(M-)SSA-package: tutorials on novel Smooth Sign Accuracy forecast approach proposed in JBCY-paper entitled “Business Cycle Analysis and Zero-Crossings of Time Series: a Generalized Forecast Approach” (2024).

M-SSA is a recent multivariate extension (2025).

Description: There are four folders and a R-project file called M-SSA_package

- Folder “Data”: macro data (in particular for German GDP predictor in tutorial 7)
- Folder “R”: collection of R-functions used in tutorials
- Folder “M-SSA Tutorials”: all tutorials. Proceed in ascending order (of numbering).
- Folder “Papers”: background and proofs for univariate (SSA) and multivariate (M-SSA) predictors.

Working through the tutorials:

- Load the R-project file “M-SSA_package” in R studio.
- In R-studio: select a tutorial from the “M-SSA Tutorial” folder.
- Go through the numbered tutorials starting with lowest numbers first.
    - Number 0: introduction to topic: trilemma, optimization criterion, classic mean-square error (MSE) approach
    - Number 1: application of SSA to forecasting
    - Number 2: application to real-time signal extraction and Hodrick-Prescott filter
    - Number 3: application to Hamilton regression filter
    - Number 4: application to Baxter and King filter
    - Number 5: application to (refined) Beveridge Nelson filter
    - Number 6: extension of SSA to non-stationary series (maximal monotone predictor)
    - Number 7: extension of SSA to multivariate prediction problem M-SSA
        - Application: forecasting German GDP several quarters ahead