

Module MA-INF 2201	Computer Vision				
Workload 270 h	Credit points 9 CP	Duration 1 semester	Frequency every year		
Module coordinator	Prof. Dr. Juergen Gall				
Lecturer(s)	Prof. Dr. Juergen Gall				
Classification	Programme M. Sc. Computer Science		Mode Optional	Semester 1. or 2.	
Technical skills	Students will learn about various mathematical methods and their applications to computer vision problems.				
Soft skills	Productive work in small teams, development and realization of individual approaches and solutions, critical reflection of competing methods, discussion in groups.				
Contents	The class will cover a number of mathematical methods and their applications in computer vision. For example, linear filters, edges, derivatives, Hough transform, segmentation, graph cuts, mean shift, active contours, level sets, MRFs, expectation maximization, background subtraction, temporal filtering, active appearance models, shapes, optical flow, 2d tracking, cameras, 2d/3d features, stereo, 3d reconstruction, 3d pose estimation, articulated pose estimation, deformable meshes, RGBD vision.				
Prerequisites	<b>Recommended:</b> Basic knowledge of linear algebra, analysis, probability theory, C++ programming				
Format	Teaching format	Group size	h/week	Workload[h]	CP
	Lecture	60	4	60 T / 105 S	5.5
	Exercises	30	2	30 T / 75 S	3.5
	T = face-to-face teaching; S = independent study				
Exam achievements	Written exam (graded)				
Study achievements	Successful exercise participation (not graded)				
Forms of media					
Literature	<ul style="list-style-type: none"><li>• R. Hartley, A. Zisserman: Multiple View Geometry in Computer Vision</li><li>• R. Szeliski: Computer Vision: Algorithms and Applications</li><li>• S. Prince: Computer Vision: Models, Learning, and Inference</li></ul>				