VMM IPv4 Opnet++ by Yosep Kim

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Namespace Index

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Class Index

2.1 Class List

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Chapter 4

Namespace Documentation

4.1 main Namespace Reference

Variables

- base_dir_name
- RAW_RSSI_DATA_BASE_DIRNAME
- description
- KF_RSSI_DATA_BASE_DIRNAME

4.1.1 Variable Documentation

4.1.1.1 base_dir_name

`main.base_dir_name`

Definition at line 13 of file main.py.

4.1.1.2 description

`main.description`

Definition at line 13 of file main.py.

4.1.1.3 KF_RSSI_DATA_BASE_DIRNAME

```
main.KF_RSSI_DATA_BASE_DIRNAME
```

Definition at line 18 of file main.py.

4.1.1.4 RAW_RSSI_DATA_BASE_DIRNAME

```
main.RAW_RSSI_DATA_BASE_DIRNAME
```

Definition at line 13 of file main.py.

4.2 src Namespace Reference

Namespaces

- common
- kalman_filter
- kalman_rssi_preprocessing
- master_gnb_analysis
- ping_pong_rate_analysis
- raw_rssi_preprocessing
- visualizer

4.3 src.common Namespace Reference

Functions

- str safe_make_directory (str directory_path)
- str get_save_dir (str base_dir_name, str save_dir_name)
- str get_load_dir (str base_dir_name, str load_dir_name)

Variables

- str

4.3.1 Function Documentation

4.3.1.1 get_load_dir()

```
str src.common.get_load_dir (
            str base_dir_name,
            str load_dir_name )
```

Definition at line 35 of file common.py.

Referenced by src.master_gnb_analysis.generate_ho_data(), src.ping_pong_rate_analysis.generate_ppr_data(), src.visualizer.get_path_kf_and_raw(), src.kalman_rssi_preprocessing.kf_preprocessing(), and src.visualizer.visualize_each().

4.3.1.2 get_save_dir()

```
str src.common.get_save_dir (
            str base_dir_name,
            str save_dir_name )
```

Definition at line 25 of file common.py.

References src.common.safe_make_directory().

Referenced by src.master_gnb_analysis.generate_ho_data(), src.ping_pong_rate_analysis.generate_ppr_data(), src.kalman_rssi_preprocessing.kf_preprocessing(), src.raw_rssi_preprocessing.raw_preprocessing(), and src.visualizer.visualize_each().

4.3.1.3 safe_make_directory()

```
str src.common.safe_make_directory (
            str directory_path )
```

Definition at line 18 of file common.py.

Referenced by src.visualizer.get_path_kf_and_raw(), and src.common.get_save_dir().

4.3.2 Variable Documentation

4.3.2.1 str

```
src.common.str
```

Definition at line 5 of file common.py.

Referenced by src.kalman_rssi_preprocessing.apply_kalman_filter_to_ue_data(), src.raw_rssi_preprocessing.save_data(), and src.visualizer.visualize_kf_and_raw().

4.4 src.kalman_filter Namespace Reference

Classes

- class KalmanFilter

4.5 src.kalman_rssi_preprocessing Namespace Reference

Functions

- pd.DataFrame apply_kalman_filter_to_ue_data (pd.DataFrame df)
- pd.DataFrame load_ue_data (str data_dir, int ue)
- def save_kf_data (pd.DataFrame df, str data_dir, int ue)
- def kf_preprocessing ()

4.5.1 Function Documentation

4.5.1.1 apply_kalman_filter_to_ue_data()

```
pd.DataFrame src.kalman_rssi_preprocessing.apply_kalman_filter_to_ue_data (
            pd.DataFrame df )
```

Definition at line 10 of file kalman_rssi_preprocessing.py.

References src.common.str.

Referenced by src.kalman_rssi_preprocessing.kf_preprocessing().

4.5.1.2 kf_preprocessing()

```
def src.kalman_rssi_preprocessing.kf_preprocessing ( )
```

Definition at line 61 of file kalman_rssi_preprocessing.py.

References src.kalman_rssi_preprocessing.apply_kalman_filter_to_ue_data(), src.common.get_load_dir(), src.↩ common.get_save_dir(), src.kalman_rssi_preprocessing.load_ue_data(), and src.kalman_rssi_preprocessing.↩ save_kf_data().

4.5.1.3 load_ue_data()

```
pd.DataFrame src.kalman_rssi_preprocessing.load_ue_data (
             str data_dir,
             int ue )
```

Definition at line 50 of file kalman_rssi_preprocessing.py.

Referenced by src.kalman_rssi_preprocessing.kf_preprocessing().

4.5.1.4 save_kf_data()

```
def src.kalman_rssi_preprocessing.save_kf_data (
             pd.DataFrame df,
             str data_dir,
             int ue )
```

Definition at line 56 of file kalman_rssi_preprocessing.py.

Referenced by src.kalman_rssi_preprocessing.kf_preprocessing().

4.6 src.master_gnb_analysis Namespace Reference

Functions

- pd.DataFrame extract_current_master (pd.DataFrame df)
- def generate_ho_data (str base_dir_name)

4.6.1 Function Documentation

4.6.1.1 extract_current_master()

```
pd.DataFrame src.master_gnb_analysis.extract_current_master (
             pd.DataFrame df )
```

Definition at line 8 of file master_gnb_analysis.py.

Referenced by src.master_gnb_analysis.generate_ho_data().

4.6.1.2 generate_ho_data()

```
def src.master_gnb_analysis.generate_ho_data (
            str base_dir_name )
```

Definition at line 15 of file master_gnb_analysis.py.

References src.master_gnb_analysis.extract_current_master(), src.common.get_load_dir(), and src.common.get↩ _save_dir().

4.7 src.ping_pong_rate_analysis Namespace Reference

Functions

- def calculate_ping_pong_rates (file_path)
- def generate_ppr_data (str base_dir_name)

4.7.1 Function Documentation

4.7.1.1 calculate_ping_pong_rates()

```
def src.ping_pong_rate_analysis.calculate_ping_pong_rates (
             file_path )
```

Definition at line 8 of file ping_pong_rate_analysis.py.

Referenced by src.ping_pong_rate_analysis.generate_ppr_data().

4.7.1.2 generate_ppr_data()

```
def src.ping_pong_rate_analysis.generate_ppr_data (
            str base_dir_name )
```

Definition at line 27 of file ping_pong_rate_analysis.py.

References src.ping_pong_rate_analysis.calculate_ping_pong_rates(), src.common.get_load_dir(), and src.↩ common.get_save_dir().

4.8 src.raw_rssi_preprocessing Namespace Reference

Functions

- def read_data (filename)
- pd.DataFrame process_data (pd.DataFrame df_raw)
- def save_data (data_by_ue, data_dir)
- def raw_preprocessing ()

4.8.1 Function Documentation

4.8.1.1 process_data()

```
pd.DataFrame src.raw_rssi_preprocessing.process_data (
            pd.DataFrame df_raw )
```

Definition at line 18 of file raw_rssi_preprocessing.py.

Referenced by src.raw_rssi_preprocessing.raw_preprocessing().

4.8.1.2 raw_preprocessing()

```
def src.raw_rssi_preprocessing.raw_preprocessing ( )
```

Definition at line 51 of file raw_rssi_preprocessing.py.

References src.common.get_save_dir(), src.raw_rssi_preprocessing.process_data(), src.raw_rssi_preprocessing.↩ read_data(), and src.raw_rssi_preprocessing.save_data().

4.8.1.3 read_data()

```
def src.raw_rssi_preprocessing.read_data (
              filename )
```

Definition at line 12 of file raw_rssi_preprocessing.py.

Referenced by src.raw_rssi_preprocessing.raw_preprocessing().

4.8.1.4 save_data()

```
def src.raw_rssi_preprocessing.save_data (
              data_by_ue,
              data_dir )
```

Definition at line 33 of file raw_rssi_preprocessing.py.

References src.common.str.

Referenced by src.raw_rssi_preprocessing.raw_preprocessing().

4.9 src.visualizer Namespace Reference

Functions

- def plot_ue_data (str df, str ue, str save_path, str description)
- def plot_combined_data (all_dfs, save_path)
- def visualize_each (str base_dir_name, str description)
- def plot_data_kf_and_raw (pd.DataFrame df_kf, pd.DataFrame df_raw, str ue, str gnb, str plot_dir)
- tuple get_path_kf_and_raw ()
- def visualize_kf_and_raw ()

4.9.1 Function Documentation

4.9.1.1 get_path_kf_and_raw()

```
tuple src.visualizer.get_path_kf_and_raw ( )
```

Definition at line 93 of file visualizer.py.

References src.common.get_load_dir(), and src.common.safe_make_directory().

Referenced by src.visualizer.visualize_kf_and_raw().

4.9.1.2 plot_combined_data()

```
def src.visualizer.plot_combined_data (
              all_dfs,
              save_path )
```

Definition at line 40 of file visualizer.py.

Referenced by src.visualizer.visualize_each().

4.9.1.3 plot_data_kf_and_raw()

```
def src.visualizer.plot_data_kf_and_raw (
             pd.DataFrame df_kf,
             pd.DataFrame df_raw,
             str ue,
             str gnb,
             str plot_dir )
```

Definition at line 75 of file visualizer.py.

Referenced by src.visualizer.visualize_kf_and_raw().

4.9.1.4 plot_ue_data()

```
def src.visualizer.plot_ue_data (
            str df,
            str ue,
            str save_path,
            str description )
```

Definition at line 21 of file visualizer.py.

Referenced by src.visualizer.visualize_each().

4.9.1.5 visualize_each()

```
def src.visualizer.visualize_each (
            str base_dir_name,
            str description )
```

Definition at line 60 of file visualizer.py.

References src.common.get_load_dir(), src.common.get_save_dir(), src.visualizer.plot_combined_data(), and src.visualizer.plot_ue_data().

4.9.1.6 visualize_kf_and_raw()

```
def src.visualizer.visualize_kf_and_raw ( )
```

Definition at line 104 of file visualizer.py.

References src.visualizer.get_path_kf_and_raw(), src.visualizer.plot_data_kf_and_raw(), and src.common.str.

Chapter 5

Class Documentation

5.1 src.kalman_filter.KalmanFilter Class Reference

Public Member Functions

- def __init__ (self, initial_state, state_transition, process_noise, measurement_noise, measurement_function)
- def predict (self)
- def update (self, measurement)

Public Attributes

- state
- state_transition
- process_noise
- measurement_noise
- measurement_function
- covariance

5.1.1 Detailed Description

Definition at line 4 of file kalman_filter.py.

5.1.2 Constructor & Destructor Documentation

5.1.2.1 __init__()

```
def src.kalman_filter.KalmanFilter.__init__ (
              self,
              initial_state,
              state_transition,
              process_noise,
              measurement_noise,
              measurement_function )
```

Definition at line 5 of file kalman_filter.py.

5.1.3 Member Function Documentation

5.1.3.1 predict()

```
def src.kalman_filter.KalmanFilter.predict (
              self )
```

Definition at line 13 of file kalman_filter.py.

References src.kalman_filter.KalmanFilter.covariance, src.kalman_filter.KalmanFilter.process_noise, src.kalman↩_filter.KalmanFilter.state, and src.kalman_filter.KalmanFilter.state_transition.

5.1.3.2 update()

```
def src.kalman_filter.KalmanFilter.update (
              self,
              measurement )
```

Definition at line 17 of file kalman_filter.py.

References src.kalman_filter.KalmanFilter.covariance, src.kalman_filter.KalmanFilter.measurement_function, src.↩kalman_filter.KalmanFilter.measurement_noise, and src.kalman_filter.KalmanFilter.state.

5.1.4 Member Data Documentation

5.1.4.1 covariance

```
src.kalman_filter.KalmanFilter.covariance
```

Definition at line 11 of file kalman_filter.py.

Referenced by src.kalman_filter.KalmanFilter.predict(), and src.kalman_filter.KalmanFilter.update().

5.1.4.2 measurement_function

```
src.kalman_filter.KalmanFilter.measurement_function
```

Definition at line 10 of file kalman_filter.py.

Referenced by src.kalman_filter.KalmanFilter.update().

5.1.4.3 measurement_noise

`src.kalman_filter.KalmanFilter.measurement_noise`

Definition at line 9 of file kalman_filter.py.

Referenced by src.kalman_filter.KalmanFilter.update().

5.1.4.4 process_noise

`src.kalman_filter.KalmanFilter.process_noise`

Definition at line 8 of file kalman_filter.py.

Referenced by src.kalman_filter.KalmanFilter.predict().

5.1.4.5 state

`src.kalman_filter.KalmanFilter.state`

Definition at line 6 of file kalman_filter.py.

Referenced by src.kalman_filter.KalmanFilter.predict(), and src.kalman_filter.KalmanFilter.update().

5.1.4.6 state_transition

`src.kalman_filter.KalmanFilter.state_transition`

Definition at line 7 of file kalman_filter.py.

Referenced by src.kalman_filter.KalmanFilter.predict().

The documentation for this class was generated from the following file:

- dat/src/kalman_filter.py

Chapter 6

File Documentation

6.1 dat/main.py File Reference

Namespaces

- main

Variables

- main.base_dir_name
- main.RAW_RSSI_DATA_BASE_DIRNAME
- main.description
- main.KF_RSSI_DATA_BASE_DIRNAME

6.2 dat/src/__init__.py File Reference

Namespaces

- src

6.3 dat/src/common.py File Reference

Namespaces

- src.common

Functions

- str src.common.safe_make_directory (str directory_path)
- str src.common.get_save_dir (str base_dir_name, str save_dir_name)
- str src.common.get_load_dir (str base_dir_name, str load_dir_name)

Variables

- src.common.str

6.4 dat/src/kalman_filter.py File Reference

Classes

- class src.kalman_filter.KalmanFilter

Namespaces

- src.kalman_filter

6.5 dat/src/kalman_rssi_preprocessing.py File Reference

Namespaces

- src.kalman_rssi_preprocessing

Functions

- pd.DataFrame src.kalman_rssi_preprocessing.apply_kalman_filter_to_ue_data (pd.DataFrame df)
- pd.DataFrame src.kalman_rssi_preprocessing.load_ue_data (str data_dir, int ue)
- def src.kalman_rssi_preprocessing.save_kf_data (pd.DataFrame df, str data_dir, int ue)
- def src.kalman_rssi_preprocessing.kf_preprocessing ()

6.6 dat/src/master_gnb_analysis.py File Reference

Namespaces

- src.master_gnb_analysis

Functions

- pd.DataFrame src.master_gnb_analysis.extract_current_master (pd.DataFrame df)
- def src.master_gnb_analysis.generate_ho_data (str base_dir_name)

6.7 dat/src/ping_pong_rate_analysis.py File Reference

Namespaces

- src.ping_pong_rate_analysis

Functions

- def src.ping_pong_rate_analysis.calculate_ping_pong_rates (file_path)
- def src.ping_pong_rate_analysis.generate_ppr_data (str base_dir_name)

6.8 dat/src/raw_rssi_preprocessing.py File Reference

Namespaces

- src.raw_rssi_preprocessing

Functions

- def src.raw_rssi_preprocessing.read_data (filename)
- pd.DataFrame src.raw_rssi_preprocessing.process_data (pd.DataFrame df_raw)
- def src.raw_rssi_preprocessing.save_data (data_by_ue, data_dir)
- def src.raw_rssi_preprocessing.raw_preprocessing ()

6.9 dat/src/visualizer.py File Reference

Namespaces

- src.visualizer

Functions

- def src.visualizer.plot_ue_data (str df, str ue, str save_path, str description)
- def src.visualizer.plot_combined_data (all_dfs, save_path)
- def src.visualizer.visualize_each (str base_dir_name, str description)
- def src.visualizer.plot_data_kf_and_raw (pd.DataFrame df_kf, pd.DataFrame df_raw, str ue, str gnb, str plot↩ _dir)
- tuple src.visualizer.get_path_kf_and_raw ()
- def src.visualizer.visualize_kf_and_raw ()

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