Feedback on the Reports of the Computerlabs

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This document collects the most important issues becoming apparent from you efforts on performing the computer labs. As indicated, when handed in proper versions of the labs, I will assign you the 1 ECTS credit. However, there are a number of practical as well as conceptual issues left. Those are enumerated as follows.

CONTENT

Computer Lab 1.

1. The \ works often most reliable in MATLAB, although the QR decomposition is from a theoretical/numerical point of view the most robust one.
2. The command `idmodel` is implemented in newer versions under `idpoly`.
3. When $\omega_2 = a\pi + b$, for b small, and $a \in \mathbb{N}$, ill-conditioning will arise in the given example..

Computer Lab 2.

1. Ergodic is indeed the name of the game!
2. In order to make the connection with the theoretical cov. matrix, check wether estimators are defined entirely similar.
3. A first order polynomial, and up to 4 sinusoids constitute the trend, and make the data not stationary. Once removed, a second order AR model captures the behavior of the data quite well.
4. There is no evidence for global warming based on this data, only for a strong repetitive trend.

Computer Lab 3.

1. Indeed 'pole-zero' cancelation is only an indication that a lower order could do. It is however, not a must, nor a criterion. In this case, indeed implementing lower orders gives rise to less accurate models!
2. In general, check with respect to more model selection criteria wether your model design is accurate.
3. 'Model fit' is always a biased estimation, and you might never want to us this one as an indication of accuracy alone.

4. Checking optimality of e.g. AIC alone is not sufficient.

5. There is no 'true' answer to the general question, but e.g. the ARX(9,9) model will do here. The data was generate using a high-order OE model, but the estimated parameters using this model-structure gave a unstable model!

Computer Lab 4.

1. The forgetting factor regulates the trade-off between accuracy and fast reaction.

2. A choice of a good initial variable is important in initial iterations.

3. A RLS scheme is in general preferable if applicable.

4. Shaping signals using pre-filtering is a widely used approach in practice.

MAKE-UP

The main concern is that the report are often not in a shape to be shown outside the scope of this course. That is fine for now, but I will be more punctual for scoring the reports and presentations of the project work coming up in Part two. Issues:

1. Avoid typos ('basic functions' rather than 'basis functions'), and use correctly constructed sentences.

2. Try to argue concisely and precisely. Nobody is impressed by enumerating irrelevant facts. Good practice is to (i) repeat the question in few words, (ii) give an answer, and (iii) and indicate why this is a good answer.

3. Explain content of figure (labels), and indicate what to conclude from this figure. Use legends as well as smart and visible (!) (color) codes. Put a caption underneath each figure explaining what to learn from the figure. If no such caption is necessary, then you probably also want to skip the figure altogether!

4. In general, I was quite pleased by the 1-page reports I asked. However, certain participants handed in reports with shared typos (...).