

Marburg
University

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



Research Group

AI – Multimodal Modelling and Machine Learning

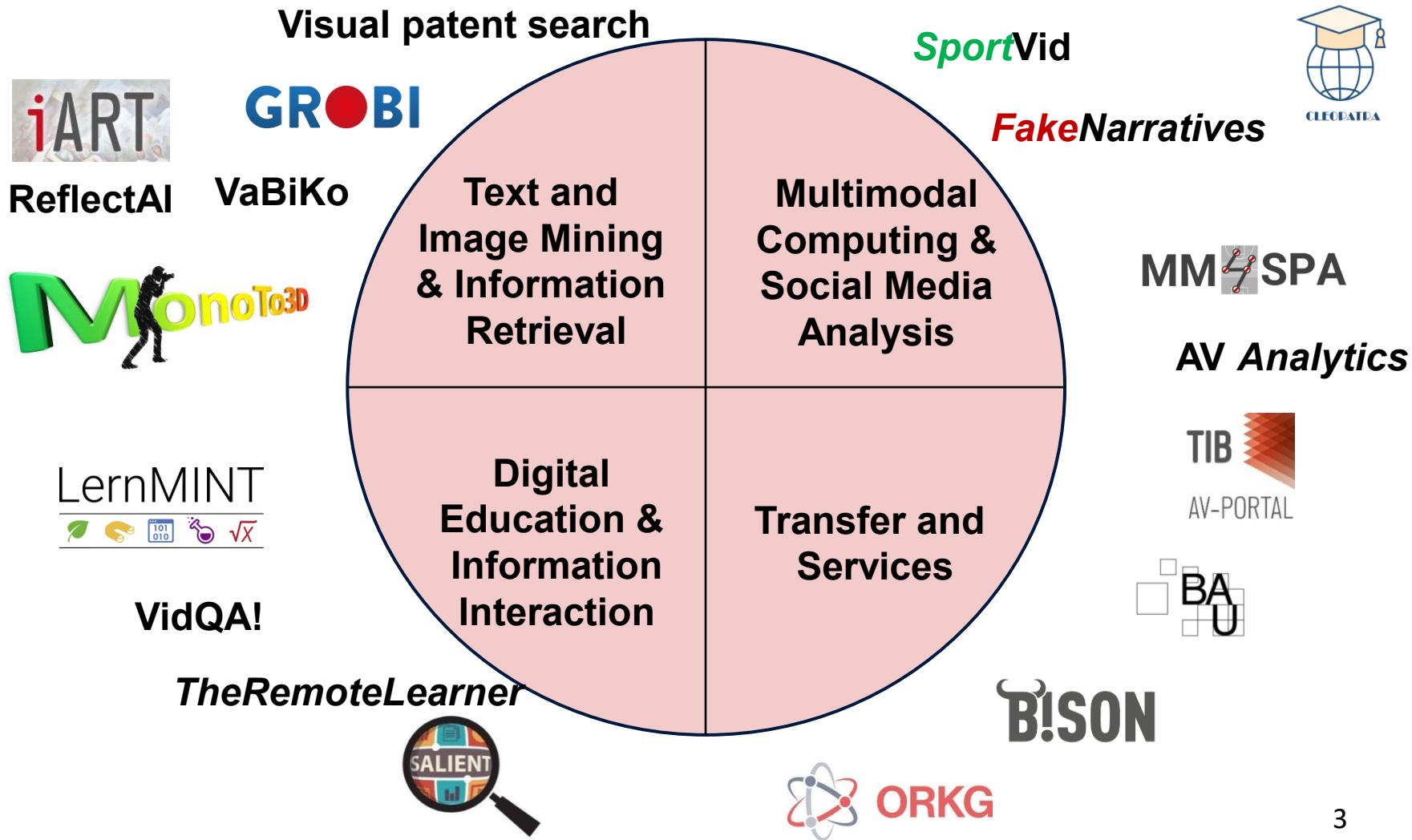
Team Marburg:

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

Exercise

Omkar Gavali

E-Mail: 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

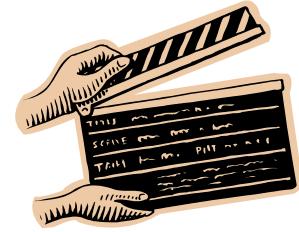
1. Torralba, Antonio, Phillip Isola, & William T. Freeman (2024). *Foundations of Computer Vision*. MIT Press.
2. Szeliski, Richard (2022). *Computer Vision: Algorithms and Applications*. Springer Nature.
3. Burger, Wilhelm & Burge, Mark. J. (2022). *Digital Image Processing: An Algorithmic Introduction*.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

Literature – Text books for the lecture

1. **Torralba, Antonio, Phillip Isola, & William T. Freeman (2024). *Foundations of Computer Vision*. MIT Press.**
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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!