

Foreword from Axel Sikora, Professor of Offenburg University, Germany and Deputy Member of the Board at Hahn-Schickard, Villingen-Schwenningen, Germany

Axel Sikora received He received his M.Sc. (Dipl.-Ing.) in Electrical Engineering in 1993 and his M.B.A. (Dipl. Wirt.-Ing.) in 1995 from Aachen Technical University (RWTH Aachen). He received his Ph.D. in 1997 from Duisburg University, Germany on circuit design for SOI-based high-temperature electronics. Between 1996 and 1999, he worked for telecommunication and semiconductor industry. His last group leader position was with product management for System LSI products with NEC Electronics (Europe) GmbH. In 1999 he became a professor at University of Cooperative Education Baden-Wuerttemberg (DHBW Loerrach). In 2011, he joined Offenburg University, where he founded and leads the Institute of Reliable Embedded Systems and Communication Electronics (iVESK), one of the leading institutes around secure, real-time, and efficient Wireless IIoT connectivity solutions. Since 2016 he is also deputy member of the board at Hahn-Schickard, an independent research institute on microtechnology in public-private partnership, where he founded and leads the division "Software Solutions", which covers R&D around the cyber-part of CPS, including AI-based data analysis. Dr. Sikora is author of more than 300 scientific papers, several textbooks, and around a dozen of patents. He is also member of committee in many international conference, including IEEE ANTS, IEEE ETFA, IEEE IDAACS, IEEE INDIN, IEEE WFCS, and many more. He is also serving as conference chairman of embedded world Conference, the world's largest event on the topic with events in Nuremberg (Germany), Shanghai (China), and Anaheim (California, USA). In addition, he is founder and co-founder of several deep-tech startup companies.



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In these days, we are seeing an extremely rapid development in all kinds of technologies. Many of them are changing life, devices, and processes in a fundamental way. Some of them are enabling technologies in its true meaning, as many other solutions are using them and are dependent on them. Certainly, the Internet is one of them. And in the last years, the (Industrial) Internet of Things has enabled many smart applications. This volume of AEEE journal contains three papers on different and interesting aspects of IoT, on technology level for a novel IEEE802.11ah MAC approach, for a multi-level beacon-based security in the IoT, and for IoT applications in military logistics. But the impact of artificial intelligence (AI) presumably is even larger. It allows intelligent systems, which means that systems can be selective (i.e. finding optimum solutions), adaptive (i.e. fine-tuning an optimum solution under dynamic conditions), reactive (i.e. responding to outside signals), and creative (i.e. generating new data, new objects, new systems), and much more ... However, we should not forget that AI plays its major benefits, if there are no analytical models of the process. Two other papers in this volume of AEEE journal follow this more exact modeling approach for real-life scenarios at pumping stations and in PV systems. And a sixth paper compares the performance of different winding techniques for Interior Permanent Magnet Synchronous Motors (IPMSM). The introductory paper of this edition goes beyond current technologies and asks, what happens if we now combine two of the fundamental enabling technologies. It is not a new idea, but goes back to Schumpeter in the early 20th century, that innovations can be described as new combinations of pre-existing ideas and technologies. And certainly, AI and the IoT can be seen as one successful example of such "Innovation by Combination" of two megatrends, which are fueling each other and are leading to an accelerating pace of innovation. The IoT connects anything, anywhere, anytime.

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