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
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

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