Advances in Cognitive Engineering and Neuroergonomics

Advances in Human Factors and Ergonomics 2014

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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, as well as associated applications.

The book is organized into seven main sections:

Section 1: Operational Applications of Tactile and Multimodal Research and Displays
Section 2: Trust of Emergent Signal and Task Technologies
Section 3: Neuroergonomics of Human Performance
Section 4: Interaction in 3D Environments and Computerized Training Systems
Section 5: Behavioral and Physiological Indicators of Human Performance
Section 6: Cognitive Assessment: Readiness and Workload
Section 7: User-Centered Design

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 goes to the Board members listed below:

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It is our hope that professionals, researchers, and students alike find the 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.

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