

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 through 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.

The book is organized into five main Parts:

Part I: Influencing Design with Cognitive Engineering and Neuroergonomics

Part II: Cognitive Computing

Part III: Physiological Monitoring and Interaction

Part IV: Theoretical Advances in Cognitive Engineering and Neuroergonomics

Part V: Assessing Cognition and Performance

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.

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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 do not 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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