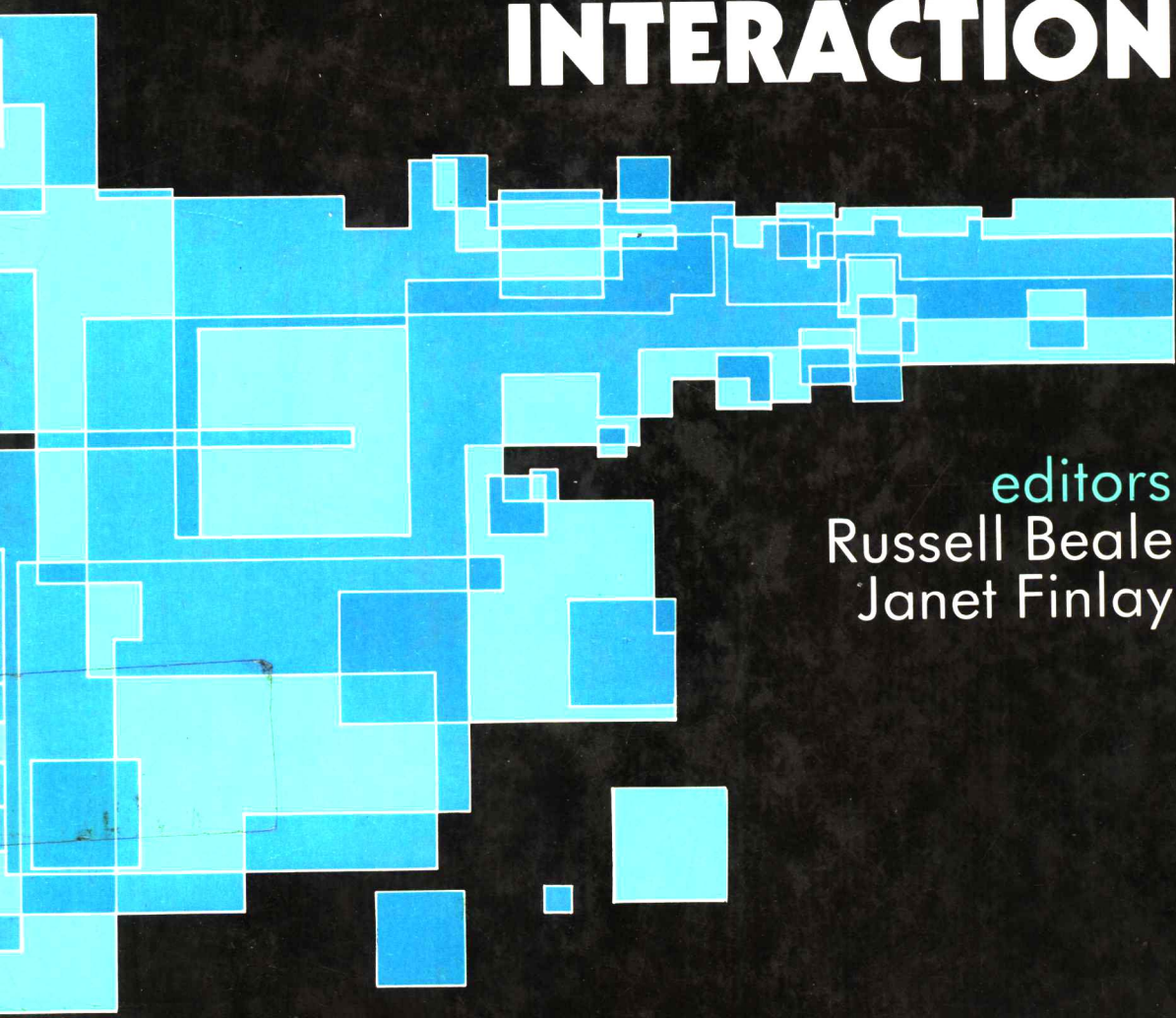


ELLIS HORWOOD WORKSHOPS

# NEURAL NETWORKS AND PATTERN RECOGNITION IN HUMAN-COMPUTER INTERACTION



editors  
Russell Beale  
Janet Finlay

# **NEURAL NETWORKS AND PATTERN RECOGNITION IN HUMAN-COMPUTER INTERACTION**





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# Foreword

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Human-Computer Interaction is about making computers worth using. Until the recent developments described in this book, HCI was seen as either the province of human sciences or of computer sciences. There is a tension between these two views. Each is necessary: usability is obviously to do with user psychology or to do with computer programming; and rather too often psychologists thought computer science was just programming, whereas computer scientists too often thought users should cope with the way things were programmed! Neural networks not only bridge this disciplinary divide, but they have introduced a new player in HCI, the computer itself. The computer henceforth has a qualitatively new, more active, subtle and flexible role than even the 'old' AI user modelling approaches. The computer, indeed, knows more about interaction than anything else apart from the user, who generally has more pressing things to worry about.

Although neural networks are supposedly 'more human' — for example they degrade better under error conditions than conventional methods — merely making HCI 'more human' is the least of the advantages that applying neural networks to HCI will obtain. There are technical advantages too, but I believe the most exciting aspect of neural nets in HCI is that the computer becomes humble. The computer has to learn, and it has to learn from the particular individual user it is working for. Before, the one right approach to HCI was advocated as user models, iterative design, formal methods — depending on one's point of view. Fortunately HCI designers need no longer be determined to have *the* right answer to fix forever in a (typically) imperative program — and in any case be found wrong! With neural nets, designers must start off being prepared to learn (or write programs prepared to learn) from the person who is actually using

the computer. It is far preferable to design a system planning it to be, say, 80% effective, and to take account of that, than to hope it is going to be completely effective and pretend failures won't or can't happen (or that the *users* must have made the mistakes!)

Of course neural nets are far more general than the previous paragraph gives credit. That is one reason why this book makes such a valuable contribution: it demonstrates a great variety of possible uses for neural nets in improving HCI. They can be used to help handicapped users; they can be used for increasing the range of user expression; and they can be used to promote analysis and research. And so forth.

Had this book appeared last year, some of these possibilities might not have been so persuasive; had the book appeared, say, next year, some of the applications might have become so specialised that a whole book might have been necessary to broach just one topic. In between these two extremes, the editors have found the time window to optimise both breadth and interest.

I hope that this book sets a precedent. Its authors are drawn from both sides of the Atlantic. The contents are drawn from lively workshops organised by the editors and held in both Britain and in North America. It represents a mutual dialogue between the many contributors and an eagerness to learn to improve the effectiveness of computers in serving human needs. In short, this book represents a subject that has come alive, and its readers will feel as if they are in on animated conversations at an exciting party. I hope people reading this book will be drawn into that excitement and say to themselves, "I must go to . . .," of any of the places represented here doing active work. Such readers will be lucky to be in on the formative years of a new area and one where they will be readily able to make a worthwhile contribution. There is much that needs doing and many ways it can be done.