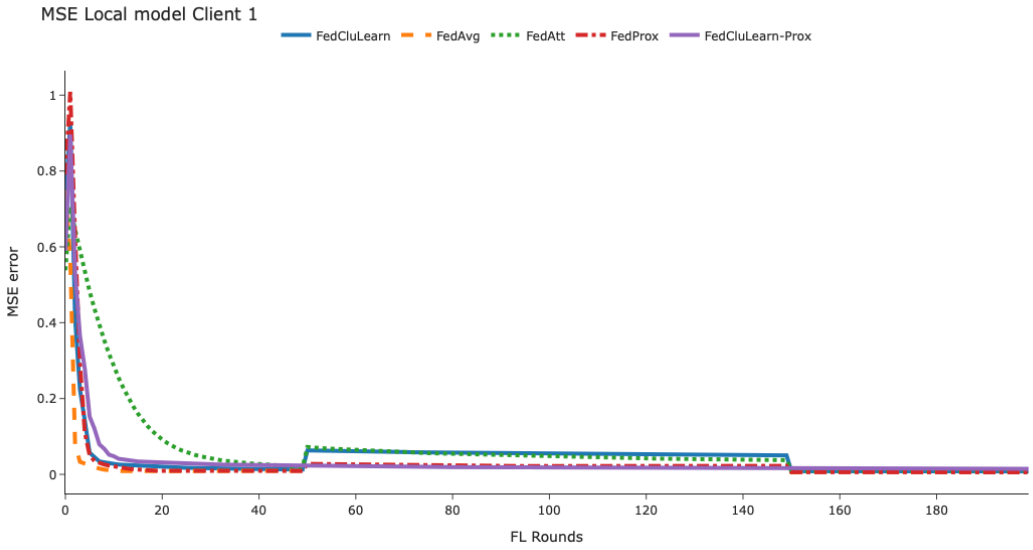
[3]:
```
local_filenames = [local_FedCluLearn, local_FedAvg, local_FedAtt,␣
 ↪local_FedProx, local_FedCluLearn_Prox]
global_filenames = [global_FedCluLearn, global_FedAvg, global_FedAtt,␣
 ↪global_FedProx, global_FedCluLearn_Prox]
```

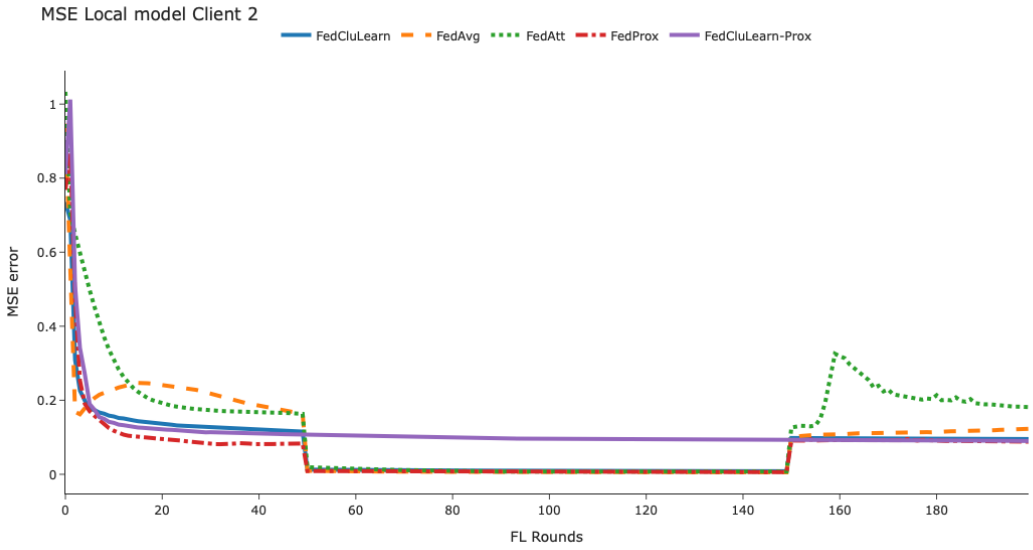
[4]:
```
mse_column = 'mse'
n_rounds, y = preprocessing_results(filenames=local_filenames,␣
↪mse_column=mse_column)
plot_plotly(n_rounds, y, title='Avg MSE Local models',␣
↪y_axis_title=f'{mse_column.upper()} error', y_axis_max=0.3)
```



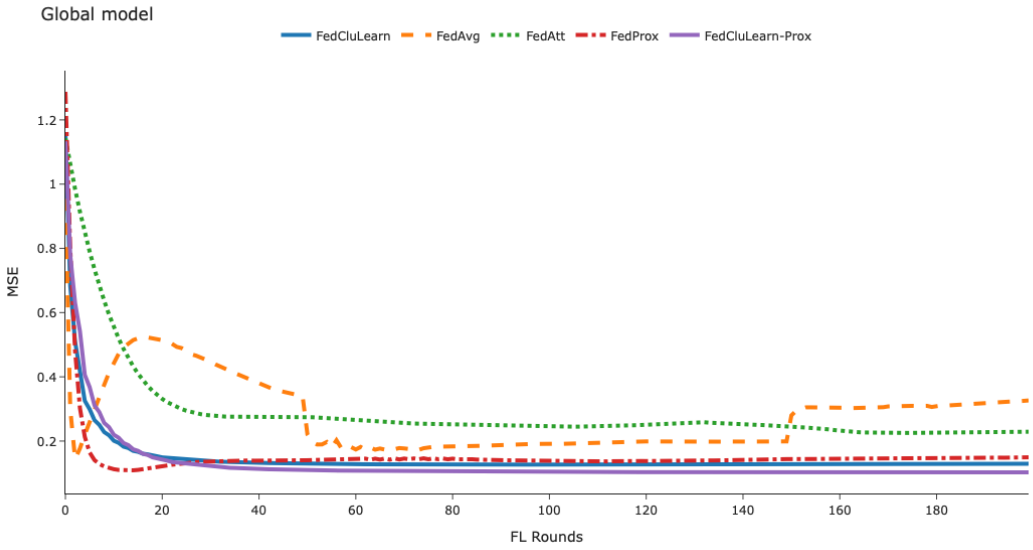
[5]:
```
for client_id in [0,1,2]:
    n_rounds, y = preprocessing_results(filenames=local_filenames,␣
↪client_id=client_id, mse_column='mse')
    plot_plotly(n_rounds, y, title=f'MSE Local model Client {client_id}',␣
↪y_axis_title='MSE error')
```


MSE Local model Client 0
FedCluLearn
FedAvg
FedAtt
FedProx
FedCluLearn-Prox
MSE error
FL Rounds
0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100
120
140
160
180


MSE Local model Client 1
FedCluLearn
FedAvg
FedAtt
FedProx
FedCluLearn-Prox
MSE error
FL Rounds
0
0.2
0.4
0.6
0.8
1
0
20
40
60
80
100
120
140
160
180



[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)
```



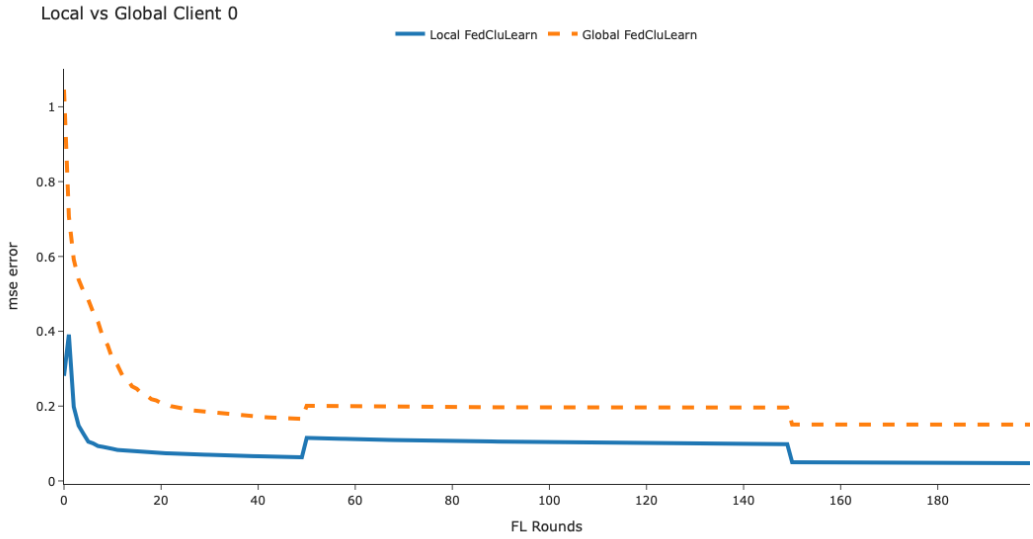
[7]:
```
mse_column = 'r2'
global_filenames = [global_FedCluLearn, global_FedAvg, global_FedAtt,␣
 ↪global_FedProx, global_FedCluLearn_Prox]
n_rounds, y = preprocessing_results(filenames=global_filenames,␣
 ↪mse_column=mse_column)
plot_plotly(n_rounds, y, title=f'Global model', y_axis_title=f'{mse_column.
 ↪upper()}', y_axis_max=1)
```

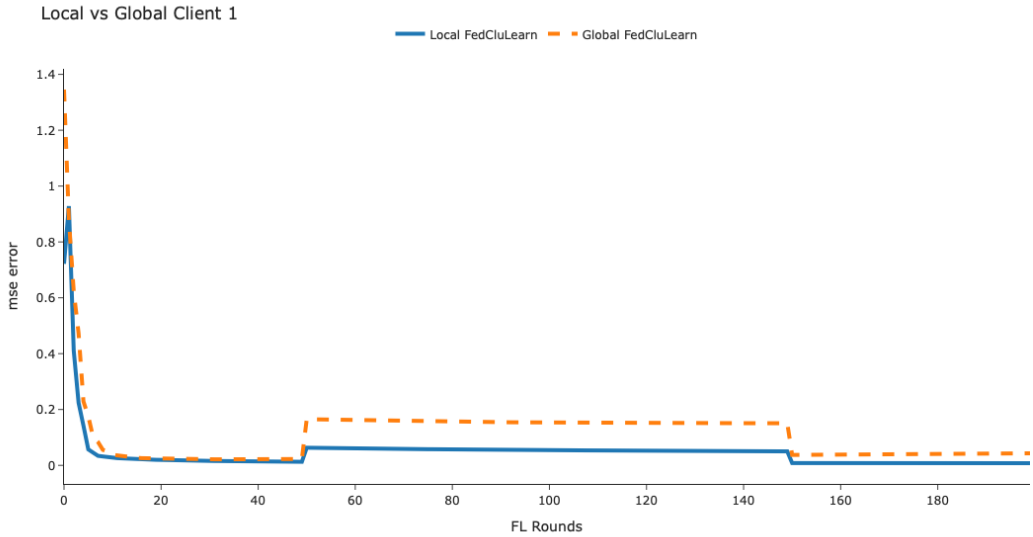
[8]:
```
mse_column='mse'
for client_id in [0,1,2]:
    n_rounds, y = preprocessing_results(filenames=global_filenames,␣
 ↪client_id=client_id,mse_column=mse_column)
    plot_plotly(n_rounds, y, title=f'Global model - test data Client␣
 ↪{client_id}', y_axis_title=f'{mse_column} error')
```

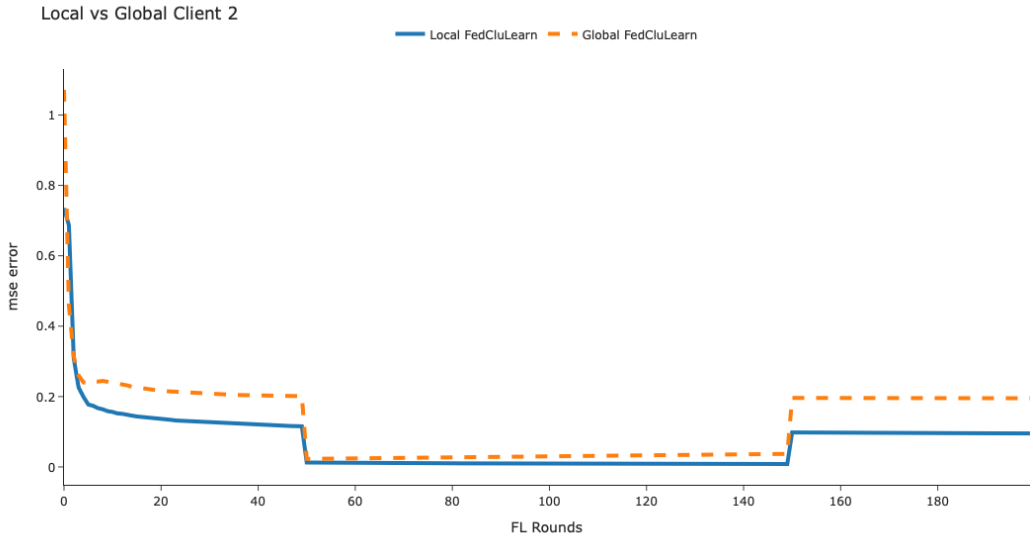
[9]:
```
mse_column='r2'
for client_id in [0,1,2]:
    n_rounds, y = preprocessing_results(filenames=global_filenames,␣
 ↪client_id=client_id,mse_column=mse_column)
    plot_plotly(n_rounds, y, title=f'Global model - test data Client␣
 ↪{client_id}', y_axis_title=f'{mse_column} error')
```

[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 2
Local FedCluLearn
Global FedCluLearn
mse error
FL Rounds
0
0.2
0.4
0.6
0.8
1
0
20
40
60
80
100
120
140
160
180