

Artificial Intelligence 2 | Advanced Topics in Algorithms & Application

Overview: Exercise & Main Capstone Project

Timo Sturm & Dr. Dominik Jung

ki@is.tu-darmstadt.de

Prof. Dr. Peter Buxmann | Information Systems | Software & Digital Business

School of Business, Economics & Law

TU Darmstadt

0

Exercise & Main Capstone Project

0.1 Overview

0.2 Structure of the Main Capstone Project

0

Exercise & Main Capstone Project

0.1 Overview

0.2 Structure of the Main Capstone Project



 linkedin.com/in/timosturm
(feel free to connect)

Timo Sturm

Information Systems | Software & Digital Business Group (Prof. Buxmann)

➤ Education

- Bachelor: Information Systems at TU Darmstadt
- Master: Information Systems (Focus: Data & Web Science) at Uni Mannheim

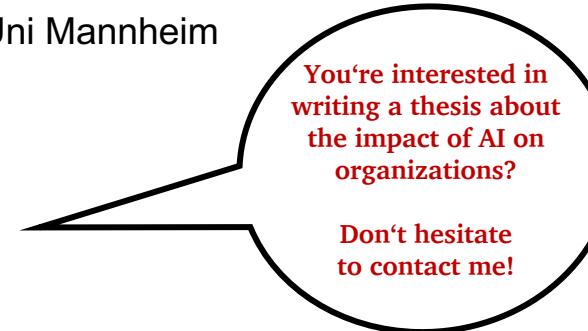
➤ Research Foci

- Artificial Intelligence in the Business Context
- Data Science and Machine Learning
- Data-driven Innovation & Innovation Processes

➤ AI-related Main Experiences

- Data Science & IoT Consulting @ SAP Germany
- Data Scientist (Area: Predictive Maintenance) @ SAP SE
- Big Data & Analytics Consulting @ SAP America, Inc.

➤ Contact via: sturm@is.tu-darmstadt.de



You're interested in writing a thesis about the impact of AI on organizations?

Don't hesitate to contact me!

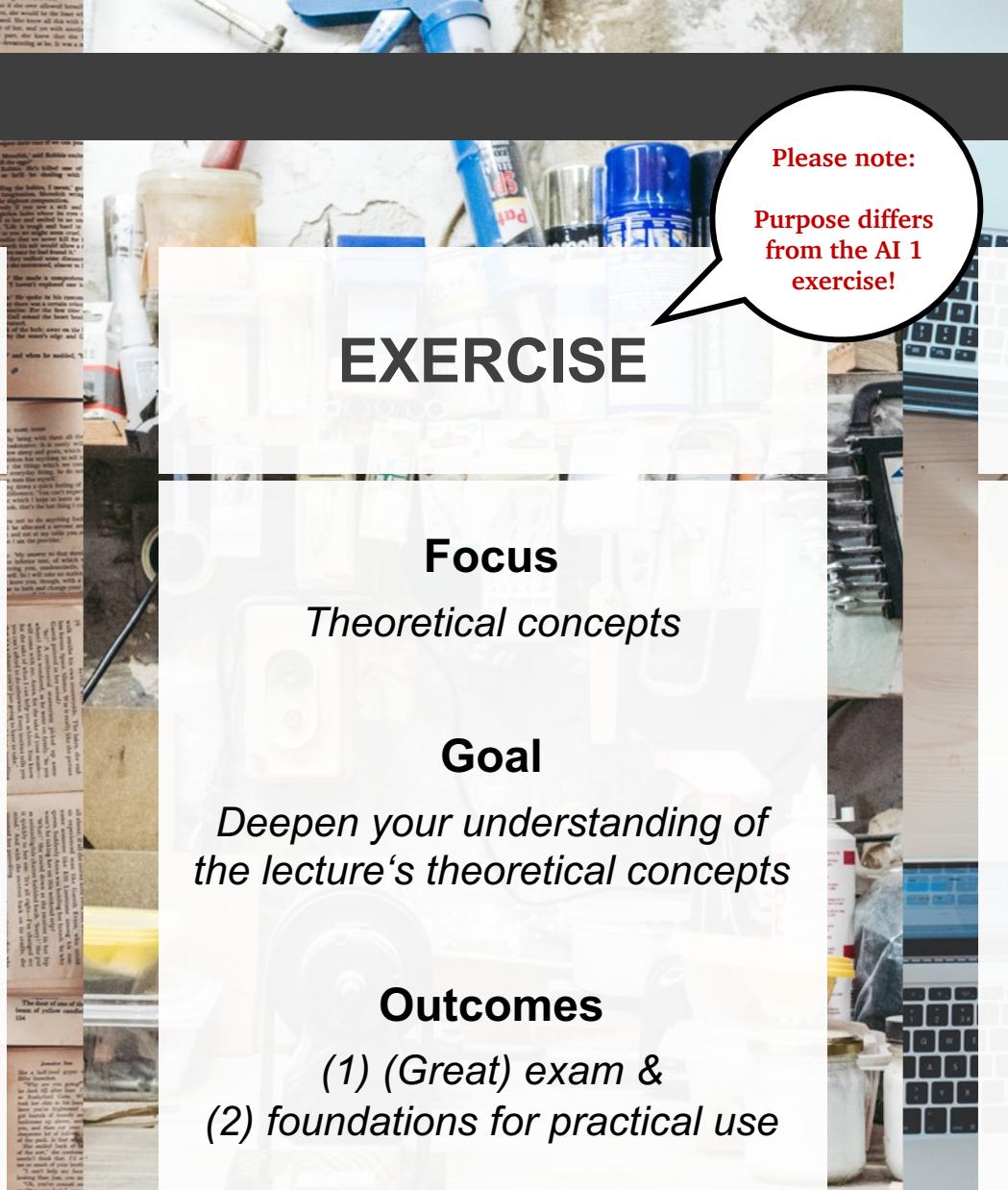
Overview

LECTURE

Focus
Theoretical concepts

Goal
Comprehend theory

Outcomes
*(1) (Great) exam &
(2) foundations for practical use*



Please note:
Purpose differs
from the AI 1
exercise!

EXERCISE

Focus
Theoretical concepts

Goal
*Deepen your understanding of
the lecture's theoretical concepts*

Outcomes
*(1) (Great) exam &
(2) foundations for practical use*

CAPSTONE PROJECT

Focus
Realization of AI initiatives

Goal
*Gather first-hand experience in
conducting AI initiatives*

Outcomes
*Practical experiences &
manifestation of theory*

60%
Written
Exam
*(Content of
AI 1 + 2)*

YOUR GRADE

40%
Capstone
Project
*(Written Report +
Oral Presentation)*

0

Exercise & Main Capstone Project

0.1 Overview

0.2 Structure of the Main Capstone Project

Structure of the Main Capstone Project



- **Project Team:** Form a team consisting of **6 - 8 students**
→ If you cannot form such a team, apply independently (alone or as a smaller group) and we will assign you to a team
- **Project Goals:** Gather first-hand experience in conducting AI initiatives
 - i. **Realize an AI solution**, by thoroughly conducting:
 - *Data exploration*
 - *Data preparation*
 - *AI modeling*
 - *AI evaluation*
 - ii. **Discuss what is needed** from an **organization's perspective** to actually use your solution
 - *What value may your AI create?*
 - *Which properties should your AI offer to be beneficial?*
 - *What does the organization potentially have to change to use your AI?*
 - ...
- **Submission:** Explain what you have done, which possibilities you have explored, and which solution you offer
 - Provide a **written report**
 - Provide and present an **oral presentation**

Realize an AI initiative by:

- Using methods for **data preprocessing** you have learned in the lecture
 - + advanced problem-specific methods
- Using **AI Algorithms** that you have learned in the lecture
 - + further advanced algorithms
- Comprehending the **business value** that your AI initiative may achieve
 - if it is done right

⇒ **Overall:** Explore further methods and algorithms, be creative!

⇒ Feel free to use RapidMiner, Python, or a combination of both to realize your project!

1) REPORT

- **Template:** Use the document template provided by us via git

(we use the official template of the International Conference on Information Systems (ICIS))

- **Submission:** Submit your report as a single PDF file!

- **Scope:** 4 - 6 pages (excluding references (if references are needed))

→ Please note: Any page which is too less or too much will degrade your grade by 0.3!

- **Required content** (*follows roughly the usual structure of a scientific paper*):

1) **Introduction/Motivation:** Which problem are you trying to solve and why is this beneficial? What are you trying to achieve?

2) **Data Overview and Preparation:**

- Provide an overview of the data you have used by reporting its structure and size (optionally: particularities that are relevant for your project)
- Provide an overview of the data preparation that you have conducted

3) **Development of AI Solution:**

- Explain the models you have built and investigated
- Report and compare computed performance measures of all built models

4) **Discussion:**

- Which model would you chose as a final solution for the problem that you want to solve and why?
- Discuss whether your solution is already sufficient to be used in a real-world context and how it can be used
- Which limitations exist with your solution and what could be done to potentially provide an even better solution?

2) PRESENTATION



- **Template:** Feel free to create **your own template!**
- **Submission:** Submit your slides as a single **PDF file!**
- **Content:** Outline the main aspects of your project in an **easy-to-understand** and **visualized** way
- **Presentation:** Present your project **briefly** at the end of the semester (date: tba)

3) AI IMPLEMENTATION



- **Tool:** You can implement your AI solution using **RapidMiner**, **Python**, or **both combined**
- **Submission:** Submit all of your final code and/or RapidMiner processes (regarding all models you present in your report)

Deadline Overview: MAIN CAPSTONE PROJECT

➤ **Team Formation:** Apply individually or as a team until **03.05.2020 23:59**

- **Send a mail indicating:**
 - your *full name*
 - *matriculation number*
 - your *email address*
- **If you apply as a team:** Please indicate the above information for all team members in a single mail
- **Send the mail to:** sturm@is.tu-darmstadt.de
- **Final Formation:** We will reach out to you with the final team formation shortly after the above registration deadline
(we will try to not split any teams that apply with 6 – 8 people)

➤ **Final Project Submission:** Submit your finalized project until: **tba**

- Submit your written report as a PDF and your implementation files (as RapidMiner processes and/or python code with the used data)
- Slides will have to be submitted on the day of the presentation (will be announced soon!)