Preface

Lin Chao
Editor
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This Q2'98 issue of the *Intel Technology Journal* focuses on failure analysis testing methodologies used at Intel and software-based research in computer vision, floating-point operations, and H.323 set of standards for multimedia communications.

Failure analysis is one of the key competencies in Intel and is essential to Intel's steep product ramp and high-volume manufacturing. The first paper in this issue describes failure analysis techniques used to detect and localize flaws in the silicon manufacturing process.

Intel actively pursues technologies that expand computing and telecommunication capabilities in PCs. The other papers in this issue describe new software-based research that contributes to this expansion.

The second paper is on computer vision. Helping computers to "see" is just one aspect of broader research into a "perceptual interface" for PCs where computers can "speak", "sense" touch, and in the case of this paper, "see." This paper describes the development of a 4-degree of freedom color object tracker. Included with this paper are three video clips showing the abilities of the head-tracking software.

Floating-point divide, remainder, and square root are three important operations performed by computers today. The third paper describes research into software alternatives to the hardware implementation of floating-point operations. This paper describes some of the general properties of floating-point computations, and proves the IEEE correctness of iterative algorithms that calculate the square root of a floating-point number.

The fourth and fifth papers describe an important industry standard, H.323, for multimedia communication over packet-based networks. The fourth paper, co-authored by the Chair of the H.323 Interoperability Group, presents an overview of the H.323 core components and functionality. IP telephony is an important industry trend, and the role of H.323 procedures in deploying IP telephony are explained.

The fifth paper presents a characterization of video and audio traffic transported over the Internet by video conferencing applications following the H.323 standards. This paper looks at the multimedia traffic sources of a H.323 terminal. Issues such as packet format and multiplexing of audio and video frames at the host are studied.