European Approaches for Advanced Architectures

One year ago, the October 1987 issue of *IEEE Micro* presented a first survey of approaches for advanced system and computer architectures recently developed in Europe. The current issue is a continuation of this topic. Whereas last year we focused mainly on research projects in the European industry, this year we emphasize the contributions from academic groups. All articles deal with innovative approaches that nevertheless imply practical implementations directed towards specific application areas.

These works share a common basic approach: to enhance the performance of a “classic” processing system (like a workstation) by adding specialized processing elements that relieve the main CPU from specific tasks that soon could become a bottleneck if left to the software. Each project corresponds to one or more very large scale integration devices or other functional modules that are either already in use or in a well-advanced design phase.

This issue features the subjects of associative processing, object-oriented programming, and database support. R.M. Lea from Brunel University describes an innovative architecture called the ASP that is based on a high number of associative-processing elements. J. Kaiser from GMD discusses the architecture of MUTABOR, a coprocessor specifically designed for an object-oriented architecture. An article by B. Bergsten, R. Gonzalez-Rubio, B. Kerherve, and J. Rohmer presents the architecture of a database accelerator developed at Bull Research Center.

As the volume of a single issue is too narrow to contain all contributions, the presentation of innovative European approaches will continue in subsequent issues of *IEEE Micro*. These outstanding contributions originate from the Politecnico di Torino, the Technical University of Vienna, and Elettronica San Giorgio. The articles discuss the design methodology and internal structure of a coprocessor that directly supports Prolog primitives, describe a distributed fault-tolerant operating system, and present a high-performance multiprocessor system.
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