Description

This document is a comprehensive overview of all Python scripts. These scripts are called **processes**. Each process has one or more **inputs** and produces one or more **outputs**. The outputs are then used as inputs in another Python script. These dependencies are visualized by using the same color. This modular approach was choosen, because of the flexibility to add more processing steps in the future.

Input		Process		Output
		./config.py	→	Creates required folders in the ./data folder
Microcontroller raw data from serial port	→	*./capturing/data_logger.py*	→	Terminal logging raw data
Microcontroller raw data from serial port	→	*./capturing/data_recorder.py*	→	./data/captured/<label_1>.csv ./data/captured/<label_2>.csv ./data/captured/<label_3>.csv
./data/captured/<label_1>.csv ./data/captured/<label_2>.csv ./data/captured/<label_3>.csv	→	*./capturing/data_plotter.py*	→	./data/captured/all_raw_time_series_data.png
./../lib/filters.h ./../lib/filters.c	→	*./preprocessing/filter_selection/filter_functions_c2dll.py*	→	./data/preprocessed/filters/filters.dll
./data/preprocessed/filters/filters.dll ./data/captured/<label_1>.csv ./data/captured/<label_2>.csv ./data/captured/<label_3>.csv	→	*./preprocessing/filter_selection/filter_calculator.py*	→	./data/preprocessed/filters/<label_1>.csv ./data/preprocessed/filters/<label_2>.csv ./data/preprocessed/filters/<label_3>.csv
./data/preprocessed/filters/<label_1>.csv ./data/preprocessed/filters/<label_2>.csv ./data/preprocessed/filters/<label_3>.csv	→	*./preprocessing/filter_selection/filter_plotter.py*	→	./data/preprocessed/filters/all_filters_time_series_data.png
./../lib/normalizations.h ./../lib/normalizations.c	→	*./preprocessing/normalization_selection/normalization_functions_c2dll.py*	→	./data/preprocessed/normalizations/normalizations.dll
./data/preprocessed/normalizations/normalizations.dll ./data/preprocessed/filters/<label_1>.csv ./data/preprocessed/filters/<label_2>.csv ./data/preprocessed/filters/<label_3>.csv	→	*./preprocessing/normalization_selection/normalization_calculator.py*	→	./data/preprocessed/normalizations/<label_1>.csv ./data/preprocessed/normalizations/<label_2>.csv ./data/preprocessed/normalizations/<label_3>.csv
./data/preprocessed/normalizations/<label_1>.csv ./data/preprocessed/normalizations/<label_2>.csv ./data/preprocessed/normalizations/<label_3>.csv	→	*./preprocessing/normalization_selection/normalization_plotter.py*	→	./data/preprocessed/normalizations/all_normalizations_time_series_data.png
./../lib/features.h ./../lib/features.c	→	*./preprocessing/feature_selection/feature_functions_c2dll.py*	→	./data/preprocessed/features/features.dll

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Input	Process	Output
./data/preprocessed/features/features.dll ./data/preprocessed/normalizations/<label_1>.csv ./data/preprocessed/normalizations/<label_2>.csv ./data/preprocessed/normalizations/<label_3>.csv	→ *./preprocessing/feature_selection/feature_calculator.py*	→ ./data/preprocessed/features/<label_1>.csv ./data/preprocessed/features/<label_2>.csv ./data/preprocessed/features/<label_3>.csv
./data/preprocessed/features/<label_1>.csv ./data/preprocessed/features/<label_2>.csv ./data/preprocessed/features/<label_3>.csv	→ *./preprocessing/feature_selection/feature_plotter.py*	→ ./data/preprocessed/features/all_features_time_series_data.png ./data/preprocessed/features/all_features_label_distribution.png ./data/preprocessed/features/all_features_pairs.png ./data/preprocessed/features/all_features_correlation_heatmap.png ./data/preprocessed/features/all_features_boxplots.png
./data/preprocessed/features/<label_1>.csv ./data/preprocessed/features/<label_2>.csv ./data/preprocessed/features/<label_3>.csv	→ *./model_building/build_dtc.py*	→ ./data/model/dtc_model.txt ./data/model/dtc_model.gz ./data/model/dtc_train_bunch.csv ./data/model/dtc_test_bunch.csv ./data/model/features_tree.png ./data/model/features_decision_surfaces.png ./data/model/features_confusion_matrix.png
./data/model/dtc_model.gz ./data/model/dtc_train_bunch.csv	→ *./model_embedding/code_generator_dtc2c.py*	→ ./data/model_embedding/dtc_model.c
./../lib/filters.h ./../lib/filters.c ./../lib/normalizations.h ./../lib/normalizations.c ./../lib/features.h ./../lib/features.c ./data/model_embedding/dtc_model.c main.c	→ *Microcontroller IDE*	→ Executable application
Microcontroller raw data from serial port	→ *./capturing/timestamp_inspector.py*	→ Terminal showing inspection results