

High Integrity Systems Project

TSA Tasks 02

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Let us continue with *Time Series Analysis*:

- ✓ 1. As stated yesterday, please set up a project organization for the two sub-groups, i.e. list of members, configuration management, Python setup (requirements.txt) etc.
- ✓ 2. All documents (written in L^AT_EX!), models, code etc. must be accessible to Dr. Butt and me and of course the group members!
3. Please summarize chapter 2 of the book *Modern time series forecasting with Python*! Explain the necessary mathematics.
4. Please explain the *data preprocessing* and give references.
5. Please explain the **mathematical** handling of *missing data*!
6. Please run the corresponding code of chapter 2, comment the code and explain it! Please explain also errors and how you solved them!
7. Please summarize chapter 3 of the book *Modern time series forecasting with Python*! Explain the necessary mathematics.
- ✓ 8. Please run the corresponding code of chapter 3, comment the code and explain it! Please explain also errors and how you solved them!
- ✓ 9. Please explain the handling of *outliers* in time series.
- ✓ 10. Please install *Matlab/Simulink* if not done already!
11. Please explore the possibilities of *visualizing* time series.!
12. Show practical examples of *time series visualization* with Python and Matlab!
13. Please research the principal ideas of the *Kalman Filter*!
 - Mathematical foundation
 - Different variants
 - Practical examples in Matlab
 - Ptactical examples in Python

As usual: Please prepare the documentation in L^AT_EX!