New major "**Intelligent Methods for Test and Reliability**" for M.Sc. InfoTech

V9, May 31, 2022

Abstract

Today's economy and entire society rest upon the dependability of information technology and especially of the underlying hardware infrastructure. The Internet of Things affects nearly all aspects of human life, introduces severe vulnerabilities into the society and relies on strong actions towards reliability, thorough testing, safety and security of the underlying hardware. The increasing complexity can only be mastered in the interplay of data, expert knowledge and machine learning. Data increasingly becomes the currency, bridging between all stages of the Semiconductor Value Chain from circuit design to in-field monitoring. Intelligently collecting and harvesting this data requires expertise from different fields.

The major “Intelligent Methods for Test and Reliability“ therefore focuses on data-driven intelligent methods for, e.g., circuit design; test and diagnosis; post-silicon validation; test generation and optimization; test software; analyzing, visualizing and learning from data; security and privacy of jointly used data; system-level test; lifetime test and reliability management; and software-based test automation.

Requirements from InfoTech for a new major:

R1) at least 5 core modules from each CS and EE
R2) sustainability, i.e. commitment of teaching after the GS-IMTR
R3) sufficient distance to other three majors of InfoTech
R4) English

Core Modules Computer Science

Modulnr	Modultitel	Modulverant.	ECTS	Sem.
101850	Advanced Software Testing and Analysis	S. Wagner	6	SS
73600	Robust System Design	I. Polian	6	SS
55630	Information Visualization and Visual Analytics	D. Weiskopf	6	WS
78900	Introduction to Modern Cryptography	R. Küsters	6	WS
105860	High-dimensional data approximation and learning	D. Pflüger	6	SS
103270	Design for Reliability in Advanced Technology	H. Amrouch	6	WS
79170	Electronic Design Automation	I. Polian	6	WS

Core Modules Electrical Engineering

Modulnr	Modultitel	Modulverant.	ECTS	Sem.
75960	Deep learning	B. Yang	6	SS
74780	Circuit design in nanometer scaled CMOS	J. Anders	6	SS
100300	Microwave Analog Frontend Design 2	I. Kallfass	6	WS
58290	Industrial Automation Systems	M. Weyrich	6	SS
102650	Modeling and Analysis of Automation Systems	A. Morozov	6	SS
21920	Physical Design of Integrated Circuits	M. Berroth / Successor	6	SS
77910	Advanced mathematics for signal and information processing	B. Yang	6	WS

Supplementary Modules

The supplementary catalogues of the other majors can be used