

**AUDIO/VIDEO****Intel brings splashy graphics to budget desktop PCs.**

Celeron-based desktops from many leading vendors will soon contain the Intel 810, a system chip set that replaces the traditional graphics card or integrated graphics chip. The 810 chip set, which will appear only in Celeron machines, delivers enough graphics power to satisfy many people's needs. Yarden Arar, *PC World*, 8/99, p. 66, 2 pp.

**Speech recognition: it's not what you say; it's how you say it.** Greater available processing power and better algorithms continue to make speech recognition more viable. The real advances, however, have been in how you can use speech to achieve "natural understanding." Nicholas Cravotta, *EDN*, 6/24/99, p. 79, 6 pp.

**BUSES**

**PCI technology—the bus that conquered the world.** Starting as a motherboard solder-in peripheral bus, PCI has moved on to become the de facto PC I/O bus and embedded I/O bus. It is also a systems bus, a mezzanine bus, and a universal socket. Ray Weiss, *RTC*, 7/99, p. 49, 3 pp.

**DEVELOPMENT TOOLS**

**Linux is a great prototyping tool for embedded-hardware designs.** Try developing your hardware and software in parallel by taking advantage of a public-domain operating system. George Tyler, Motorola; *Electronic Design*, 7/28/99, p. 42, 5 pp.

**IC DESIGN**

**The incredible shrinking transistor.** To build ICs with 100 million transistors, designers must keep dynamic and static power within bounds and must control threshold voltage variations caused by dopant fluctuations and the effects of short channels. Yuan Taur, IBM T. J. Watson Research Center; *IEEE Spectrum*, 7/99, p. 22, 5 pp.

**A new role for e-beam: electron projection.** Scalpel, a tool that uses a wide electron beam and a scattering mask to pattern wafers, is carving a place among contenders in next-generation lithography. L. R. Harriott, Lucent; *IEEE Spectrum*, 7/99, p. 41, 5 pp.

**Ultralight lithography.** As ICs shrink to accommodate higher speeds and lower power consumption, production-worthy lithographic tools capable of patterning ultrasmall features onto wafers are fast approaching. Noreen Harned, Silicon Valley Group; *IEEE Spectrum*, 7/99, p. 35, 6 pp.

**Calibrating simulation tools for nanometer designs.** Circuit models calibrated with parameters obtained from test chips can improve accuracy and speed development for ICs that use very deep submicron technologies. Mahmoud Shahram, *IEEE Spectrum*, 6/99, p. 77, 6 pp.

**Improving the manufacturability of electronic designs.**

Nonparametric boundary analysis brings the yield-enhancing advantages of statistical circuit design to non-Gaussian data sets. Dan Stoneking, Hewlett Packard; *IEEE Spectrum*, 6/99, p. 70, 7 pp.

**Testing the monster chip.**

Trends in semiconductor scaling present serious challenges for testing 100-million-transistor chips. The answer calls for a new approach, in which test functions are partitioned into two complementary components to be used simultaneously: embedded test and external test. Yervant Zorian, LogicVision; *IEEE Spectrum*, 7/99, p. 54, 7 pp.

**The fine art of IC design.**

Dropping IC voltages and increasing device densities confront designers with many problems. Among them: rapidly switching currents, power-performance optimization, asynchronous timing elements, design reuse, and managing engineering talent. Barbara Chappell, Intel; *IEEE Spectrum*, 7/99, p. 30, 5 pp.

**MEMORY****Special-purpose SRAMs**

**smooth the ride.** Data and telephone networks are experiencing more traffic of multiple types, at higher speeds, and with varying delivery expectations. SRAM-based memories play a big role in responding to performance and flexibility needs. Brian Dipert, *EDN*, 6/24/99, p. 93, 8 pp.

**MISCELLANEOUS**

**DSL technologies: ready for takeoff?** While ADSL is struggling to reach your home, HDSL is already at the office. Meanwhile, G.Lite and VDSL are poised to feed a bandwidth-starved market. Lee Goldberg, *Electronic Design*, 6/28/99, p. 53, 6 pp.

**Sony versus Wintel: mortal combat.**

Sony's new game console threatens to woo consumers away from their PCs. Michael Macedonia, U.S. Army Stricom, and Ted Lewis, Technology Assessment Group; *Computer*, 7/99, p. 112, 4 pp.

**PROCESSORS****Designing an Alpha microprocessor.**

Defining and designing a high-performance processor is high adventure in computer engineering. An architect shares the process the Alpha design teams use to develop their processors. Matt Reilly, Compaq; *Computer*, 7/99, p. 27, 8 pp.

**PROGRAMMABLE LOGIC****Embedded logic and memory**

**find a home in FPGAs.** By saving chip area and opening up higher-performance applications to FPGAs, dedicated blocks of memory and logic trim design time. Dave Bursky, *Electronic Design*, 7/12/99, p. 43, 7 pp.

**Speedy flash-based FPGAs score with 500-Kgate density.**

With family members packing as many as 1.1 million system gates, the ProAsic FPGA series delivers fine-grain programmability. Dave Bursky, *Electronic Design*, 7/28/99, p. 35, 4 pp.