Welcome to the Mannheim Master in Data Science

Introductory Session

HWS 2017
Contacts

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Agenda

- Welcome
- Programme Structure
  - Fundamentals
  - Data Management
  - Data Analytics
  - Projects & Seminars
  - Master's Thesis
- Module Catalogue and Study Plan
- Examination Regulations
Mannheim Master in Data Science

- Research oriented

- Interdisciplinary
  - Computer Science
  - Mathematics and Statistics
  - Social Science

- Applied
  - Hands-on experience
  - Close cooperation with industry partners
Data Science in a Nutshell

• Global Data Volume
  – 2,5 Million Terabytes per day
  – ~6,000 DVDs per second

• Challenges
  – Data collection
  – Storage
  – Processing
  – Analysis
Becoming a „Data Scientist“

• Competencies
  – Mathematics
  – Computer Science
  – Statistics

• Job Areas
  – Business (Recommender systems, market research, pricing, …)
  – Industry 4.0 (Production planning, machine supervision, early warning systems, …)
  – Research (Social Sciences, Computer Science, Digital Humanities, …)
  – Administration (Traffic planning, intelligent energy networks, …)
  – Medical Science (Research studies, personalized medication, …)
Disclaimer

- Please always double-check the information provided in this session with this information with the official documents:
  - Examination regulations
  - Module catalogue
MMDS Mailing List

- You will be added to the mmds emailing list.

- Please note: All email correspondence from now on will go to your Uni Mannheim email account!
  → Check your university mail account regularly!
Programme Structure

• The programme consists of different blocks:
  - Fundamentals (0-14 ECTS)
  - Data Management (24-36 ECTS)
  - Data Analytics (30-54 ECTS)
  - Projects & Seminars (12-16 ECTS)
  - Master’s Thesis (30 ECTS)
Programme Structure

**1st Semester**
- **Fundamentals**
  - Up to two out of
  - Data Acquisition
  - Database Technology
  - Multivariate Analysis
  - Programming

- **Data Management**
  - e.g., one out of
  - Algorithms
  - Database Systems II
  - Data Security
  - Information Retrieval and Web Search

**2nd Semester**
- **Data Management**
  - e.g., one out of
  - Query Optimization
  - Advanced Software Engineering
  - Semantic Web Technologies

- **Data Analytics**
  - e.g., two out of
  - Advanced Quantitative Methods
  - Computational Finance
  - Data Mining and Matrices
  - Data Mining II
  - Web Mining
  - Non-linear Optimization
  - Longitudinal Data Analysis

- **Research**
  - Team or Individual Project or Seminar

**3rd Semester**
- **Data Management**
  - e.g., one or two out of
  - Large-scale Data Management
  - Model-Driven Development
  - Web Data Integration

- **Data Analytics**
  - e.g., one or two out of
  - Algebraic Statistics
  - Hot Topics in Machine Learning
  - Mathematics and Information
  - Mathematical Visualization

- **Research**
  - Team or Individual Project
  - Seminar

**4th Semester**
- Master’s Thesis

Approx. 30 ECTS / Semester
Fundamentals

- The MMDS is an interdisciplinary study programme
  - Hence, most of you have different backgrounds:
    you are computer scientists, social scientists, mathematicians, …
- Fundamentals help you catch up with each other
- Offerings:
  - Data acquisition
  - Multivariate analysis
  - Database technology
  - Programming
Fundamentals

- You decide which fundamentals you need!
- You can visit up to two fundamental courses
- Take a look at descriptions of fundamentals in the module catalogue
  - Do the contents sound familiar or unfamiliar?
- Take a look at the requirements of other courses in the module catalogue
  - Do they sound familiar or unfamiliar?
Data Management (24-36 ECTS)

- Storing, processing, and searching for data
  - Formats, standards, and methodologies

- Lecture offerings include
  - Large Scale Data Management
  - Information Retrieval and Web Search
  - Anfrageoptimierung
  - Semantic Web Technologies
  - Model-driven Development
  - Algorithmik
  - Web Data Integration
  - Record Linkage
  - Data Security
Data Analytics (30-54 ECTS)

- Analysis, subsequent processing, and visualization
  - Methods and applications
- Lecture offerings include
  - Data Mining
  - Text Analytics
  - Hot Topics in Machine Learning
  - Mathematische Visualisierung
  - Multivariate Analyses
  - Cross Sectional Data Analysis
  - Longitudinal Data Analysis
  - Baysian Statistics
  - Lineare Optimierung
  - Decision Support
  - Big Data and Social Sciences
Seminars and Individual Projects

• Seminar (4 ECTS)
  – Mostly theoretical work (e.g., literature reviews on certain topics)
  – Offered every semester
  – Watch for the announcements of different chairs

• Individual Projects (8 ECTS)
  – Practical work on a data science problem
  – Approach chairs directly for topics
Team Projects (12 ECTS)

- Work on a data science project as a team
  - Acquire team organization and management skills on top!
- Run over one or two semesters
- Topics are announced every semester in a special session
  - This semester: 05.09. 9-11am, Room tba
- Registration via portal2 after the announcement
Team Projects (12 ECTS) ctd.

- Cancellation policy:
  - Cancelling without penalty:
    - Within the first three weeks (for one semester projects)
    - Within the first six weeks (for two semester projects)
  - Cancelling after those deadlines will get you a "FAIL" for the project.

- For cancellation, inform both the project supervisor and the team project coordinator (i.e., Mr. Sebastian Herdtweck)
Industry Partners

- We are constantly extending our network of industry partners
  - Joint projects
  - Internships (can be combined with individual project)
  - Master’s theses
Module Catalogue

- See online at http://www.fmi.uni-mannheim.de/de/studium/modulkatalog-uebersicht/
Module Catalogue

- See online at http://mmds.wim.uni-mannheim.de/

### Fundamentals (0 – 14 ECTS)

<table>
<thead>
<tr>
<th>Course</th>
<th>Lecturer</th>
<th>ECTS</th>
<th>FSS</th>
<th>HWVS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Acquisition</td>
<td>Dr. Sean Carey</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Database Technology</td>
<td>Prof. Dr. Paulheim</td>
<td>5</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Multivariate Analysis</td>
<td>Prof. Geschwend</td>
<td>6+2</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Programming Course</td>
<td>Dr. Rost</td>
<td>0</td>
<td></td>
<td>X</td>
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### Data Management (24 – 36 ECTS)

<table>
<thead>
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<th>Course</th>
<th>Lecturer</th>
<th>ECTS</th>
<th>FSS</th>
<th>HWVS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Software Engineering</td>
<td>Prof. Dr. Atkinson</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Algorithmik</td>
<td>Prof. Dr. Krause</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Anfrageoptimierung</td>
<td>Prof. Dr. Moerkotte</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Data Security</td>
<td>Prof. Dr. Armknecht</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Datenbanksysteme II</td>
<td>Prof. Dr. Moerkotte</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Information Retrieval and Web Search</td>
<td>Prof. Dr. Porzelt</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Large Scale Data Management</td>
<td>Prof. Dr. Gamulla</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Model-driven Development</td>
<td>Prof. Dr. Atkinson</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Semantic Web Technologies</td>
<td>Prof. Dr. Paulheim</td>
<td>6</td>
<td></td>
<td>X</td>
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<tr>
<td>Web Data Integration</td>
<td>Prof. Dr. Bizer</td>
<td>6</td>
<td></td>
<td>X</td>
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### Data Analytics (30 – 54 ECTS)

<table>
<thead>
<tr>
<th>Course</th>
<th>Lecturer</th>
<th>ECTS</th>
<th>FSS</th>
<th>HWVS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Quantitative Methods</td>
<td>Prof. Geschwend</td>
<td>6+2</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Algebraische Statistik</td>
<td>Prof. Dr. Seiler</td>
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<td>see here</td>
</tr>
<tr>
<td>Computational Finance</td>
<td>Prof. Dr. Neuenkirch</td>
<td>5</td>
<td>from 2018</td>
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<td>Cross Sectional Data Analysis</td>
<td>Prof. Dr. Gatschi</td>
<td>6+3</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Data Mining I</td>
<td>Prof. Dr. Bizer / Prof. Dr. Paulheim</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Detailed Information about Courses

- You will find information about the courses on the chairs’ web sites.

- For courses offered by the business informatics department:
  - Information session on Monday, 4th, 3:30 pm, B6 A1.01

- Course registration
  - Differs from course to course (Portal, ILIAS, …)
  - If a course is booked, write an e-mail to instructor
    - Sometimes, there are leftover places
Student Portal

• Found online at http://portal2.uni-mannheim.de/

• Used for
  – Course overview
  – Examination registration
  – Overview of grades
  – Information about institutions and campus life
Examination Regulations

• The single most important document stating your student rights and duties:
  - „Examination regulations/ Prüfungsordnung“!

• http://www.uni-mannheim.de/studienbueros/pruefungen/pruefungsordungen/index.html

• There is also an English translation available!
Examination Regulations (ctd.)

- Exam registration
  - Dates will be announced via the emailing list

- There are two examination dates for each course
  - CS500, CS530, CS550, CS560, IE500, IE560 and MAC404: you may register for the first or second date
  - All other courses: you can only register for the first date

- Registration via the Student Portal: portal2.uni-mannheim.de

- Seminars (700-level courses): direct registration at the chair
Examination Regulations (ctd.)

- You can withdraw from a module
  - unless individual in-class exams or assessments have already been or are currently being taken.

- The deadlines for withdrawals are announced on the pages of the student services
  - http://www.uni-mannheim.de/studienbueros/english/exams/withdrawal/

- You can use the form which can be downloaded here:

- If you fall ill and cannot write an exam: hand in a „qualified“ doctor‘s certificate immediately! A simple certificate of disability is not sufficient!

- If you fail to do so, you will receive a 5.0/fail for the exam!
Examination Regulations (ctd.)

- General rule: you can only resit an exam ONCE

- If you fail an exam, you will be registered automatically by the Studienbüro for the next possible examination date!

- Two times during your studies, you can take a second resit (so-called „Jokers“)

- There are NO third resits! Never ever!

- You SHOULD finish your studies within 4 semesters

- You MUST finish within 7 semesters!
Examination Board

- Concerned with cases like
  - Credit transferral
  - Approval of credits obtained during abroad semesters
  - Cases of hardship
  - Etc.

- Office of the Examination Board
  - Head: Prof. Simone Ponzetto
  - [http://pruefungsausschuss.wim.uni-mannheim.de/en/](http://pruefungsausschuss.wim.uni-mannheim.de/en/)
Master‘s Certificate

- ECTS in English or German?

- Certificate: will show how many ECTS in English if at least 60; if completely in English it will be stated on the certificate

- ‘Express-Schalter‘: ground floor of administrative building L 1,1

- Student Services Office (Studienbüro I) first floor in same building

- Contact person: Mr. David Steiner
  steiner@verwaltung.uni-mannheim.de
Important Contacts

Study track manager
Christoph Kleeberg
B6, 26 - Raum B 1.04
Tel.: 0621-181-2441
kleeberg@wim.uni-mannheim.de

Academic advisor (Fachstudienberater):
Samuel Broscheit
A5,6 – B 227
studienberatung@wim.uni-mannheim.de

http://pruefungsausschuss.wim.uni-mannheim.de

Please make an appointment via email!
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Scholarships and Funding Opportunities

- Various funding opportunities are available
  - e.g., Deutschlandstipendium (new funding round likely in HWS 2018)
  - see https://www.uni-mannheim.de/stipendium/english/
And now for Something Completely Different

- The Data and Web Science Group hosts a BBQ at the beginning of each semester
- Drinks and grill are provided, please bring your own food
- Thursday, September 7th, 5pm, basement of B6 26
- You should have gotten an invitation by e-mail
Questions?