UNIVERSITÄT DUISBURG ESSEN

Veranstaltungen
Ingenieurwissenschaften

Fakultät für

Ingenieurwissenschaften

Elektrotechnisches Kolloquium

Referent:

Prof. Daoyi Dong
School of Engineering, Australian National University, Australia

Thema:

Quantum estimation, sensing and compression: algorithm development and performance analysis

Quantum technology is a promising future technology where unique quantum characteristics are taken advantage of to develop faster computation, securer communication, and high-precision sensing than their classical (non-quantum) counterparts. Quantum estimation (tomography) is a fundamental task for developing powerful quantum technology. In this talk, we will first present several results on optimization and error analysis in quantum estimation and identification. Then we will introduce a couple of examples on capability and performance analysis of quantum sensors. Lastly, we will introduce learning control for quantum autoencoders which are an important tool for quantum data compression.

Daoyi Dong is currently a Professor at the Australian National University, Australia. He is a Fellow of the IEEE, a Fellow of Engineers Australia, and a Fellow of the Australian Institute of Physics, and a Future Fellow of the Australian Research Council. He worked at the University of New South Wales from 2008 to 2023. He has had a visiting appointment at several institutes including Princeton University (USA), RIKEN (Japan), University of Duisburg-Essen (Germany), University of Sydney (Australia). He received a B.E. degree in automatic control and a Ph.D. degree in engineering from the University of Science and Technology of China, in 2001 and 2006, respectively. His research interests include quantum control, machine learning, system identification and renewable energy. He was awarded an ACA Temasek Young Educator Award by the Asian Control Association and is a recipient of a Humboldt Research Fellowship from Alexander von Humboldt Foundation in Germany. He is the founding chair of the Technical Committee on Quantum Computing, Systems and Control, IEEE Control Systems Society. He is an elected member of Board of Governors, IEEE Control Systems Society (2025-2027) and a Vice President, IEEE Systems, Man and Cybernetics Society (2025-2026).

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