

博士課程教育リーディングプログラム 平成 29 年度リーディング特別セミナー

Industry 4.0 and Research Aspects in Control Engineering

聴講
自由

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Abstract:

Still more and more increasing computational power, connectivity with extreme data rates, availability of cheap mass storages of endless size resulted in the chance of processing high data volumes with no restrictions of available computer resources located at the manufacturing area. Together with smart sensor and actuator devices the smart factory of the future can be the key enabler for effective flexible production of individualized products with smart functionalities. For control engineers several aspects are interesting related to industry 4.0 from the interface between big data analysis, and learning algorithms to stochastic dynamic systems, process monitoring by soft sensors, autonomy by fault detection, predictive maintenance, and re-configuration of control. For the implementation optimization methods for dynamic systems is an important area relevant from connecting planning and manufacturing up to self-organization in manufacturing. In the talk several examples from data analytics in manufacturing plants, fault detection and self-adaptation for process monitoring are presented. For sensing the scene in the manufacturing area a novel indoor GPS system approach is presented and discussed. Several examples for IoT related research projects together with construction industry close the talk.



Biography:

Professor Sawodny received his Dipl.-Ing. degree in electrical engineering from the University of Karlsruhe, Karlsruhe, Germany, in 1991 and his Ph.D. degree from the University of Ulm, Ulm, Germany, in 1996. In 2002, he became a Full Professor at the Technical University of Ilmenau, Ilmenau, Germany. Since 2005, he has been the Director of the Institute for System Dynamics, University of Stuttgart, Stuttgart, Germany. His current research interests include methods of differential geometry, trajectory generation, and applications to mechatronic systems. He received important paper awards in major control application journals such as Control Engineering Practice Paper Prize (IFAC, 2005) and IEEE Transaction on Control System Technology Outstanding Paper Award (2013). He is a senior member of IEEE and senior editor of Mechatronics.

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