Preface

This book brings together a wide-ranging set of contributed articles that address emerging practices and future trends in cognitive engineering and neuroergonomics —both aim to harmoniously integrate human operator and computational system, the former through a tighter cognitive fit and the latter a more effective neural fit with the system. The chapters in this book uncover novel discoveries and communicate new understanding and the most recent advances in the areas of workload and stress, activity theory, human error and risk, and neuroergonomic measures, cognitive computing as well as associated applications.

This book is organized into seven main sections:

Section 1: Human-Autonomy Teaming
Section 2: Audition and Workload
Section 3: Spatial Perception
Section 4: Vision and Memory
Section 5: Neuroergonomics Theory and Design
Section 6: General and Systemic Structural Activity Theory
Section 7: Cognitive Computing and Internet of Things: Techniques and Applications

Collectively, the chapters in this book have an overall goal of developing a deeper understanding of the couplings between external behavioral and internal mental actions, which can be used to design harmonious work and play environments that seamlessly integrate human, technical, and social systems.

Each chapter of this book was either reviewed or contributed by members of the Cognitive & Neuroergonomics Board. For this, our sincere thanks and appreciation go to the Board members listed below:

Thomas Alexander, Germany
O. Bouhali, Qatar
Henry Broodney, Israel
N. Jochems, Germany
Stefan Pickl, Germany
S. Ramakrishnan, USA
Duncan Speight, UK
Martin Stenkilde, Sweden
Ari Visa, Finland
H. Adeli, USA
Gregory Bedny, USA
Winston “Wink” Bennett, USA
Alexander Burov, Ukraine
P. Choe, Qatar
M. Cummings, USA
Madga Fafrowicz, Poland
Cali Fidopiastis, USA
Chris Forsythe, USA
X. Fang, USA
Qin Gao, China
Y. Guo, USA
Peter Hancock, USA
David Kaber, USA
Kentaro Kotani, Japan
Ben Lawson, USA
S.-Y. Lee, Korea
Harry Liao, USA
Y. Liu, USA
Tadeusz Marek, Poland
John Murray, USA
Denise Nicholson, USA
A. Ozok, USA
O. Parlangeli, Italy
Robert Proctor, USA
David Rodrick, USA
A. Savoy, USA
Dylan Schmorrow, USA
Kay Stanney, USA
Neville Stanton, UK
K. Vu, USA
Thomas Waldmann, Ireland
Brent Winslow, USA
G. Zacharias, USA
L. Zeng, USA

It is our hope that professionals, researchers, and students alike find this book to be an informative and valuable resource; one that helps them to better understand important concepts, theories, and applications in the areas of cognitive engineering and neuroergonomics. Beyond basic understanding, the contributions are meant to inspire critical insights and thought-provoking lines of follow on research that
further establish the fledgling field of neuroergonomics and sharpen the more seasoned practice of cognitive engineering. While we don’t know where the confluence of these two fields will lead, they are certain to transform the very nature of human–systems interaction, resulting in yet to be envisioned designs that improve form, function, efficiency, and the overall user experience for all.

July 2017

Carryl Baldwin
Advances in Neuroergonomics and Cognitive Engineering
Baldwin, C. (Ed.)
2018, XV, 458 p. 133 illus., Softcover
ISBN: 978-3-319-60641-5