Software-Development for Industrial Robotics

Winter

(engl. Software-Development for Industrial Robotics)

Modulnummer: FIN-INF-120273

Kürzel	CP	Semester	Fachsem.	Dauer	Sprache	Niveau
SDIR	6	Winter	ab 1.	1 Semester	deutsch	Master

Link zum LSF:	LSF
Zugang beschränkt:	
Verantwortung:	Prof. Dr. Frank Ortmeier
Dozent:in:	Prof. Dr. Frank Ortmeier
Lehrveranstaltungen:	• Vorlesung *Software-Development for Industrial Robotics* • Übung *Software-Development for Industrial Robotics*
Verwendbarkeit:	- M.Sc. INF: Informatik - M.Sc. INGINF: Informatik - M.Sc. INGINF: Ingenieurinformatik - M.Sc. WIF: Informatik - M.Sc. DKE: Applied Data Science - M.Sc. DE: Methoden des Digital Engineering - M.Sc. DE: Methoden der Informatik - M.Sc. DE: Fachliche Spezialisierung - M.Sc. VC: Computer Science

Angestrebte Lernergebnisse:
The students have ...

- Understanding of problems in the robotics domain

- Understanding and applicability of the mathematical background
- Practical experience in programming industrial robots on the basis of various tasks

Inhalt:
The use of industrial robots is increasing rapidly these days. In 2014, the expected number of industrial robots increased by 27% compared to the previous year. The main reason is their flexibility, especially their ability to perform a wide range of tasks. In the lecture “Software Development for Industrial Robotics” an overview of this domain is given as well as the mathematical background. The latter deals in particular with the idea of forward and inverse kinematics, point-to-point movements, linear movements, trajectory planning, recognition of singularities, Denavit-Hartenberg convention, rotation and translation matrices. The final project deals with control using a collision-free path planner, KUKA youBot kinematics, numerical approaches to solving inverse kinematics, etc.

Arbeitsaufwand:
180h = 56h attendance time + 124h independent work

Prüfungsvorleistungen:	**Studien-/Prüfungsleistungen:**	**Lehrform / SWS:**
Projekt	mündliche Prüfung	• Lecture (2 SWS) • Exercise (2 SWS)

Voraussetzungen nach Prüfungsordnung:	**Empfohlene Voraussetzungen:**
none	

Medienformen:	**Literatur:**

Hinweise:
Zuangsbeschränkung: Limitierte Teilnehmerzahl. Auswahlverfahren wird in erster Vorlesung bekannt gegeben

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