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Contents

Special Issue on Artificial Intelligence and Advanced Technologies for Power and Renewable Energy Systems Mainly from IS3C2020

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Special Issue on Artificial Intelligence and Advanced Technologies for Power and Renewable Energy Systems Mainly from IS3C2020

Preface

We have great pleasure in presenting the special issue of Sensors and Materials entitled Artificial Intelligence and Advanced Technologies for Power and Renewable Energy Systems Mainly from IS3C2020. This special issue pertains to the 5th International Symposium on Computer, Consumer and Control (IS3C2020) held in Taichung, Taiwan, November 13–16, 2020. This conference offers a great opportunity for scientists, engineers, and practitioners to present the latest research results, ideas, developments, and applications. IS3C, held every two years, is hosted and sponsored by National Chin-Yi University of Technology, Taichung, Taiwan. Original high-quality papers related to these themes are especially solicited, including those on scientific research, technology development, engineering, theories, methodologies, and applications in computing, consumer electronics, and control.

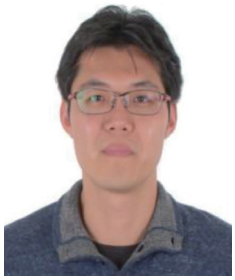
In recent years, many countries have proposed increases in the proportion of renewable energy capacity in power generation and to reduce their dependence on thermal power generation following the rise of environmental awareness. This special issue discusses the potential of renewable energy technologies to enhance the integration of renewable energy capacity into the power grid. It deals with new technologies for AI and advanced technologies for power and renewable energy systems including state-of-the-art research on renewable energy technologies, photovoltaic and wind energy technologies, AI fault detection and diagnostics, smart power systems and grids, power conversion, power and energy systems, AI-based methods, sensor-based control, intelligent control and applications, and applications of power electronics in power systems. These studies are expected to contribute to improving the performance of power and renewable systems. Eight peer-reviewed articles covering various topics have also been published in this special issue.

We would like to thank all the authors who kindly contributed their papers to this special issue. Thanks also go to all the reviewers who generously provided their valuable time and expertise. We also thank the conference chairs and committees, and all the participants of IS3C2020. Finally, we would like to thank the editors of Sensors and Materials for their kind help and support throughout the entire editorial process. We are also indebted to the Sensors and Materials editorial office and the publishing and production teams for their assistance in the preparation and publication of this issue.

Meng-Hui Wang received his M.S. degree in electrical engineering in 1990 and his Ph.D. degree in the same field in 1994, both from National Taiwan University of Science and Technology. He came to National Chin-Yi University of Technology in August 1994 and is now affiliated with the Department of Electrical Engineering as a lifetime distinguished professor. His major areas of research include renewable energy systems, power systems, extension theory, and AI applications. He is a member of the Chinese Association of Artificial Intelligence (CAAI), the vice president of the Taiwan Education Society of Innovation & Invention (TESII), and also the chairman of the 6th Intelligent Living Technology Association of Taiwan (ILTAT). He was the general chair of the 1st Intelligent Living Technology Conference (2006) and the honorary co-chair of the 2012 International Symposium on Computer, Consumer and Control (IS3C).

Kuei-Hsiang Chao received his B.S. degree in electrical engineering from National Taiwan Institute of Technology, Taipei, Taiwan, in 1988 and his M.S. and Ph.D. degrees in electrical engineering from National Tsing Hua University, Hsinchu, Taiwan, in 1990 and 2000, respectively. He is currently a distinguished professor with National Chin-Yi University of Technology, Taichung, Taiwan. His current research interests include computer-based control systems, applications of control theory, renewable energy, and power electronics. He is a life member of the Solar Energy and New Energy Association and a member of the IEEE. He is the general co-chair of the 2020 International Symposium on Computer, Consumer and Control (IS3C).

Her-Terng Yau received his B.S. degree from National Chung Hsing University, Taichung, Taiwan, in 1994 and his M.S. and Ph.D. degrees from National Cheng Kung University, Tainan, Taiwan, in 1996 and 2000, respectively, all in mechanical engineering. He is currently a professor at the Department of Mechanical Engineering, National Chung Cheng University, Chiayi, Taiwan. He has also been a researcher at the Artificial Intelligence Application Research Center, National Chin-Yi University of Technology, Taichung City, Taiwan, since 2018. His research interests include system control of mechatronics, AI, nonlinear system analysis, and control. He has authored more than 150 research articles on a wide variety of topics in mechanical and electrical engineering. He was honored as a fellow of IET and a senior member of IEEE.



Shiue-Der Lu received his M.S. degree from Chung Yuan Christian University, Taoyuan City, Taiwan, in 2006 and his Ph.D. degree from National Taiwan University of Science and Technology, Taipei City, Taiwan, in 2013, both in electrical engineering. From 2012 to 2016, he was a researcher at the Industrial Technology Research Institute. From 2016 to 2018, he was an assistant researcher at the Department of Electrical Engineering, Chung Yuan Christian University. Since 2018, he has been with the Department of Electrical Engineering, National Chin-Yi University of Technology, Taichung City, Taiwan, where he is currently an associate professor. He is also the secretary-general of the 6th Intelligent Living Technology Association of Taiwan (ILTAT). His research interests include renewable energy, power quality, damage diagnosis of wind power generators, and AI applications in power systems.