Innovative Technologies in Management Research

This version: Summer Semester 2024

Course instructors

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Location

The course will be held in person at the TUM main campus in Munich (Arcisstr. 21, Building 0505, Room Z577)

Application and registration procedure

Goal and target audience

This course will give doctoral students a broad overview of the state-of-the-art technologies and methods (e.g., virtual reality, virtual humans, vocal transformation, AI) used in management research. At the end of this course, participants will be familiar with the different methods and tools available for conducting research. We will discuss the benefits of using technologies, and the potential technical difficulties and drawbacks that might be encountered along the way, and how to solve them.

In this course, you will have the opportunity to not only to develop an understanding of existing methods, but also to develop and work on a concrete research project involving an innovative technology. To this end, students will be asked to develop a short research proposal and a final presentation showcasing their work on the project.

Application process

By email to anely.bekbergenova@tum.de (Dr. Anely Bekbergenova) until **April 1st.** Participants will be admitted on a first come, first served basis.

In your email please include (1) your doctoral research topics, (2) a potential research question you would like to explore using innovative technology.

Course aims

What this course is

This is an introductory course which will give you an overview of the state-of-the-art technologies and methods used in management research. The goal of this course is to build awareness of the available methods and to understand how these methods can be beneficial for your research.

What this course is not

This course is not a programming course. Even though the discussed methodologies involve programming (e.g., computerized tracking of nonverbal behavior, developing virtual humans) we will not cover the programming in this course.

Course objectives

Knowledge Objectives

After this course, participants will have an overview of the state-of-the-art methods in management research: The possibilities, methods, programs, and what to watch out for.

Skills Objectives

Participants will learn to apply the discussed methods in their own research. They will learn how to communicate their research to an audience in a presentation, and how to summarize it in a research proposal.

Learning Objectives

Participants will learn to understand and apply novel methodologies, answer pertinent research questions, and how to communicate their research effectively.

Preliminary schedule

The course will be held in person at the TUM main campus in Munich (Arcisstr. 21, Building 0505, Room Z577)

Monday, 01.04.2024 – 23:59 – Registration deadline
Wednesday, 10.04.2024 – 9:00 – 17:00 – Presentation by instructor
Thursday, 10.04.2024 – 9:00 – 17:00 – Presentation by instructor & group/individual work
Wednesday, 17.04.2024 – 9:00 – 17:00 - Presentation Day by participants & feedback
Wednesday, 1.05.2024 – 23:59 – Research proposal deadline

Core readings

Kleinlogel, E. P., Renier, L. A., Schmid Mast, M., Jayagopi, D. B., & Shubham, K. (2023). From low invasiveness to high control: how artificial intelligence allows to generate a large pool of standardized corpora at a lesser cost. *Frontiers in Computer Science*, *5*, 1069352. https://doi.org/10.3389/fcomp.2023.1069352

Peck, T. C., Seinfeld, S., Aglioti, S. M., & Slater, M. (2013). Putting yourself in the skin of a black avatar reduces implicit racial bias. *Consciousness and cognition, 22*(3), 779-787. https://doi.org/10.1016/j.concog.2013.04.016

Schmid Mast, M., Kleinlogel, E. P., Tur, B., & Bachmann, M. (2018). The future of interpersonal skills development: Immersive virtual reality training with virtual humans. *Human Resource Development Quarterly, 29*(2), 125-141. https://doi.org.10.1002/hrdq.21307

Yee, N., & Bailenson, J. (2007). The Proteus effect: The effect of transformed self-representation on behavior. *Human communication research, 33*(3), 271-290. https://doi.org/10.1111/j.1468-2958.2007.00299.x

Optional:
Wulff, J. N., Sajons, G. B., Pogrebna, G., Lonati, S., Bastardoz, N., Banks, G. C., & Antonakis, J. (2023). Common methodological mistakes. *The Leadership Quarterly, 34*(1), 101677. https://doi.org/10.1016/j.leaqua.2023.101677

Course procedures

On the first day we will have an overview of on-screen non-immersive as well as on-screen and walking immersive virtual reality and virtual humans. We will have an overview of existing research using this technology. Similarly, we will investigate the possibilities of deep fake technology, the computerized detection of nonverbal behavior, and vocal transformation. We will look at studies that have been performed using such methods. We will discuss possible technical difficulties that can arise and possible solutions to overcome such hurdles. We will briefly discuss the uses of artificial intelligence in research. During the first day we will discuss the format of the final presentation

and the suggested structure of the short research proposal.

On the second day we will discuss the uncanny valley effect, the importance of perceived embodiment, and its potential effect on conducting research in virtual reality. On the second part of day, participants will break up into groups to discuss direct applications of the discussed methods to their own research. Afterwards, participants will work on their research ideas and develop concrete steps to conduct this research. Participants will be able to receive individual feedback on their research ideas.

On the third day participants will present their research projects. Each presentation will be followed by a short round of questions and feedback. Students must hand in the short research proposal (taking into account the in-class feedback), by the indicated deadline. Brief feedback will be provided on the proposals by the instructor.

Assessment

The course is assessed through the final presentation and the short research proposal. It is mandatory to hand in a short research proposal by the deadline. The instructor will provide feedback on the research proposal. Participation in all sessions and discussions is mandatory.

Workload

3 ECTS (21h of lectures, 90 hours total workload)