



Marburg  
University

# Exercise Computer Vision Organisation

Lecture Computer Vision

**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**

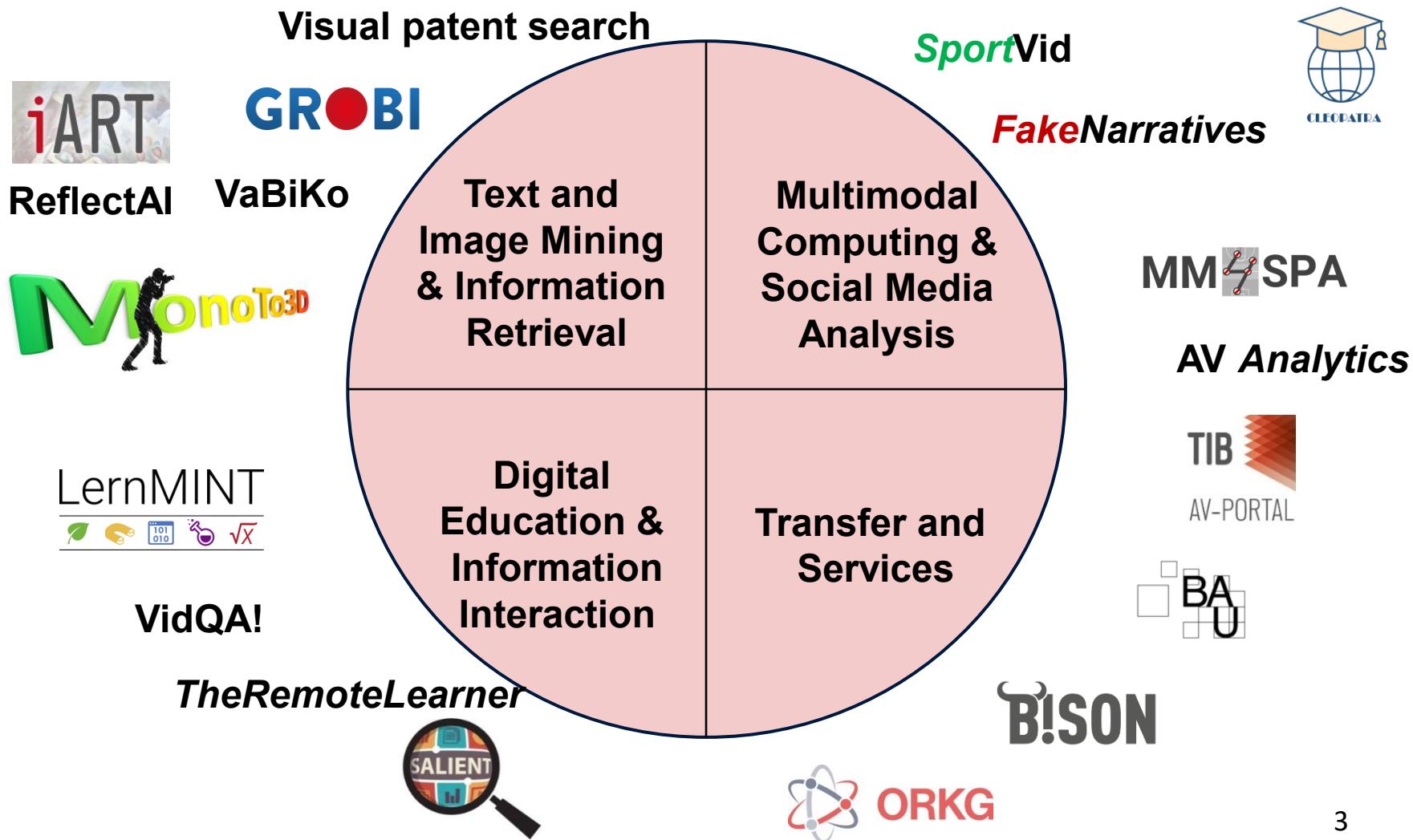
Team Marburg:

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](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

# About the Exercise

- Answering questions about the lecture (from last week and in general)
- Opportunities for questions (organisation, but mainly lecture content)
- Discussion of the tasks from last week
  - More than 50% of all available points are achieved
  - No more than two exercises with less than 50%
  - Regular participation (at least two „presentations“)
- Submission deadline for exercises: normally Wednesday by 23:55
- **-> You can assume that there will be no exceptions to these rules**
  
- Active participation pays off!
- -> In my courses at Hannover there was a moderate correlation between points in the exercises (i.e. % of correct answers) and the achieved points in the exam! ☺

# Types of Exercises

- Exercises will take place in the Ilias system
- Main components: An Ilias „Test”, consisting of
  - Multiple choice questions
  - Calculation tasks
  - Fill-in-the-gap texts
  - Etc.
  - You will have two attempts per week
    - After the first attempt, the test will be blocked for an hour
    - ➔ Use the time between two tests to consult your learning material (!)
    - ➔ Work on the question topics you found difficult / you were unsure
    - ➔ Your last attempt will count for the exercise assessment
- Additionally, there will be smaller programming tasks

# Exam

- Type of exam: Written electronic exam (on-site)
- **Exam dates:**
  - Mon 02nd March (first examination phase)
  - Wed 18th March (second examination phase)
- That is, exam is similar to the exercises, but it is more difficult
  - You will not be allowed to use learning materials
  - You will not be allowed to use any tools (calculator, cell phones)
  - You cannot discuss tasks with others
- Thus, it is beneficial if you work carefully on the exercises

# 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,  |
| 06.11.2025 | 3           | Image transformations (Fourier, DCT, ect) and representations    |
| Tba        | 4           | Introduction to (machine) learning for computer vision           |
| Tba        | 5           | Gradient-based learning and generalisation                       |
| 27.11.2025 | 6           | Neural networks  |
| 04.12.2025 | 7           | Neural networks II   |
| 11.12.2025 | 8           | Convolutional neural networks                                    |
| 18.12.2025 | 9           | Transformer models   |
| 15.01.2026 | 10          | Representation learning  |
| 22.01.2026 | 11          | Generative models  |
| 29.01.2026 | 12          | Pre-training and transfer learning                               |
| 05.02.2026 | 13          | Vision tasks and applications I (Motion, Depth, Segmentation...) |
| 12.02.2026 | 14          | Vision and language  |

## Literature – Text books for the lecture

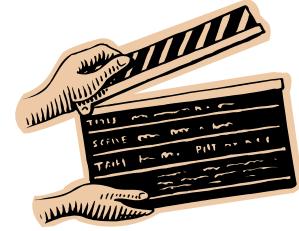
1. Torralba, Antonio, Phillip Isola, & William T. Freeman (2024). *Foundations of Computer Vision*. MIT Press.
2. Szeliski, Richard (2022). *Computer Vision: Algorithms and Applications*. Springer Nature.
3. Burger, Wilhelm & Burge, Mark. J. (2022). *Digital Image Processing: An Algorithmic Introduction*.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

## Literature – Text books for the lecture

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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!