

Foreword to the Special Issue on Japanese Microprocessors

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This issue of the *Journal of Information Processing* is devoted to selected papers on microprocessors that were originally designed, prototyped, or manufactured in Japan. Nine papers authored by academic researchers and industrial engineers give an overview of research results and implementation experiences relating to microprocessors recently developed in Japan. The papers cover a wide spectrum of microprocessor architectures and their applications, from general-purpose processors to application-specific chips.

The first three papers deal with so-called "general-purpose microprocessors." The first paper, written by Y. Kohmoto et al., describes architectural features of NEC's V-series microprocessors. V is one of the first commercially available microprocessors to have been developed in Japan. The next paper is on Hitachi's high-performance microprocessor. Y. Nakatsuka et al. discuss how to exploit advanced BiCMOS technology in the design of a microprocessor and report their experiences in the actual implementation. The final paper in this set presents the architecture of G/micro series processors developed by the TRON consortium. Since the development of G/micro is one of the areas to be covered by the challenging TRON project, the authors, K. Sakamura et al., give an overview and describe the basic concepts of the TRON project before describing the architectural details of the chip. The paper mainly discusses the project's latest microprocessor, called G/micro 100, which was developed by Mitsubishi Electric.

The remaining six papers discuss application-specific microprocessors. The first one is on a Toshiba microprocessor oriented to logic programming. M. Saito et al. describe its architectural features for efficient execution of Prolog-based AI applications. The second, by Y. Tanigawa et al. of Matsushita, discusses the architecture of a core processor for a parallel computer system. The processor features a wide data band-width (64-bits). The third paper, written by Y. Hibino et al., discusses a LISP microprocessor developed by NTT. The processor, called ELIS, was designed as a key hardware component of an AI workstation, and bears a close relation to NTT's new language TAO. Processors for dataflow computing are covered in the next paper, written by S. Sakai et al. After a brief overview of current dataflow architectures, the authors give details on the design of EMC-R, the latest dataflow processor developed at the Electrotechnical Laboratory. From the Institute for New-Generation Computing (ICOT), A. Goto et al. describe a microprocessor which is to be used as a processor element of ICOT's next-generation parallel inference machine, called PIM/p. The last paper is on a processor devoted to string search processing. K. Takahashi et al. discuss details of their string search processor and its applications.

We wish to thank all the authors for their contributions. It will give us great pleasure if this issue of *Journal of Information Processing* succeeds in providing insights into research and engineering activities on microprocessors in Japan.

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