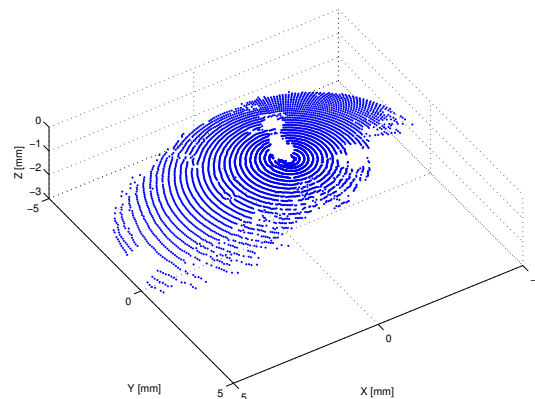

Robust Model Selection for a Biomedical Application



Pro-/Projektseminar or Bachelor/Master Thesis



Selecting an appropriate model from a potentially large number of candidate models is a task which is central to regression or time series modeling. Model selection thus deals with answering the question “which parameters can describe my data best?”. In this context model selection criteria can be applied to find an appropriate balance between variability and complexity. A very complex model may fit the current data set well, but fails to describe subsequent data sets. A model that is too simple, on the other hand, may not fit any of the data sets. Robust model selection deals with finding appropriate models, even when the data sets contain outliers, which are defined as a minority of data points which differ substantially from the rest of the data set.

The aim of this project is to gain an insight about different model selection criteria, and their robust extensions. Possible real data applications are in the field of eye research, e.g. the modeling of the cornea in the presence of reflections from the eyelashes or mucus, which produce outliers in the videokeratographic measurements. Further applications could be in time series modeling of biomedical cardiovascular or respiration data in the presence of measurement artifacts.

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