control_experiment_5G_A2_totals

June 8, 2025

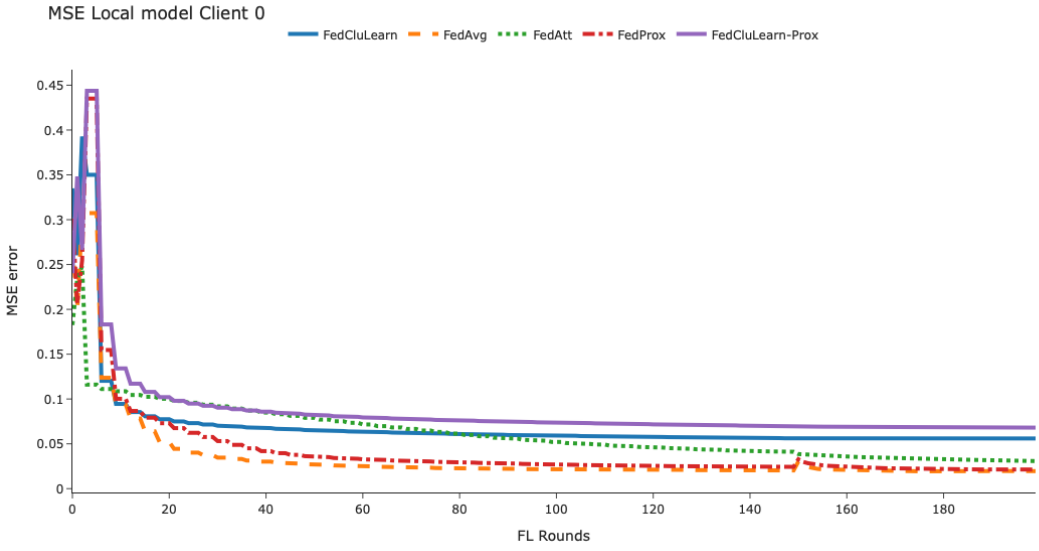
[1]:
```
import sys
import os

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

from plots import plot_plotly, preprocessing_results
```

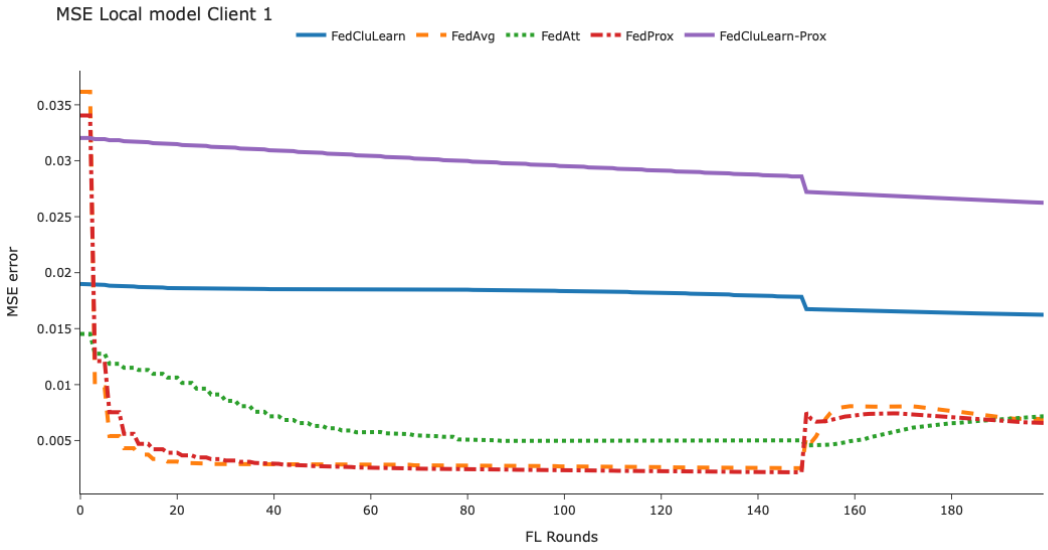
[2]:
```
# experiment 1, local epochs 3 local concept drift
local_FedCluLearn = 'results/results_FedCluLearn_2025-02-26_12_05_05.479940.txt'
global_FedCluLearn = 'results/
 ↪global_model_evaluation_FedCluLearn_2025-02-26_12_05_05.479940.txt'

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_Prox = 'results/results_FedCluLearn_Prox_2025-02-26_13_29_34.
 ↪958705.txt'
global_FedCluLearn_Prox = 'results/
 ↪global_model_evaluation_FedCluLearn_Prox_2025-02-26_13_29_34.958705.txt'
```

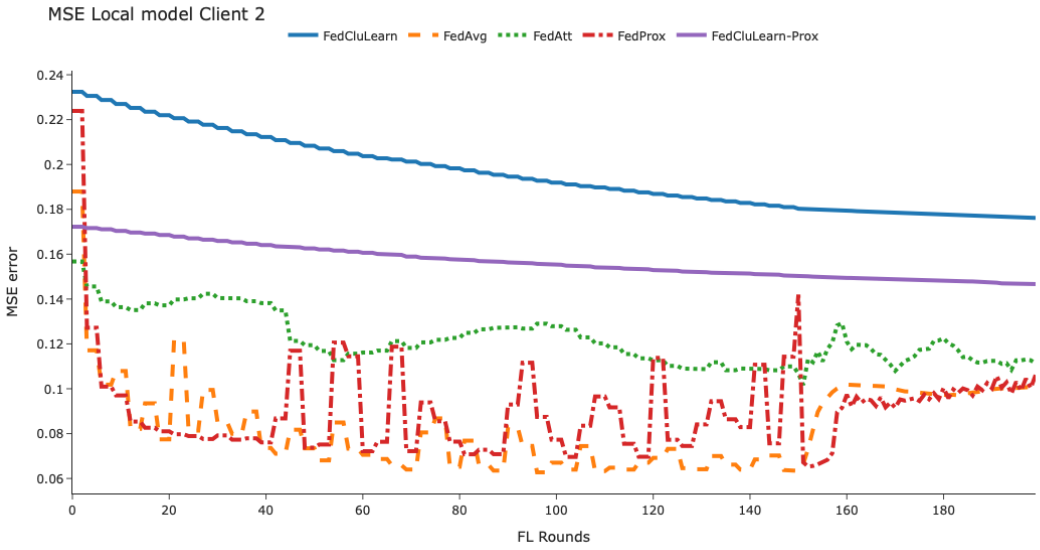
[3]:
```
local_filenames = [local_FedCluLearn, local_FedAvg, local_FedAtt,␣
 ↪local_FedProx, local_FedCluLearn_Prox]
global_filenames = [global_FedCluLearn, global_FedAvg, global_FedAtt,␣
 ↪global_FedProx, global_FedCluLearn_Prox]
```

[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)
```

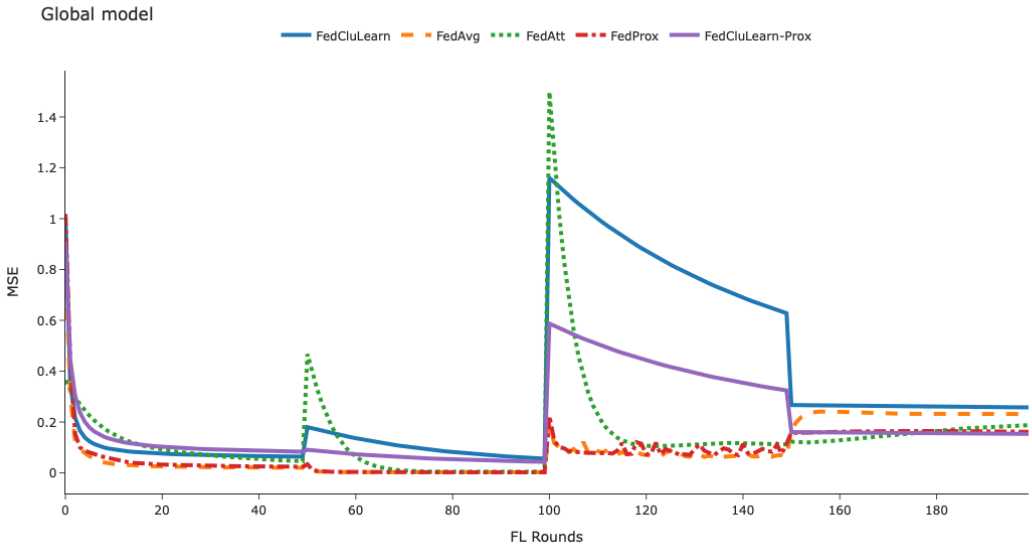
[5]:
```
for client_id in [0,1,2]:
    n_rounds, y = preprocessing_results(filenames=local_filenames,␣
 ↪client_id=client_id, mse_column='mse')
    plot_plotly(n_rounds, y, title=f'MSE Local model Client {client_id}',␣
 ↪y_axis_title='MSE error')
```







[6]:
```
mse_column = 'mse'
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)
```



[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')
```

[11]:
```
local_FedCluLearn_070 = 'results/results_FedCluLearn_2025-03-04 10:42:21.373624.
 ↪txt'
global_FedCluLearn_070 = 'results/
 ↪global_model_evaluation_FedCluLearn_2025-03-04 10:42:21.373624.txt'
local_FedCluLearn_080 = 'results/results_FedCluLearn_2025-03-04 10:43:06.616600.
 ↪txt'
global_FedCluLearn_080 = 'results/
 ↪global_model_evaluation_FedCluLearn_2025-03-04 10:43:06.616600.txt'
local_FedCluLearn_090 = 'results/results_FedCluLearn_2025-03-04 11:28:42.427780.
 ↪txt'
global_FedCluLearn_090 = 'results/
 ↪global_model_evaluation_FedCluLearn_2025-03-04 11:28:42.427780.txt'
local_FedCluLearn_Prox_070 = 'results/results_FedCluLearn_Prox_2025-03-04 11:29:
 ↪08.539834.txt'
global_FedCluLearn_Prox_070 = 'results/
 ↪global_model_evaluation_FedCluLearn_Prox_2025-03-04 11:29:08.539834.txt'
local_FedCluLearn_Prox_080 = 'results/results_FedCluLearn_Prox_2025-03-04 11:30:
 ↪23.357036.txt'
global_FedCluLearn_Prox_080 = 'results/
 ↪global_model_evaluation_FedCluLearn_Prox_2025-03-04 11:30:23.357036.txt'
local_FedCluLearn_Prox_090 = 'results/results_FedCluLearn_Prox_2025-03-04 11:30:
 ↪29.815623.txt'
global_FedCluLearn_Prox_090 = 'results/
 ↪global_model_evaluation_FedCluLearn_Prox_2025-03-04 11:30:29.815623.txt'
```

[12]:
```
mse_column = 'mse'
global_filenames = [global_FedCluLearn, global_FedCluLearn_070,␣
 ↪global_FedCluLearn_080, global_FedCluLearn_090]
n_rounds, y = preprocessing_results(filenames=global_filenames,␣
 ↪mse_column=mse_column)
plot_plotly(n_rounds, y, title=f'', y_axis_title=f'{mse_column.upper()} error',␣
 ↪y_axis_max=1, algo_name1 = '0.5', algo_name4='0.7', algo_name5='0.8',␣
 ↪algo_name6='0.9')
```

```
---------------------------------------------------------------------------
FileNotFoundError                         Traceback (most recent call last)
Cell In[12], line 3
      1 mse_column = 'mse'
      2 global_filenames = [global_FedCluLearn, global_FedCluLearn_070,␣
 ↪global_FedCluLearn_080, global_FedCluLearn_090]
----> 3 n_rounds, y =␣
 ↪preprocessing_results(filenames=global_filenames, mse_column=mse_column)
```

```
     4 plot_plotly(n_rounds, y, title=f'', y_axis_title=f'{mse_column.upper()}␣
 ↪error', y_axis_max=1, algo_name1 = '0.5', algo_name4='0.7', algo_name5='0.8', ␣
 ↪algo_name6='0.9')

File ~/git-repo/FedClust/src/plots.py:48, in preprocessing_results(filenames,␣
 ↪client_id, mse_column)
     46     n_rounds, y = __preprocessing_results_a_client(filenames, client_id ␣
 ↪mse_column)
     47 else:
---> 48     n_rounds, y =␣
 ↪__preprocessing_results_all_clients(filenames, mse_column)
     49 return n_rounds, y

File ~/git-repo/FedClust/src/plots.py:55, in␣
 ↪__preprocessing_results_all_clients(filenames, mse_column)
     53 for filename in filenames:
     54     if filename != None:
---> 55         dfs.append(_read_csv(filename))
     56     else:
     57         dfs.append(pd.DataFrame())

File ~/git-repo/FedClust/src/plots.py:19, in _read_csv(filename)
     17     fl_results_df.
 ↪columns=["fl_round","client_id","learning_rate","direction","mse","best_mse", mae","r2","lo
     18 else:
---> 19     raise FileNotFoundError
     20 return fl_results_df

FileNotFoundError:
```