Machine Learning Lab

Course instructor

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Location

Campus Heilbronn

Application procedure

Goal and target audience

The course is aimed at doctoral candidates. The goal is to equip them with hands-on machine learning experience, from traditional machine learning methods to cutting-edge generative AI models. This is a beginner's course in machine learning.

Application process

There is a limit of 15 participants maximum for this course. Please use the official application procedure for the TUM SoM Doctoral Summer School.

The application starts on May 2, 2023, 12:00 noon. The deadline for application is June 30, 2023, end of day. Registration works on a first come, first served basis. Registration is only possible for doctoral candidates of TUM School of Management.

Please find the link for registration here: https://www.mgt.tum.de/faculty-research/doctoral-program/course-program

Course aims

What this course is

The course is a hands-on introduction to applied machine learning, with a focus of unstructured data analytics (e.g., text, image, video, audio).

What this course is not

The course is not an advanced technical machine learning course. We will discuss and apply cutting-edge deep learning methods, developed by some of the leading tech firms in the world (Google, Meta, OpenAI). However, applying these models typically involves only a few lines of intuitive Python code (see https://huggingface.co/j-hartmann/emotion-english-distilroberta-base for an example).

Course objectives

Knowledge, Skills, and Learning Objectives

Upon successful completion of the module, students will be able to:
-         understand how machine learning (esp. text, image, video, and audio analytics) can inform data-driven decision making
-         apply diverse methods using R and/or Python to digital marketing problems
-         evaluate which methods are appropriate contingent on the application context
-         develop an end-to-end solution from unstructured data to structured insights

Preliminary schedule

The course takes place in the second week of the **TUM SoM Doctoral Summer School** from September 25 to September 29, 2023.

25.09.2023, 13:00-16:15, **Introduction to ML**
26.09.2023, 09:00-14:45, **Text and Audio Analytics**
27.09.2023, 09:00-14:45, **Image and Video Analytics**
28.09.2023, 09:00-14:45, **Generative AI**
29.09.2023, 09:00-12:15, **Final Presentations**

Please refer to the schedule for the Summer School for further details on the course schedule. The schedule for the Summer School can be found in the digital flyer on the Summer School: https://www.mgt.tum.de/faculty-research/doctoral-program/course-program

Core readings

Hartmann, J., Heitmann, M., Schamp, C., & Netzer, O. (2021). The power of brand selfies. *Journal of Marketing Research*, 58(6), 1159-1177.

Hartmann, J., Heitmann, M., Siebert, C., & Schamp, C. (2023). More than a feeling: Accuracy and application of sentiment analysis. *International Journal of Research in Marketing*. 40(1), 75-87.

Hartmann, J., & Netzer, O. (2023). Natural language processing in marketing. In *Artificial Intelligence in Marketing* (Vol. 20, pp. 191-215). Emerald Publishing Limited.

Course procedures

The course will be a mix of lectures and exercises and will put emphasis on in-class discussions, interactive materials, practical relevance, research-based, interdisciplinary teaching, and code examples (in R and Python). The course will offer an engaging learning environment, complemented by in-class coaching opportunities.

In the mornings, the instructor will provide input. In the afternoons, participants work in teams on the course project (see below for details). We will have frequent Q&As to clarify questions regarding the course project.

Assessment

Form of assessment: course project (100%)

Participants will be assigned to work on a course project related to generative AI in teams of three. The course project has to be completed and submitted at the end of the summer school week.

Participation in all sessions is mandatory.

Workload

3 ECTS (22.5 hours lectures, 90 hours total workload)