

## Objective:

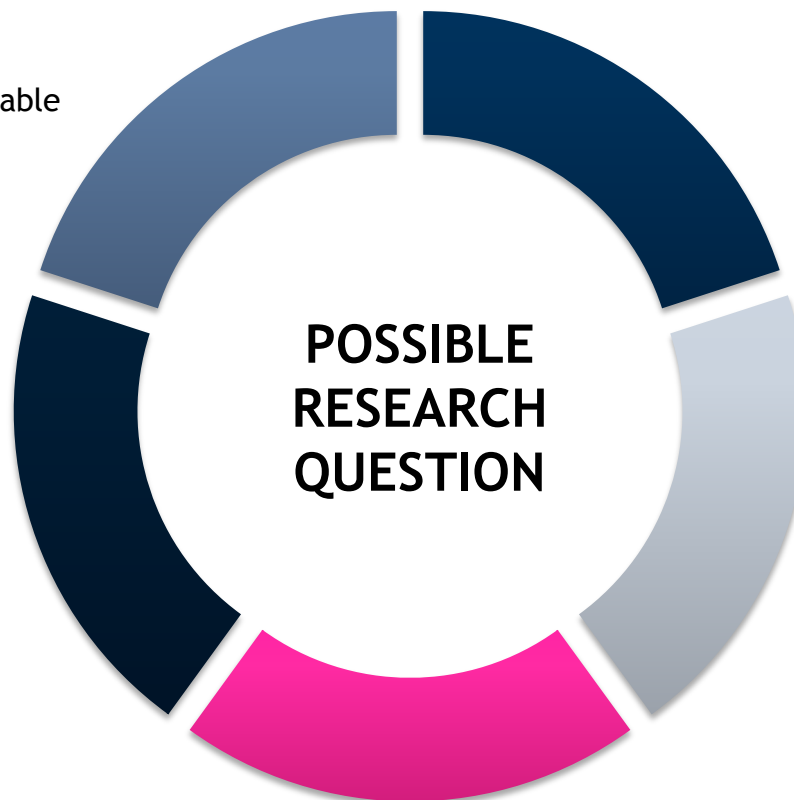
- Become an expert for a particular subtopic within the topic of Generative AI.
- Present different aspects of Generative AI to the class.
- Get to know and present different scientific methodologies.

## GenAI Solution

- ChatGPT, Google Gemini, Stable Diffusion
- Text-to-text
- Text-to-image
- Voice-to-text
- ....

## PERSPECTIVE

- User (Individual, Organization)
- Society
- Government
- Regulators
- Academic Researcher



**POSSIBLE  
RESEARCH  
QUESTION**

## DATA

- Qualitative
- Quantitative
- Synthetic
- Theory

## DOMAIN and Use Case

- Technical
- Legal
- Economic
- Financial
- Management/ Marketing
- Societal / Cultural
- Ethical

## FACTORS

- (Technology) adoption
- Trust
- Technostress
- Privacy (concerns)
- Security (concerns)
- Trends and Ecosystems
- Scientific overview
- Attitudes

## Prerequisites:

Topic needs to ask and answer a research question that can be answered given time, effort and informational constraints

## How-To:

Seminar paper should optimally create new information by gathering data.

1. Scientific literature review
2. Qualitative methods (e.g. interviews)
3. Quantitative methods (e.g. surveys)
4. Programming/modelling

## Structure:

- Introduction and Background
- Related Work and Methodology
- Results and Discussion
- Limitations and Future Work
- Conclusion

## Preliminary list of possible topics:

- (1) Systematic literature review on GenAI
- (2) Technical aspects of GenAI
- (3) Social/Ethical implications of GenAI
- (4) Regulation and GenAI
- (5) Technology adoption of GenAI
- (6) Security/privacy concerns and GenAI
- (7) Technostress through GenAI
- (8) Synthetic data: Pros and Cons
- (9) Use Cases: GenAI in organizations
- (10) GenAI: Output Bias analysis
- (11) GenAI: fake news and content flooding
- (12) GenAI and its impact on teaching
- (13) GenAI: create your own application
- (14) Trust: Human and AI Collaboration
- (15) *Your own ideas are welcome!*

# (1) Literature Review on GenAI

## Context:

- The amount of scientific literature on Generative AI has grown tremendously in recent years with research focusing on different aspects of the topic.

## To-Do:

- **Literature review** on Generative AI in general to provide an overview and update on the topic. Find suitable categories to cluster research and provide insights into how research has changed, gaps in the literature and the most recent results.

## References:

- Vom Brocke, J., Simons. Reconstructing the Giant: On the importance of rigour in documenting the literature search. *Ecis*. (2009). <https://doi.org/10.1108/09600031211269721>.
- Tronnier, F., Recker, M., & Hamm, P. (2020). Towards Central Bank Digital Currency–A Systematic Literature Review.



## (2) Technical Aspects of GenAI

### Context:

- There exist a plethora of technologies and approaches towards (Generative) AI, ranging from learning approaches to issues such as hallucinations.

### To-Do:

- **Literature review** on technological aspects Generative AI to provide an overview and update on the topic. Explain past, current and future technical approaches and their pros and cons to the class. Find suitable categories to cluster research and provide insights into how research has changed, gaps in the literature and the most recent results.



### References:

- Vom Brocke, J., Simons. Reconstructing the Giant: On the importance of rigour in documenting the literature search. *Ecis*. (2009). <https://doi.org/10.1108/09600031211269721>.
- Tronnier, F., Recker, M., & Hamm, P. (2020). Towards Central Bank Digital Currency—A Systematic Literature Review.

# (3) Social/Ethical implications of GenAI

## Context:

- The emergence of GenAI comes with new ethical and societal implications, such as a potential decrease in workforce, the inadvertent use of personal data or overreliance on technology.

## To-Do:

- **Literature review or interviews** on Generative AI and its potential societal and ethical implications. Find suitable categories to cluster research and provide insights into such issues, how they arose and how they could be mitigated.

## References:

- Vom Brocke, J., Simons. Reconstructing the Giant: On the importance of rigour in documenting the literature search. *Ecis*. (2009). <https://doi.org/10.1108/09600031211269721>.
- Tronnier, F., Recker, M., & Hamm, P. (2020). Towards Central Bank Digital Currency—A Systematic Literature Review.



## (4) Regulation and (Gen)AI

### Context:

- There exist first regulation on Artificial Intelligence on an EU-level. Other countries might follow. The implications of such regulation are yet uncertain.

### To-Do:

- **Literature review or interviews** on the implications of regulation on (Generative) AI. What does the regulation say and how might it differ between nations? What stakeholders are involved and how? What implications might arise from the regulation, for the different stakeholders?

- 

### References:

- Vom Brocke, J., Simons. Reconstructing the Giant: On the importance of rigour in documenting the literature search. *Ecis*. (2009). <https://doi.org/10.1108/09600031211269721>.
- Tronnier, F., Recker, M., & Hamm, P. (2020). Towards Central Bank Digital Currency–A Systematic Literature Review.
- [Future of Life Institute, 2024. https://artificialintelligenceact.eu/de/](https://artificialintelligenceact.eu/de/)



## (5) Technology adoption of GenAI

### Context:

- Academic research provides a wide range of models that study attitudes, intention and actual adoption of new technologies. Such models can be applied to study the adoption of new GenAI applications.

### To-Do:

- **Literature review or interviews or survey** on technology adoption for Generative AI solutions (text, voice, image, mixed-data).



### References:

- Vom Brocke, J., Simons. Reconstructing the Giant: On the importance of rigour in documenting the literature search. Ecis. (2009). <https://doi.org/10.1108/09600031211269721>.
- Venkatesh, V. (2022). Adoption and use of AI tools: a research agenda grounded in UTAUT. Annals of Operations Research, 308(1), 641-652.



## (6) Privacy/Security concerns and GenAI

### Context:

- Academic research provides a wide range of models that study privacy and security concerns of new technologies. Such models can be applied to study concerns of individuals when deciding whether to use new GenAI applications.

### To-Do:

- **Literature review or interviews or survey** on the impact of privacy / security concerns on Generative AI usage (text, voice, image, mixed-data).

### References:

- Vom Brocke, J., Simons. Reconstructing the Giant: On the importance of rigour in documenting the literature search. *Ecis*. (2009). <https://doi.org/10.1108/09600031211269721>.
- Smith, H. J., Dinev, T., & Xu, H. (2011). Information privacy research: an interdisciplinary review. *MIS quarterly*, 989-1015.
- Nissenbaum, H. (2004). Privacy as contextual integrity. *Wash. L. Rev.*, 79, 119.



## (7) Technostress through GenAI

### Context:

- Technostress are different types of stress, associated with the use of a technology. Different models and factors exist to study technostress.

### To-Do:

- **Literature review or interviews or survey** on the occurrence of technostress with regard to the usage of Generative AI (text, voice, image, mixed-data).
- Focus could be on drivers of technostress or coping strategies.

### References:

- Vom Brocke, J., Simons.  
Reconstraining the Giant: On the importance of rigour in documenting the literature search. Ecis. (2009). <https://doi.org/10.1108/09600031211269721>.
- Charmaz, K. (2014). Constructing Grounded Theory. SAGE Publications Ltd, 2nd edition.



# (8) Synthetic data generation with GenAI

## Context:

- GenAI can be used to create synthetic, “fake” data, to be used in place of actual data, e.g. to perform analyses on personal data.

## To-Do:

- **Data analysis:** Design and test a use case in which synthetic data is generated through a GenAI application and test its usability.
- Potential use cases could test usability and similarity of the data.

## References:

- Will be given per email.
- Md Momin Al Aziz, Tanbir Ahmed, Tasnia Faequa, Xiaoqian Jiang, Yiyu Yao, and Noman Mohammed. Differentially private medical texts generation using generative neural networks. *ACM Transactions on Computing for Health- care (HEALTH)*, 3(1):1–27, 2021
- Xiang Yue, Huseyin A. Inan, Xuechen Li, Girish Kumar, Ju- 834 lia McAnallen, Hoda Shajari, Huan Sun, David Levitan, 835 and Robert Sim. Synthetic text generation with differential 836 privacy: A simple and practical recipe. 2023.
- Justus Mattern, Zhijing Jin, Benjamin Weggenmann, Bern- 736 hard Schoelkopf, and Mrinmaya Sachan. Differentially 737 private language models for secure data sharing. 2022.

## (9) Use Cases: GenAI in organizations

### Context:

- Nearly every organization is testing the use of GenAI applications such as ChatGPT, in different domains, sectors, but also organizational parts, such as business intelligence, HR or marketing

### To-Do:

- **Interviews, Survey or Data analysis:** Evaluate the usage of GenAI applications in an organizational context. E.g. through interviews with employees or case studies as part of an internship or working student job.
- A focus can be given on one particular sector, industry or company.

### References:

- Yin, R. K. (2018). Case study research and applications, volume 6. Sage Thousand Oaks, CA.
- Banh, L. and Strobel, G. (2023). Generative artificial intelligence. Electronic Markets, 33(1).
- Brachten, F., Kissmer, T., and Stieglitz, S. (2021). The acceptance of chatbots in an enterprise context – A survey study. International Journal of Information Management, 60.

## (10) Output Bias Analysis

### Context:

- Machine learning, AI and Generative AI models rely on the quality of data input for their data output. Consequently, and specifically for gendered languages such as German, GenAI solutions are susceptible to biases, e.g. with regard to gender.

### To-Do:

- **Data analysis:** Evaluate the potential for biases such as gender bias in GenAI solutions. Other biases could also be tested for voice or image GenAI solutions. Such biases could for instance be tested for through translating test data.

### References:

- A. Chauhan *et al.*, "Identifying Race and Gender Bias in Stable Diffusion AI Image Generation," *2024 IEEE 3rd International Conference on AI in Cybersecurity (ICAIC)*, Houston, TX, USA, 2024, pp. 1-6, doi: 10.1109/ICAIC60265.2024.10433840.
- M. Bernagozzi, B. Srivastava, F. Rossi and S. Usmani, "Gender Bias in Online Language Translators: Visualization, Human Perception, and Bias/Accuracy Tradeoffs," in *IEEE Internet Computing*, vol. 25, no. 5, pp. 53-63, 1 Sept.-Oct. 2021, doi: 10.1109/MIC.2021.3097604

# (11) GenAI: fake news and content flooding

## Context:

- The objective of GenAI is to create new content. Such content is nowadays widely used online, to create posts, website content and enrich existing data. With this tremendous growth in content and data, new issues may arise, from fake news to new GenAI models build on fake, or AI created content.

## To-Do:

- **Literature review, interviews, data analysis:** Evaluate potential issues through the excessive creation of new data through GenAI. This could be through expert interviews or other means.

## References:

- Vom Brocke, J., Simons. Reconstructing the Giant: On the importance of rigour in documenting the literature search. ECIS. (2009). <https://doi.org/10.1108/09600031211269721>.
- Charmaz, K. (2014). Constructing Grounded Theory. SAGE Publications Ltd, 2nd edition.

# (12) GenAI and its impact on teaching

## Context:

- With the emergence of GenAI, the job of teachers and lectures gets more challenging as traditional tasks, such as content summarization, essay writing or code creation can easily be outsourced to GenAI solutions by students and pupils.

## To-Do:

- **Literature review, interviews, surveys:** Evaluate the impact of GenAI on teaching-related jobs. Here, the perspective of different stakeholders, students, researchers, teachers, lecturers, can be taken into account.
- What new teaching methods could mitigate these issues? How could the future of teaching look like? Are there positive factors for these jobs?

## References:

- X. Chen and D. Wu, "Automatic Generation of Multimedia Teaching Materials Based on Generative AI: Taking Tang Poetry as an Example," in *IEEE Transactions on Learning Technologies*, vol. 17, pp. 1353-1366, 2024, doi: 10.1109/TLT.2024.3378279.
- S. Chen, Q. Liu and B. He, "A Generative AI-based Teaching Material System Using a Human-In-The-Loop Model," *2023 International Conference on Intelligent Education and Intelligent Research (IEIR)*, Wuhan, China, 2023, pp. 1-8, doi: 10.1109/IEIR59294.2023.10391244.

# (13) GenAI: create your own application

## Context:

- Various tasks can be outsourced or improved by using GenAI. It is feared, that GenAI could replace thousand of jobs, e.g. writers, designers or programmers.

## To-Do:

- **Evaluate** GenAIs' capabilities by designing and implementing your own use case. Write and publish a book, design a video or create a website or a specific program with applications such as ChatGPT or Stable Diffusion.
- Evaluate the result and how well you could work with the GenAI application. Analyze the process and the result critically. What can be learned and generalized from this case study?

## References:

- Yin, R. K. (2018). Case study research and applications, volume 6. Sage Thousand Oaks, CA.
- Banh, L. and Strobel, G. (2023). Generative artificial intelligence. *Electronic Markets*, 33(1).
- J. Song and D. Yip, "Exploring the Intersection of AI Art and Film: A Case Study of Giant," *2023 IEEE International Conference on Multimedia and Expo Workshops (ICMEW)*, Brisbane, Australia, 2023, pp. 347-352, doi: 10.1109/ICMEW59549.2023.00066.



# (14) Trust: Human and AI Collaboration

## Context:

- Human-Computer Interaction is an enormous field of study, as the success of new technology often does not depend on its capabilities, but also its usability. Trust is a crucial factor in the adoption of new technologies.

## To-Do:

- **Literature review, surveys, interviews** on the factor of trust in GenAI, as well as on human and AI collaboration.

## References:

- Han, L., & Siau, K. (2020). Impact of Socioeconomic Status on Trust in Artificial Intelligence. AMCIS 2020.
- Dodgson, M. (1993). Learning, trust, and technological collaboration. *Human relations*, 46(1), 77-95.
- Li, X., Hess, T. J., & Valacich, J. S. (2008). Why do we trust new technology? A study of initial trust formation with organizational information systems. *The Journal of Strategic Information Systems*, 17(1), 39-71.

## (15) Your own ideas

**Any new topics and ideas are welcome!**



**Frédéric Tronnier**  
**Chair of Mobile Business & Multilateral Security**

Goethe University Frankfurt  
E-Mail: [seminar@m-chair.de](mailto:seminar@m-chair.de)  
WWW: [www.m-chair.de](http://www.m-chair.de)