Computer Vision I

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Machine Learning for Computer Vision
TU Dresden

Winter Term 2022/2023

Welcome

- Course consisting of
  - Lectures in ASB/0028/H on Mon, 11:10–13:00
  - Exercise groups starting Oct 17th

Online	Mon, 14:50–16:20
In APB/E069	Tue, 13:00–14:50
In APB/E069	Tue, 14:50–16:40

  - Self-study and moderated discussion in a forum
  - Final examination (covering lectures and exercises)
- https://mlcv.inf.tu-dresden.de/courses/22-winter/cv1/index.html
- **Registration**:
  - All participating students need to register through **OPAL**
  - Those enrolled in the study program Computational Modeling and Simulation (CMS) need to register additionally via **SELMA**.
- **Textbooks**:
  - Szeliski, R.. *Computer Vision: Algorithms and Applications*, 2nd ed., 2020, available online at http://szeliski.org/Book/
  - Hartley, R. I. and Zisserman, A.. Multiple View Geometry in Computer Vision. Second edition. 2004. Cambridge University Press
- **No recordings/reproductions of the lectures or exercises!**

Computer Vision

Computer Vision is a branch of computer science devoted to the *study* and *development* of mathematical models, algorithms, software and systems for analyzing and interpreting images.

- Poses challenging problems
- Combines insights and methods from multiple disciplines
  - Mathematics (esp. optimization, probability theory, statistics)
  - Computer Science (esp. algorithms, complexity, software engineering)
  - Engineering (electrical, mechanical, optical)
- Provides an opportunity for applying analytical and engineering skills
- Is rewarding by visual results
- Has impact on applications (medical, robotic, consumer)
- Grows dynamically
- Offers excellent career opportunities (esp. in tech companies and startups)

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- Leading scholarly journals:
  - Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
  - International Journal on Computer Vision (IJCV)
  - Journal on Mathematical Imaging and Vision (JMIV)
- Leading academic conferences:
  - Computer Vision and Pattern Recognition (CVPR)
  - International Conference on Computer Vision (ICCV)
  - European Conference on Computer Vision (ECCV)
- Scientific communities
  - Computer Vision
  - Mathematical Image Analysis
  - Medical Image Analysis
  - Computational Imaging (tomography, MRI, radar, ultrasound, etc.)
  - Machine Learning

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