TPK4171 Advanced Industrial Robotics
Plan 2024

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Lectures	Monday 08:15 - 10:00, R10	
	Thursday 08:15 - 10:00, F2	

Lecture notes Robot Vision. Olav Egeland, 2024

Lecture	Date	Topic	Text
1	2024-01-08	Camera model	
2	2024-01-11	RANSAC, Hough transform	
3	2024-01-15	Projective geometry i 2D. Homographies: Properties and types	
4	2024-01-18	Affine and projective homographies.	
5	2024-01-22	Projective homographies. Computation of homographies with DLT.	
6	2024-01-25	Optimization for 2D homographies. Sampson's error.	
7	2024-01-29	Optimization for 2D homographies. Transfer error and reprojection.	
8	2024-02-01	Points and planes in 3D. Plücker coordinates.	
9	2024-02-05	Points, lines and planes in Plücker coordinates	
10	2024-02-08	Intersecting lines. Laser scanner geometry	
11	2024-02-12	Calibration	
12	2024-02-15	Stereo vision with calibrated cameras. Recovery of displacement	
13	2024-02-19	No lecture. Calibration exercise.	
14	2024-02-22	No lecture. Calibration exercise.	
15	2024-02-26	Quaternions	
16	2024-02-29	Quaternions. SLERP interpolation.	
17	2024-03-04	Exponentials and logarithms in SO(3).	
18	2024-03-07	Gradients and distances in SO(3).	
19	2024-03-11	Optimization in SO(3). Rotation averaging.	
20	2024-03-14	Exponentials and logarithms in SE(3). Distance measures.	
21	2024-03-18	The Procustes problem for rotation and displacement.	
22	2024-03-21	Hand-eye calibration	
23	2024-04-04	Point cloud registration. PnP.	
24	2024-04-08	EPnP. GNC	
25	2024-04-11	Machine learning for registration.	
26	2024-04-15	Machine learning for registration.	
27	2024-04-18	Latent space in machine learning	
28	2024-04-22	TBD	
29	2024-04-29	Summing up. Questions.	

Exercises: 10 exercises, 7 must be accepted to be admitted to the exam
Exam: 2024-06-06