

# Lecture Computer Vision Organisation

**Prof. Dr. Ralph Ewerth**

AI Research Group – Multimodal Modelling and Machine Learning

Department of Mathematics and Computer Science (FB 12)

Marburg University & hessian.AI



Marburg  
University

# Research Group

## AI – Multimodal Modelling and Machine Learning

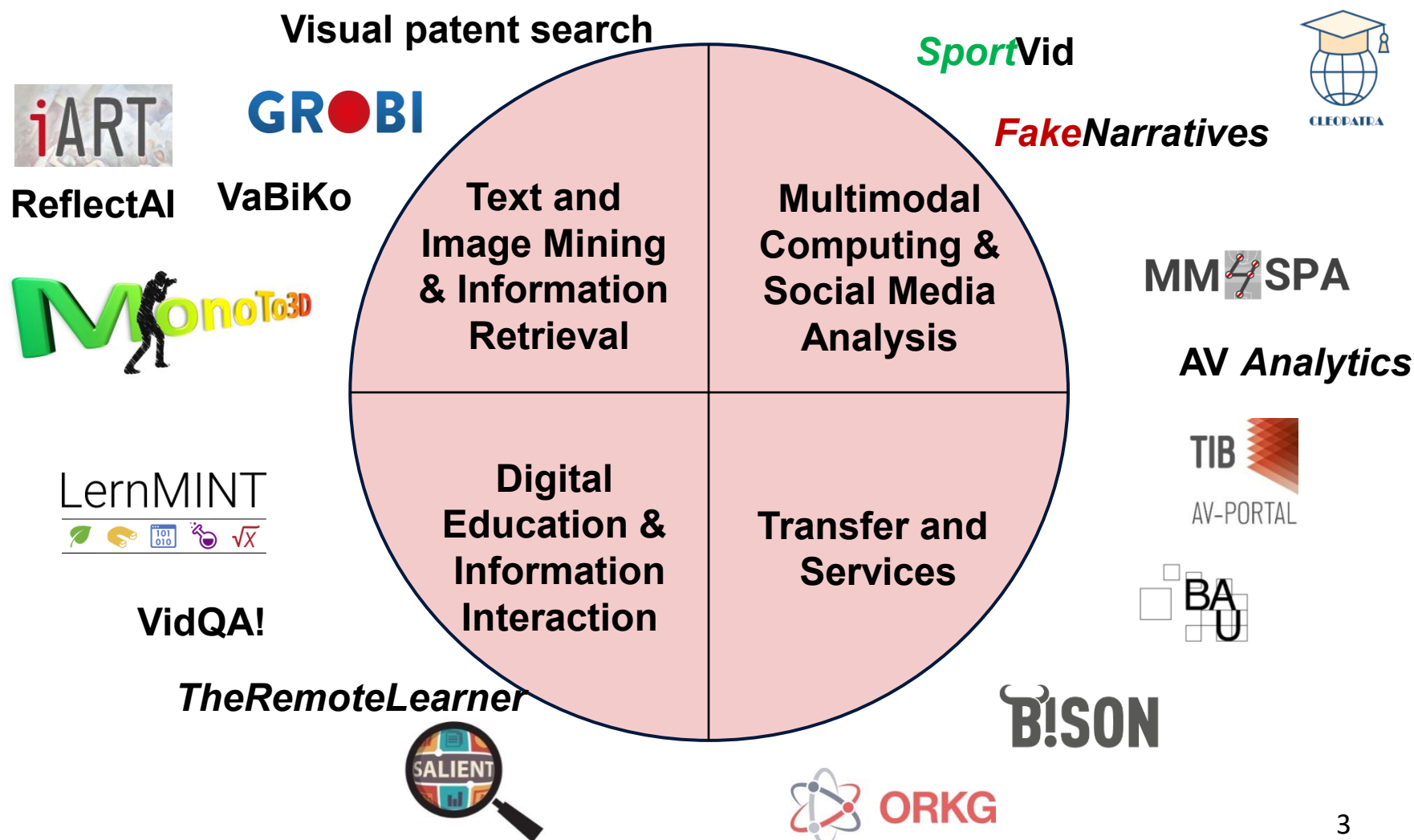
Team Marburg:

- |                       |                                                            |
|-----------------------|------------------------------------------------------------|
| 1. Prof. Ralph Ewerth | (Group Lead)                                               |
| 2. Dr. Anett Hoppe    | (Human-centred AI for Science and Education)               |
| 3. James Simpson      | (Conversational AI and User Science)                       |
| 4. Alexander Krawczyk | (Machine Learning and Video Retrieval, “SportVid” project) |
| 5. Omkar Gavali       | (Image Retrieval, “VaBiKo” project)                        |

Research areas

1. Computer vision, video and multimodal data analysis
2. Multimedia information retrieval
3. Information visualization
4. Human-centred AI for science and education

# Our Research Projects



# Contact Persons

## Lecture and Exercise

Prof. Dr. Ralph Ewerth

E-Mail: [rewerth@informatik.uni-marburg.de](mailto:rewerth@informatik.uni-marburg.de)

## Exercise

Omkar Gavali

E-Mail: [gavali@informatik.uni-Marburg.de](mailto:gavali@informatik.uni-Marburg.de)

# Schedule and Room

- Lecture: Thursday 14:00 – 15:30
- Room: Lecture Hall D (Lecture Hall Building)
- Exercises: Thursday 16:00 – 17:30
- Room: Lecture Room V 04A23 (HS V A4, MZG) (Seminarraum)
- Exercises (recitation, „Übung“):
  - Please consider announcements in ILIAS
  - It will start in **3rd week**, i.e., 30th October, 4 pm



# Exam

1. Type of exam: written exam (probably electronic)

# Preliminary Semester Plan (modifications still possible)

Date	Lecture nr.	Topic
16.10.2025	1	Organisation; Introduction Computer Vision, Color spaces
30.10.2025	2	Linear filters, transforms (Fourier, DCT, ect), image representations
06.11.2025	3	Introduction to (machine) learning for computer vision
Tba	4	Gradient-based learning and generalisation
Tba	5	Neural networks
27.11.2025	6	Neural networks II
04.12.2025	7	Convolutional neural networks
11.12.2025	8	Transformer models
18.12.2025	9	Representation learning
15.01.2026	10	Generative models
22.01.2026	11	Pre-training and transfer learning
29.01.2026	12	Vision tasks and applications I (Motion, Depth, Segmentation...)
05.02.2026	13	Vision tasks and applications II
12.02.2026	14	Vision and language

## Literature – Text books for the lecture

1. Torralba, Antonio, Phillip Isola, & William T. Freeman (2024). *Foundations of Computer Vision*. MIT Press.
2. Szeliski, Richard (2022). *Computer Vision: Algorithms and Applications*. Springer Nature.
3. Burger, Wilhelm & Burge, Mark. J. (2022). *Digital Image Processing: An Algorithmic Introduction*. Springer Nature.

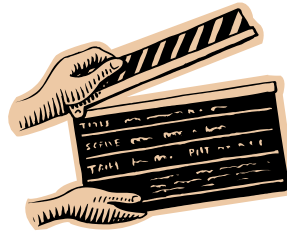


## Literature – Text books for the lecture

1. **Torralba, Antonio, Phillip Isola, & William T. Freeman (2024). *Foundations of Computer Vision*. MIT Press.**
2. Szeliski, Richard (2022). *Computer Vision: Algorithms and Applications*. Springer Nature.
3. Burger, Wilhelm & Burge, Mark. J. (2022). *Digital Image Processing: An Algorithmic Introduction*. Springer Nature.

Most of the lecture chapters will be based on Torralba's textbook, except for the first chapters which are mainly based on Burger & Burge's textbook.

# Questions and Comments...?



Thanks for your attention!