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HOCHSCHULE DARMSTADT
UNIVERSITY OF APPLIED SCIENCES
fbi
FACHBEREICH INFORMATIK

Modulbeschreibung

Motion Planning

Module numbers:	41.5080 [PVL 41.5081]
Language:	english
Study programme:	Dualer Master 2021 - Katalog AS: Anwendungs- und systemorientierte Module Dualer Master 2021 - Vertiefung TG: Technische und graphische Systeme Master 2021 - Katalog AS: Anwendungs- und systemorientierte Module Master 2021 - Vertiefung TG: Technische und graphische Systeme Dualer Master 2013 - Katalog AS: Anwendungs- und systemorientierte Module Dualer Master 2013 - Vertiefung TG: Technische und Graphische Systeme Master 2013 - Katalog AS: Anwendungs- und systemorientierte Module Master 2013 - Vertiefung TG: Technische und Graphische Systeme MN Data Science 2022/2016 - Katalog M-I_I: Allgemeine Wahlpflicht Informatik
Type of course:	V+S+P = Lecture+Seminar+Practical
Weekly hours:	2+1+1
Credit Points:	6
Exam:	written exam
PVL (e.g. Practical):	not graded
Required knowledge:	none
Learning objectives:	Students should finish the course with the ability: • to evaluate different strategies to solve motion planning problems • to use computational tools to implement solutions for motion planning problems • to improve the ability to read and evaluate scientific literature • to practice in conveying research results to an audience
Content:	The foundations of motion planning and state-of-the-art algorithms are illustrated in the context of several important applications, including robotics, computational biology, and computer animation. The course covers both classic results and, selectively, advances from recent research. Students will complete several practical exercises and/or a project that involves substantial programming in order to gain working knowledge of the topics covered in the class.
Literature:	• Steven M. Lavalle. Planning Algorithms. Cambridge University Press. 2006. Available online at http://planning.cs.uiuc.edu/ • H. Choset, K. M. Lynch, S. Hutchinson, G. Kantor, W. Burgard, L. E. Kavraki and S. Thrun, Principles of Robot Motion: Theory, Algorithms, and Implementations ISBN-13: 978-0-262-03327-5 • K.M. Lynch, F.C. Park: Modern Robotics - Mechanics, Planning, and Control Cambridge University Press, 2017 (englisch)
Lecture style / Teaching aids:	Seminaristic lecture with seminar and laboratory. Resources include lecture notes, example programs and software tools.
Responsibility:	Thomas Horsch
Professional competencies:	• formal, algorithmic, mathematical competencies: medium • analytical, design and implementation competencies: high • technological competencies: medium • capability for scientific work: medium
Interdisciplinary competencies:	• interdisciplinary expertise: basic technical and natural scientific competence • social and self-competencies: competence of knowledge acquisition