"Tech-Assumptions and Innovation: A study of Robotic Interactive Learning in Social Work"

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The Project:

The BMBF-funded teaching-learning project "Public understanding of AI through transdisciplinary teaching" aims to equip a broad base of students with application-oriented AI skills. In contrast to traditional projects, this initiative focuses on transdisciplinary teaching projects in which students from different academic backgrounds work together to use AI to solve practical, real-world problems. By bringing together students from different academic backgrounds, this project reflects Fleck's concept of different thinking styles and encourages the mutual broadening of perspectives that enhance the understanding and application of AI in different disciplines[1]. This approach ensures that students acquire technical skills while understanding the ethical implications, societal impacts and disciplinary differences of using AI.

Studies show that the integration of AI into higher education in the various disciplines is very uneven. In the STEM subjects, particularly computer science and engineering, AI dominates with over 60% of relevant research. In the humanities and social sciences, the proportion of AI research is significantly lower at only 20-25%. In disciplines such as medicine and economics, the proportion is 10-12%. These figures illustrate the varying degrees of impact of AI, with the technical fields leading the way in transforming education[2].

This difference in the implementation of AI is of great importance for higher education as it affects how well students are prepared for a digital future. Balanced AI integration prepares students from all disciplines for the evolving labour market and promotes adaptability and expertise.

Problem:

AI and robotics are becoming increasingly relevant and are also finding their way into higher education. How can these new develop-ments be addressed? What perspective do students have?

Objective:

To develop a deeper understanding of social work and computer science students' perceptions of AI. The focus is to explore what attitudes future professionals have towards AI and robots and how these are shaped by higher education. Through this teaching-learning research, ethical and social issues related to AI and higher education will be explored.

Methodology:

The research study aims to gain a comprehensive under-standing of student perspectives by employing a combination of focus groups and Grounded Theory Methodology (GTM). The focus groups take place every semester with the current cohort and a number of 6-12 participants.
A central element of the study involves the integration of a social robot. The students come into contact with the robot through simulated counselling exercises based on their previous group work with the other discipline. The social robot that was used is the Furhat (see below).
The primary goal is to capture and analyze students' interactions and reflections within a practical context. Through this approach, the study seeks to achieve a nuanced understanding of the implicit assumptions and perceptions students associate with social robots in educational settings. Furthermore, the students' everyday use of AI is surveyed and analyzed.

The Furhat

User awareness

Customizable face and appearance

Life-like expressiveness

Conversational intelligence
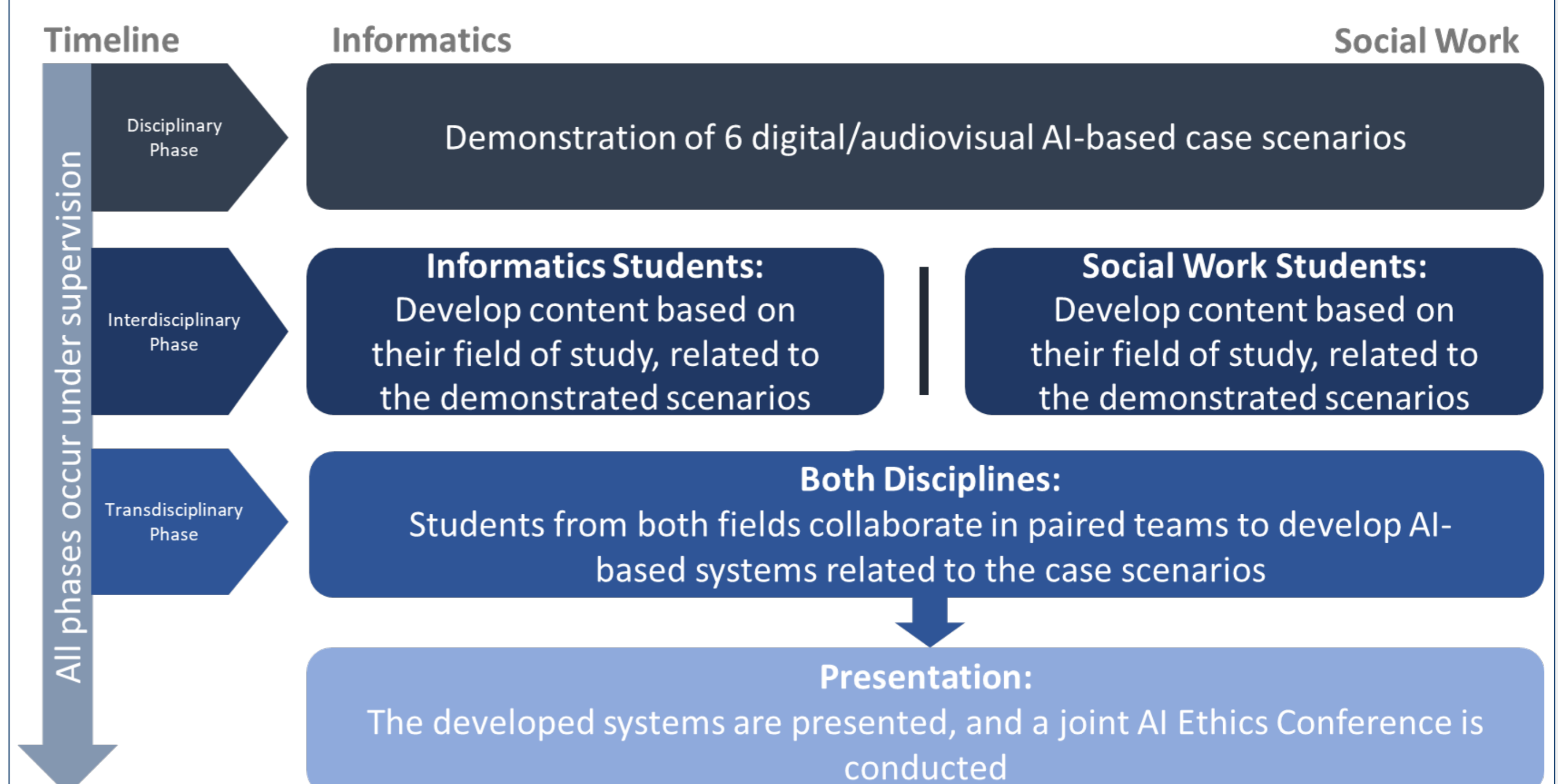
https://furhatrobotics.com/

First Results:

The results highlight **divergent perceptions** between social work and informatics students regarding AI and robotics. Social work students approach AI with caution, focusing on risks and emotional aspects, while informatics students are more optimistic, emphasizing technological possibilities. Despite this, both groups share an **ambivalence where optimism is tempered by ethical concerns**. A common concern across both disciplines is the need for expanded educational initiatives that provide practical experience with AI and social robots to bridge skills gaps. Students recognize the value of AI tools but emphasize the importance of critically evaluating AI outputs. While they have gained general competencies, there's a noted need for deeper, **practical engagement with AI** and robotics. Another outcome was that social work students had hardly had any **contact with AI** before the seminar and were rather cautious about the technology, while computer science students had already gained significant experience and regularly used AI as a tool in their everyday lives.

Seminar Concept

Timeline — Informatics — Social Work

All phases occur under supervision

Disciplinary Phase: Demonstration of 6 digital/audiovisual AI-based case scenarios

Interdisciplinary Phase:
Informatics Students: Develop content based on their field of study, related to the demonstrated scenarios
Social Work Students: Develop content based on their field of study, related to the demonstrated scenarios

Transdisciplinary Phase:
Both Disciplines: Students from both fields collaborate in paired teams to develop AI-based systems related to the case scenarios

Presentation: The developed systems are presented, and a joint AI Ethics Conference is conducted

First Implications:

The implications of the research suggest the need for **curriculum development** that integrates AI through interdisciplinary approaches, balancing technical skills with ethical considerations. It highlights the importance of establishing robust **ethical frameworks** within educational programs to guide students in critically assessing AI's societal impacts. The study also emphasizes the necessity of **enhancing collaboration** between academic fields to ensure a holistic educational experience. Finally, it stresses the importance of providing practical, **hands-on experiences** with AI, particularly in fields requiring human interaction, to close skills gaps and better prepare students for real-world applications.

Conclusion:

The study examines the use of social robots and AI in education and contributes to the discussion about their integration into the academic world. It emphasises the need for a balanced approach that considers technological, ethical and social aspects of AI while preparing students for a technology-driven future through transdisciplinary approaches and innovative methods.

Discussion:

Practical Application vs. Theoretical Knowledge:
How can educational institutions better prepare students for the practical challenges of working with AI, especially in fields where human interaction is crucial? What kind of support and resources are needed to enhance practical learning?

References:
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