INF

FAKULTÄT FÜR
INFORMATIK

Topics for Seminars & Projects

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Timeline for seminars and projects (Bachelor / Master)

- **REGISTRATION:**
  1. You apply for a topic till: Friday, April 20, 2018 – 13:00
  2. Topic assignments made until Monday, April 23, 2018 – evening
  3. You sign the form and submit to the KMD team by

     Friday, April 27, 2018 – 13:00
- **MEETINGS for seminars** Attendance is mandatory
  1. **Monday, May 28 – 11:00 (tentative)**
  2. **Monday, June 11 – 11:00 (tentative)**
  3. **Monday, July 2 – from 9:00 till 17:00 (final presentations)**

REPORT for seminars: Friday, July 06, 2018 – 13:00

- **PRESENTATIONS/REPORT for projects: July 2018**

For Master DKE students: Teamprojects for area "Methods I"

According to the statutes, it is not permissible to place a teamproject in the area "Fundamentals". This holds for all teamprojects.

IT-Softwareprojects (Bachelor degrees only)

Prerequisites for all projects of this type:

- A team of THREE students
- GOOD software engineering skills
- Background:
  - Data mining / ML: at least one member
  - Data mining / ML / statistics: at least one further member

Teamproject (Master degrees only)

Prerequisites for all projects of this type:

- A team of THREE students
- GOOD software engineering skills
- Background in data mining / machine learning

unless otherwise specified

TUNE–2: Assessing trial difficulty during an experiment

GOAL: Build an environment that helps an experimenter assess the difficulty of a trial

- An experiment consists of a sequence of trials.
- A trial is a task, eg a question for which the participant must provide an answer.
- A distress–measuring device (with associated software) delivers timeseries that indicate the difficulty of a trial – in a participant–dependent way

TASKS:

- SUBTASK 1: Learning
- SUBTASK 2: Monitoring
- SUBTASK 3: Evaluation

TUNE–2: Assessing trial difficulty during an experiment

GOAL: Build an environment that helps an experimenter assess the difficulty of a trial

SUBTASK 1: Learning

1. Brief literature overview on timeseries classification (binary and n–ary problems)
2. Design of the timeseries classification task
3. Implementation of the timeseries classification task per participant
4. Design and implementation of the timeseries classification task over all participants

SUBTASK 2: Monitoring

1. Component that captures the timeseries and uses them for classifier training and for classifier application
2. Design a component that links the classifier to the experiment runs
3. Implementation of all components

SUBTASK 3: Evaluation

1. Specification of the evaluation criteria
2. Design of a demonstrator
3. Live evalution on a crowdsourcing experiment

TUNE–2: Assessing trial difficulty during an experiment

GOAL: Build an environment that helps an experimenter assess the difficulty of a trial

- SUBTASK 1: Learning
- SUBTASK 2: Monitoring
- SUBTASK 3: Evaluation

PREREQUISITES for the team:

1. Data mining & machine learning – at least 3 members
2. Experience with dm/ml suites – at least 2 members
3. Experience with timeseries – at least 2 members
4. Software engineering – at least 4 members

TUNE–2: Assessing trial difficulty during an experiment

PREREQUISITES for the team:

1. Data mining & machine learning – at least 3 members
2. Experience with dm/ml suites – at least 2 members
3. Experience with timeseries – at least 2 members
4. Software engineering – at least 4 members

POSSIBLE team constellations:

- 5 Master students (a 6 ECTS)
- 3 Master students (a 6 ECTS) and
  one MDigiEng student (12 ECTS, as "Digital Engineering Project")
- 2 Master students with prerequisites 2 and 3 (a 6 ECTS) and 3 Bachelor studients (a 6 ECTS, as "IT–Softwareprojekt")

Seminar (Master level)

Prerequisites for all assignments of this type:

- Background in data mining / machine learning

Topics – all in Methods I

1. Privacy–preserving timeseries classification
2. Privacy–preserving anomaly detection in timeseries
3. k–NN–based prediction in timeseries
4. Burst prediction in timeseries
5. k–NN–based recommenders in comparison to latent model based recommenders

TASKS for each topic

1. Specify keywords with the help of a seed paper
2. Collect literature on the basis of keywords; describe the procedure of paper exclusion
3. Select 6 papers; describe the procedure of paper inclusion

You can also select followups of a paper you chose, but they do not count to the 6

1. Review the papers (you will obtain a review template)
2. Rank the papers you reviewed and justify the ranking

You may need to collect, read and cite additional papers in your review, to justify your grading and ranking.

3. Presentation in class:
   briefly present each paper, discuss its merits and shortcomings (from the review) and the arguments for its rank position (from the review)
4. Final report:
   literature collection, inclusion/exclusion criteria, materials of the presentation, compilation of the paper reviews and rankings

WARNING

The assignment will be graded with a 5.0 if one or more of following cases shows up for at least one review:

- The review consists mainly of quoted text from the paper being reviewed.
- The review text does not justify the grades given to the paper.
- The review does not justify the rank position allotted to the paper.
- The review contains material from papers without quoting them.
- The review was not submitted in time.

Thank you very much!

Questions ?