



Bachelor Thesis Announcement

Strukturierung, Aufbereitung und Bewertung von TLE Datensätzen hinsichtlich ihres Potentials zur wissenschaftlichen Auswertung

Structuring, processing and evaluation of TLE data with regards to their potential to be used for scientific evaluations

Motivation:

In the recent days, the world's most valuable resource is no longer oil, but data. Experts claim that only in the last decade, we have generated more data than in the entire recorded history and hundreds of terabytes are created on a daily basis. However, to leverage this data and to find the signal in the noise is not an easy task.

Over the years, the company Astos Solutions GmbH has gathered a huge amount of two-line element (TLE) sets. A two-line element set (TLE) is a data format encoding a list of orbital elements of an Earth-orbiting object for a given point in time, the so called *epoch*. Using suitable prediction formula, the state (position and velocity) at any point in the past or future can be estimated to some accuracy.

Thus, the question arises whether and if so how this data can be used to answer scientific research questions. Within the course of this thesis, this question shall be answered. Therefore, the task is to examine, structure, process and evaluate the data sets with regards to their potential to be used for scientific evaluations. The evaluation shall follow suitable statistical analysis and the final decision be based on a quantifiable metrics. In the end, the results shall be documented.

Task:

- Familiarization with two-line element sets.
- Examination, structuring and processing of the available data.
- Identifying suitable statistical methods to evaluate the data.
- Evaluating the data with regards to their potential to be used or scientific evaluations.
- Deriving different suitable research questions which can be answered with the available data.
- Documentation of the findings.

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