

# Master-Seminar Time-Series Mining

Introduction Lecture

Josif Grabocka

[josif@ismll.de](mailto:josif@ismll.de)

C35 Spl

# Time-series

- Ordered sequence of real-time values
- Challenges:
  - Prediction
  - Classification and Early Classification
  - Discovering rules in time series
  - Clustering
  - Modeling and Dependencies

# Seminar: A three step process

- **Step 1:** Student selects a paper from a provided list
- **Step 2:** Student presents the paper during an allocated slot
- **Step 3:** Student submits a written report



source: [thedoverguy.com](http://thedoverguy.com)

# STEP 1: Selecting a paper

- Go to: [www.ismll.de](http://www.ismll.de) → english → Courses → Winter Term 2015, Master-Seminar: Time-Series Mining → Readings
- Select 3 (three) papers and send them
  - Via email to [josif@ismll.de](mailto:josif@ismll.de)
  - Rank the papers by order of preference
  - First-come first-serve principle
  - **Deadline: 05/11/2015 16:00**

# List of Papers (1)

- Yongjie Cai et al., Facets: Fast Comprehensive Mining of Co-evolving High-order Time Series, Proceedings of the 21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, KDD 2015
- Dachraoui et al., Early Classification of Time Series as a Non Myopic Sequential Decision Making Problem, Proceedings of the 8th European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, ECML 2015
- Caballero et al., Dynamically Modeling Patient's Health State from Electronic Medical Records: A Time Series Approach, Proceedings of the 21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, KDD 2015
- Shokoohi-Yekta et al., Discovery of Meaningful Rules in Time Series, Proceedings of the 21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, KDD 2015

# List of Papers (2)

- Liu et al., Modeling Clinical Time Series Using Gaussian Process Sequences, Proceedings of the 2013 SIAM International Conference on Data Mining, SDM 2013
- Cheng et al., FBLG: A Simple and Effective Approach for Temporal Dependence Discovery from Time Series Data, Proceedings of the 20th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, KDD 2014
- Bahadori et al., Functional Subspace Clustering with Application to Time Series, Proceedings of the 32nd International Conference on Machine Learning, ICML 2015
- Anava et al., Online Time Series Prediction with Missing Data, Proceedings of the 32nd International Conference on Machine Learning, ICML 2015

# STEP 2: Presentations

- Within a week after receiving the preferred papers (until 12/11/15), the instructor will send back a list of allocated papers and presentation times to the students
- One presentation per week (two only if the classroom is crowded)
- Duration: Talk **60** minutes, Discussion **60** minutes
- Participation is mandatory to all presentations!

# STEP 3: Seminar Report

- Content should be ca. 20 pages
- **Soft** Submission deadline: 22/01/2016
- To be submitted to Josif Grabocka (C35 Spl)
  - 3 printed and bound copies
  - 1 CD with the report and all relevant materials



# The Purpose of This Seminar is

- To assess and improve a student's ability to understand state-of-the-art research work,
- To understand and analyze strengths and weaknesses of published research papers,
- To promote constructive criticism



source: [dancumberworth.co.uk](http://dancumberworth.co.uk)

# Please avoid

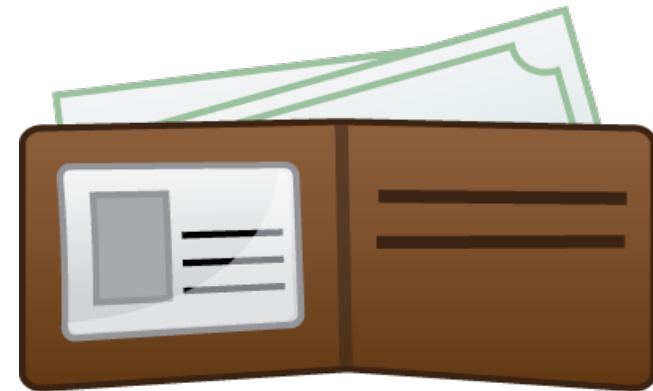
- Memorizing formulas
- Just giving a nice presentation
- Simply reproducing what the authors have written
- Not being able to rephrase and reformulate from scratch



Swim on your own!

# Tips for A Successful Seminar

- Understand the problem definition
- Explore the related work (Speed read 5-6 closely related papers)
- Assess how does the paper delineate from the related work
- What is being optimized? How?
- Is the method better, significantly?
- What about the runtime?



# Tips on Writing A Seminar Report

- Describe the motivation, context and the related work
- Formulate the problem definition with your own words (do not reproduce the paper)
- Provide a minimal working example for the optimization method
- Assess positive and negative points
- Criticize and suggest improvements



# Thank you!

- Questions, comments, feedback?