

Modul Systems Identification for Embedded Drive Systems					Abk. SIS
Studiensem. 2	Regelstudiensem. 4	Turnus WS	Dauer 1 Semester	SWS 3	ECTS-Punkte 4

Modulverantwortliche/r	Prof. Dr.-Ing. Matthias Nienhaus
Dozent/inn/en	Dr.-Ing. Emanuele Grasso
Zuordnung zum Curriculum	Systems Engineering Master, Wahlbereich

Zulassungsvoraussetzungen	No formal pre-assumptions	
Leistungskontrollen / Prüfungen	Oral examination with grade	
Lehrveranstaltungen / SWS	Lecture: 2 SWS Excercise: 1 SWS	
Arbeitsaufwand	Lecture Time 15 Weeks per 2 SWS	30 h
	Excercise Time 15 Weeks per 1 SWS	15 h
	Pre- and post-preparation for Lecture and Excercise	45 h
	Exam preparation	30 h
	Total	120 h (4 CP)
Modulnote	Grade	

Lernziele/Kompetenzen

This lecture is intended to provide the necessary mathematical tools needed for the identification of linear dynamic systems for supporting the design of real-time controllers with particular attention to motor drive applications. Moreover, an insight to parameter identification of dynamic systems will be provided. Finally, both multilayer perceptron and radial basis neural networks will be introduced together with the basis of genetic algorithms as support for system identification. Practical exercises based on real applications will be proposed along with the lecture time.

Inhalt

- Overview on Linear Time-Invariant Systems (LTIs)
- AR(X)/ARMA(X) Systems
- Normalized Least Mean-Squares and Recursive Least Mean-Squares Algorithms
- Problem of Identification and Solutions for LTIs
- Identification of Linear Systems Parameters
- Applications of System Identification to Control of Electrical-Drives
- Multilayer Perceptron and Radial Basis Neural Networks
- Introduction to Genetic Algorithms
- Implementation of System Identification Algorithms to Embedded Drive Systems

Weitere Informationen
Unterrichtssprache: english