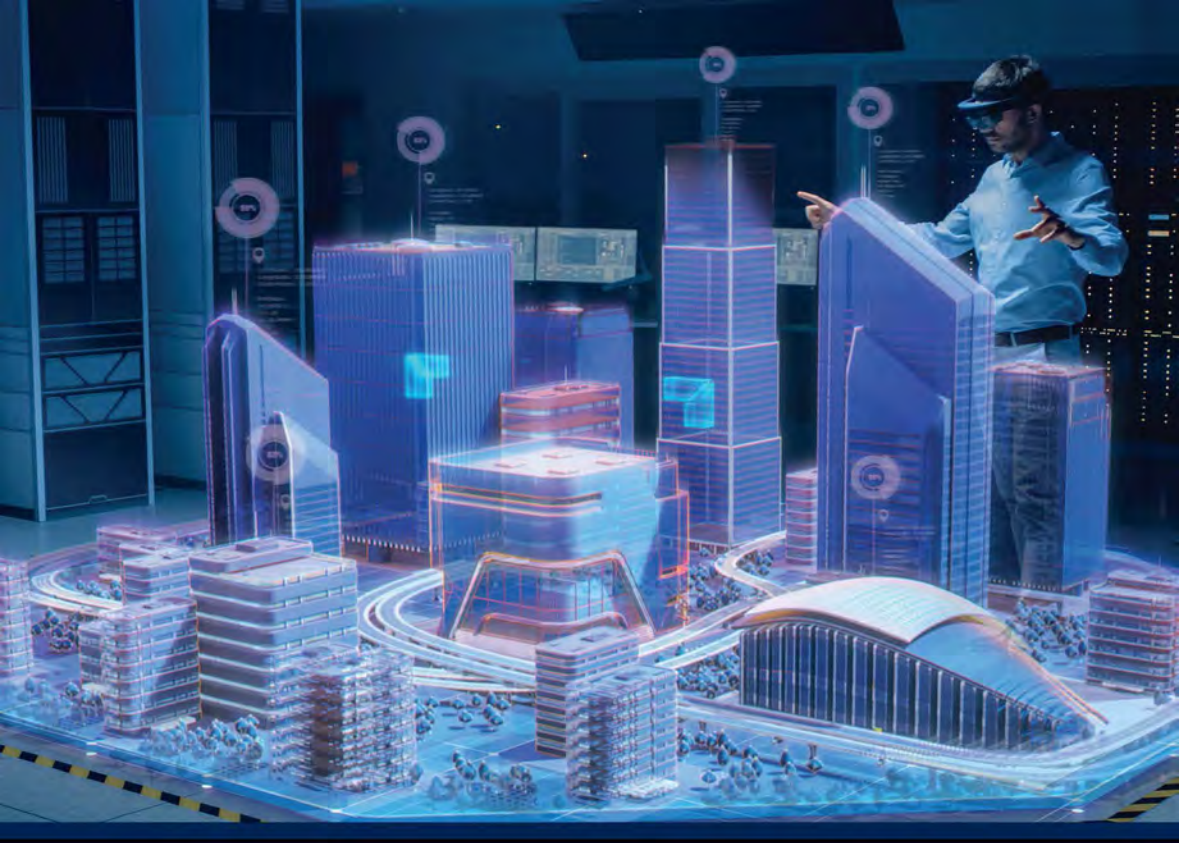

HANDBOOK OF DIGITAL TWINS

Edited by

Zhihan Lyu

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Handbook of Digital Twins

Over the last two decades, Digital Twins (DTs) have become the intelligent representation of future development in industrial production and daily life. Consisting of over 50 chapters by more than 100 contributors, this comprehensive handbook explains the concept, architecture, design specification and application scenarios of DTs.

As a virtual model of a process, product or service to pair the virtual and physical worlds, DTs allow data analysis and system monitoring by using simulations. The fast-growing technology has been widely studied and developed in recent years. Featured with centralization, integrity and dynamics, it is cost-effective to drive innovation and performance. Many fields saw the adaptation and implementation across industrial production, healthcare, smart city, transportation and logistics. World-famous enterprises such as Siemens, Tesla, ANSYS and General Electric have built smart factories and pioneered digital production, heading towards Industry 4.0.

This book aims to provide an in-depth understanding and reference of DTs to technical personnel in the field, students and scholars of related majors, and general readers interested in intelligent industrial manufacturing.

Dr Zhihan Lyu is an Associate Professor at the Department of Game Design, Uppsala University, Sweden. He is also IEEE Senior Member, British Computer Society Fellow, ACM Distinguished Speaker, Career-Long Scientific Influence Rankings of Stanford's Top 2% Scientists, Marie Skłodowska-Curie Fellow, Clarivate Highly Cited Researcher and Elsevier Highly Cited Chinese Researcher. He has contributed 300 papers including more than 90 papers on IEEE/ACM Transactions. He is the Editor-in-Chief of Internet of Things and Cyber-Physical Systems (KeAi), an Associate Editor of a few journals including *ACM TOMM*, *IEEE TITS*, *IEEE TNSM*, *IEEE TCSS*, *IEEE TNSE* and *IEEE CEM*. He has reviewed 400 papers. He has received more than 20 awards from China, Europe and IEEE. He has given more than 80 invited talks for universities and companies in Europe and China. He has given 20 keynote speeches at international conferences.

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