

Data science for tax administration

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Propositions for the PhD thesis

Data Science for Tax Collection

Mark Pijnenburg

- 1. Data science techniques contribute optimally to the supervision of tax authorities if there is an interplay between data science and domain knowledge (Chapter 2).
- 2. Factorization Machines are a valuable intermediary for incorporating interaction of categorical variables with many values into numerical algorithms (Chapter 3).
- 3. Anomalies with the largest number of remarkable features are not always the most valuable anomalies (Chapter 4).
- 4. Statistical tests can make a valuable contribution to process mining (Chapter 5).
- 5. Data scientists who take a multi-disciplinary approach make the largest contributions to an organization.
- 6. For many practical data science problems, a simple solution is preferable to the technologically superior solution, because a simple solution can be realized considerably faster and is easier to explain.
- 7. Techniques that assist in choosing between different unsupervised learning techniques are welcome. Consider, for example, the development of characteristics of a data set.
- 8. Open source software should be preferred in government processes where transparency is important. Not because the software is cheap, but because the code is verifiable.
- 9. Experiments are not only an excellent way to gain knowledge about the outside world, but are also useful for getting to know yourself.
- 10. Science can be beautiful and fascinating, but one must also not forget its limitations.
- 11. Practical skills are just as important in a PhD program as good ideas.