BOOK REVIEW


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The discipline of human factors has a key role to play in the design of defence systems across all modes: air, land and sea. Accordingly, there is a long history of applications in defence force research whereby human factors theories, principles and methods have been applied for designing and evaluating defence systems. As these systems become more advanced, more complex, and more reliant on a seamless integration between humans and technology, the role that human factors theory and methods has to play in the design of such systems has become ever more critical. *Designing Soldier Systems*, edited by Savage-Kneipshield, Martin, Locket, and Allender, focuses on contemporary human factors issues related to the design of soldier systems, presenting a series of chapters describing how these issues are currently being addressed by the US Army through research at its Army Research Laboratory.

The book comprises 21 diverse chapters covering all manner of human factors-related issues including autonomous robots, operators’ spatial ability, situation awareness, workload, display and equipment design, C2 on the move, future system concepts, simulation, information flow and communications, performance in extreme environments, and human factors methods. These contributions are presented across three parts: understanding human performance with complex systems, overcoming operational and environmental conditions, and assessing and designing systems.

Part I (Understanding human performance with complex systems) includes five chapters that cover human performance challenges for the future force, the challenges and advantages of using robots, the effects of operators’ spatial ability on target detection and robotic tasks, workload reduction, and tactile displays in operational environments.

Part II (Overcoming operational and environmental conditions) includes five chapters covering operations on the move, night vision goggle design, the effects of encapsulation on dismounted warrior performance, soldier auditory situation awareness, and human factors in military environments.

Finally, Part III (Assessing and designing systems) includes contributions on multi-aspect measurement tools, future soldier system design concepts, solider centred design and evaluation techniques, science and technology capability gaps identified by warfighters, immersive simulation for dismounted soldier research, tactical ergonomics, 3D human figure modelling, interface design, holistic analytical approaches for conceptual system design, modelling information flow and operator performance, and dynamic network evolution of C2 communications.

In general the contributions are well written and cover a range of interesting concepts, methods, and issues that will be of interest to those involved in defence research and practice. The range of issues covered is a key strength (for the reader wanting to learn about the range of contemporary defence research applications). As various research studies are presented, the book will be especially useful to researchers and practitioners involved in the design and evaluation of new defence technologies and systems. Especially interesting are the contributions testing new technologies and describing compelling analyses of performance (such as those using social network analysis and information flow modelling). A further strength of the book is the contributions describing highly novel systems such as brain-computer interaction technologies and immersive simulation. These chapters will interest readers wishing to identify appropriate methodologies for defence research whilst at the same time satisfying those wanting to read about new technologies and systems.

*Designing Soldier Systems* also suffers ever slightly due to the fact that is an edited collection of chapters rather than an authored book. Whilst excellent for the reader looking for an overview of current Army research, the diverse range of issues on offer may bamboozle the reader looking for a more focussed text. In addition, often the level of detail is insufficient to get for the reader to fully get to grips with the methodology adopted or software tool applied. Studies will be hard to replicate as a result and further reading of other sources will be required for those wishing to do so. Finally, consistency across chapters suffers and the book would have benefitted from a standardised chapter structure. Of course, these are weaknesses that can be levelled at most edited books and do not detract from the books contribution.

Since the book presents US Army research, the majority of co-authors are US researchers and practitioners. Whilst this is strength as it assures a level of coherence, it also acts as a slight weakness—the research presented is US centric and many of the human factors theories and methods favoured by researchers outside of the US are not included. This is not
a major limitation though, as much European-based defence research adopting different approaches is also communicated in the Ashgate Defence Series (see [1–4]).

In summary, Designing Soldier Systems does exactly what it was supposed to, and does it very well. It effectively communicates the diverse range of research currently being undertaken surrounding the human factors issues impacting Army operations. It is comprehensive in this respect, and any reader wishing to see the current status quo will be more than satisfied. For those wishing to see what is currently going in US Army human factors research I can highly recommend this book. Readers wishing to explore more in-depth human factors theories and methods underpinning defence force research will probably be better served looking elsewhere in the Ashgate series; however, the book provides an interesting read for anyone conducting research in the area of defence.

Designing Soldier Systems: Current Issues in Human Factors can be ordered online through Ashgate at: http://www.ashgate.com/isbn/9781409452263.

References