Module MA-INF 4304	**Lab Cognitive Robotics**		
Workload 270 h	**Credit points** 9 CP	**Duration** 1 semester	**Frequency** every semester
Module coordinator	Prof. Dr. Sven Behnke		
Lecturer(s)	Prof. Dr. Sven Behnke		
Classification	**Programme** M. Sc. Computer Science	**Mode** Optional	**Semester** 2. or 3.
Technical skills	Participants acquire practical experience and in-depth knowledge in the design and implementation of perception and control algorithms for complex robotic systems. In a small group, they analyze a problem, realize a state-of-the-art solution, and evaluate its performance.		
Soft skills	Self-competences (time management, goal-oriented work, ability to analyze problems and to find practical solutions), communication skills (Work together in small teams, oral and written presentation of solutions, critical examination of implementations)		
Contents	Robot middleware (ROS), simultaneous localization and mapping (SLAM), 3D representations of objects and environments, object detection and recognition, person detection and tracking, action recognition, action planning and control, mobile manipulation, human-robot interaction.		
Prerequisites	**Recommended:** At least 1 of the following: MA-INF 4113 – Cognitive Robotics MA-INF 4114 – Robot Learning		
Format	**Teaching format** / **Group size** / **h/week** / **Workload[h]** / **CP** Lab / 8 / 4 / 60 T / 210 S / 9 T = face-to-face teaching; S = independent study		
Exam achievements	Oral presentation, written report (graded)		
Study achievements	none (not graded)		
Forms of media			
Literature	• S. Thrun, W. Burgard and D. Fox: Probabilistic Robotics. MIT Press, 2005. • B. Siciliano, O. Khatib (Eds.): Springer Handbook of Robotics, 2008. • Selected research papers.		