

Tárgyleírás

Tárgy neve: 3D Computer Vision

Tárgyfelelős neve: Hajder Levente

Tárgyfelelős tudományos fokozata: PhD

Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Az oktatás célja angolul / Aim of the subject:

Knowledge

- Possession of required knowledge in estimation theory and computer vision, especially in the following areas: single and multiple view geometry, stereo vision and point cloud processing.
- Detailed and expert-level knowledge of the technical terms and expressions of computer vision in English.

Abilities:

- Ability to formalize complex technical problems, to analyze theoretical and practical background, and to provide adequate solutions.
- Skills for cooperation and team work, and ability to take leading role.
- Ability for written and oral communication in English, using the technical terms and expressions of computer vision. Ability to argue, to prepare reports, to read, understand and exploit scientific and technical material (e.g. books, technical reports and papers).
- Expertise in utilizing sources of technical information, their critical interpretation and evaluation, and the extraction of information relevant to the solution of a specific problem.
- Ability to perform supervised scientific research, and skills required for post-graduate studies.

Attitude:

- Attends professional, technological development related to their qualification.
- Commitment to critical feedback and self-assessment.
- Commitment to lifelong learning and receptivity to new IT competencies.
- Adopts and coordinates the ethical principles of work, organizational culture and research.
- Shares professional knowledge, mediates professional results.
- Commitment to quality standards and its IT tools.
- Open to initiate collaboration with IT and other specialists.

Autonomy, responsibility:

- Takes responsibility for his professional decisions taken during his professional activities.
- Takes responsibility for observing and enforcing deadlines.
- Takes responsibility for own and fellow workers' work.

Az oktatás tartalma angolul / Major topics:

Camera models. Perspective and weak-perspective camera. Plane-plane homography. Camera calibration. Stereo vision. Estimation of fundamental and essential matrices. Triangulation. Multiple view vision: Bundle adjustment and Tomasi-Kanade factorization. Case studies in several application fields of computer vision

A számonkérés és értékelés rendszere angolul / Requirements and evaluation:

Continuous assessment: final mark is given based on assignments and an oral exam at the end.

Irodalom / Literature:

- Richard Hartley, Andrew Zisserman. Multiple View Geometry 2nd edition, Cambridge University Press, 2004. ISBN: 05215405182
 - Yi Ma, Stefano Saototo, Jana Kosecka, S. Shankar Sastry. An Invitation to 3-D Vision. Springer-Verlag, New York, November 2003
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