

Computer Vision

Classroom x

Studio or workshop

Name

External venue

Online

Codes

M-KF-301-DI-202402-04, M-KF-E-301-DI-202402-04

Host

Design Intézet

| | Kurzus típusa | Kredit | Kontaktóra | Otthoni munkaóra | Tantárgy típusa | Félév | Melyik tantárgy része? |
|------------|------------------|----------|------------|------------------|-----------------|-------|------------------------|
| Basic info | Gyakorlat | 5 | 48 | | RDI | | |

Recommendation

This course is tailored for designer students looking to explore the innovative integration of AR with physical cards. Throughout this program, you'll delve into the fundamentals of computer vision technology combined with generative artificial intelligence and learn how to leverage it creatively in design using interactive cards. Engage in hands-on activities where you'll experiment with AR applications, creating captivating visual experiences that merge the digital and physical realms seamlessly. By the end of this course, you'll have a solid understanding of using AR cards as a powerful design tool, unlocking new dimensions for creative expression in the field of design.

Short Description

Sense making systems in artificial intelligence and computer vision are technologies that aim to give computers the ability to understand and make sense of the world around them. This can involve using various sensors and cameras to capture information about the environment, and using machine learning algorithms to analyze and interpret this data. In the field of computer vision, for example, this could involve using AI to analyze images and video to recognize objects, scenes, and activities. The goal of sense making systems is to enable networks and computers to understand the context and meaning of the information they collect from their environment, in order to make more informed decisions and take appropriate actions. During the sessions, we will explore the following topics, related to the sociocultural aspects of computer vision and interaction:

- experimental capture (historical overview)
- digital signal processing
- computer vision (recognition, tracking, estimation)
- pattern & gesture recognition
- machine learning (regression, classification)
- neural networks (adversarial systems, transfer learning)
- generative design, artificial creativity
- predictive systems

Teachers

| Name of lecturer | Contact of lecturer | BIO | Open Office |
|------------------|--|---------------------|-----------------------------------|
| Ágoston Nagy | nagy.agoston@mome.hu +36304809295 | Assistant Professor | Teams & Onsite once each month |

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Semester
schedule

| Course | Date |
|--------|------|
| | |

| Alk. | Date | Description |
|------|------|---|
| 1 | | Introduction: context and general overview - cognition, automation, learning, game theory, representations |
| 2 | | Deep time of Artificial Intelligence: - history, trends and examples |
| 3 | | Case studies, anatomy of a playful artificial system - |
| 4 | | Consultation: Collected materials (game + AR examples), ideas |
| | | Consultation: Analysis, charts, graphs & visualizations |
| | | Generative AI - image generation models, synthetic media, prompts |
| | | - Augmented Reality |
| | | Worlding, world-building: - simulations, evolutionary systems and game worlds |
| | | Consultation: game mechanics, narrative content |
| | | Consultation: in-depth elaboration, iterative testing |
| | | Consultation: fine tuning, evaluation |
| | | Class Work Presentation & documentation |

Requirements
and evaluation

| Deliverables | Criteria for assessment | Deadline | Proportions |
|---|--|-------------|-------------|
| 10 mins Presentation & Pitching | Active participation on the classes aesthetic qualities of the practical work | 10th week | 40% |
| Video documentation (1.5 mins) | | 12th week | 20% |
| Presenting interactive software as working prototypes | Presentation (visual introduction of the class work) Method of assessment: Practical demonstration, pitching | 9-12th week | 40% |
| | | | |
| | | | |

Compulsory
readings

Recommended readings

"Superintelligence: Paths, Dangers, and Strategies" by Nick Bostrom
"Thinking, Fast and Slow" by Daniel Kahneman
"How to Create a Mind" by Ray Kurzweil
"The Age of Spiritual Machines" by Ray Kurzweil

Learnings

| | |
|----------------|--|
| Knowledge | A comprehensive understanding of the fundamentals of AI, AR and sense making systems |
| Skills | Improved critical thinking and problem-solving skills in the fields of mixed reality |
| Attitude | Responsible designer with advanced problem framing capabilities |
| Responsibility | A better understanding of the potential future developments and applications of AI and sense making systems. |

Exemption

- Exemption from attending and completing the course cannot be granted
- Exemption may be granted from the acquisition of certain competencies and the fulfilment of tasks
- Some tasks can be substituted with other activities,
- A full exemption can be granted

Curriculum connections

| Unit | Parallel courses | Course proportion in unit |
|-------------------------|----------------------|---------------------------|
| Befoglaló tantárgy címe | [Ez a kurzus] | |
| | Másik kurzus címe | |
| | Harmadik kurzus címe | |

| Course prerequisites | Is it available as an elective? | Prerequisites in case of elective |
|----------------------|---------------------------------|-----------------------------------|
| | | |

Misc. information