Preface
Special Issue on
Human Interfaces

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The astounding pace of growth of computer technology and the Internet environment has highlighted the need for friendly, easy-to-use human-machine interfaces that require no special skills to operate. In fact, such interfaces are also required for mobile phones, which are spreading even more rapidly than PCs, and other data communication terminals. This special issue provides examples of the wide-ranging work Fujitsu is doing to improve the way humans and technology interact and thereby meet this need for better interfaces.

There are 15 papers in this special issue. The first four introduce some sophisticated two-way interfaces developed by Fujitsu and discuss various psychological aspects of their design and use. These four papers describe an improved video conferencing system; an easy-to-use interface for children that is based on a 1-minute model of human-machine interaction; the importance of autonomy in artificial life forms and an artificial life form for amusement called "FinFin" which can also be developed into an intelligent agent; and a new, friendly interface for sales terminals that displays an animated cartoon character who helps the user.

The fifth paper gives an overview of the history of human-interface design and the recent expansion of activities at the Fujitsu Design Laboratory.

Next, we present eight papers about experimental or newly developed input and display technologies. We start with the papers about input technologies. These papers describe a keyboard operable with a single hand that was designed for mobile computing, a program that can perform high-accuracy online recognition of handwritten Japanese characters for pen-based computers, a very promising technique for practical voice interfacing, and an audio/visual interface that can

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automatically point a camera at a talking person to enable communication with a computer using hand signals and other visual signs. For the display side, we then present papers about a new high-contrast, wide viewing angle liquid crystal display (LCD); a high-resolution plasma display panel (PDP); a color management system that reduces color differences between original, displayed, and printed versions of the same image; and a development tool for creating animations of complex structures such as humans and animals.

Lastly, we describe the development and features of two new products. One is a data entry system that uses document recognition technology, and the other is a mobile terminal with a built-in scanner that can read one-dimensional and two-dimensional barcodes.

The science of human interfaces is relatively new, and we have much to learn. Our progress in this area will depend not just on our knowledge of machines (mostly computers), but also of the human beings who use them. We hope that you find this issue enjoyable and informative and that you will share with us your opinions regarding its contents. We also look forward to your guidance and encouragement to help us develop truly outstanding human interface technologies.