Guest Editors’ Introduction

Computer Graphics in Europe

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For the second time, IEEE Computer Graphics and Applications is featuring articles on computer graphics in Europe. The first special issue on the subject, published in 1982, was well-received by the worldwide computer graphics community and is an often cited reference. In this issue we present articles from six different countries, a limited but representative sampling of computer graphics activities in Europe.

We begin with an article from Sweden, by Blomberg, Frenckner, Kruse, Lönemark, Romberger, and Sundblad, who describe a model for a computerized text and image processing system based in concept on the worktable, tools, and materials used by the traditional graphic artist in preprinting production.

In our second article, Christoph Hornung of West Germany presents a new approach to determining the visible parts of a three-dimensional scene to be displayed graphically. Based on connectivity information, Hornung’s method leads to a uniform description of the visibility problem, and it greatly reduces calculation time.

From France, Coquillart and Gangnet describe and illustrate their work in displaying perspective views of terrain. Using data from digital maps, they have applied improved priority list and ray-tracing concepts to hidden-surface removal and clipping, and they have developed a filtering technique for simulating distance effects.

Italy is represented by an article by Bacchelli-Montefusco and Casciola, who have developed an interactive computer graphics system for experimental work in surface interpolation.

In our fifth article, Morten Zachrisen of Norway describes a simple algorithm that divides a multipane frame buffer into logical layers to provide overlaid images of independent data for computer graphics display. By placing layer-management utilities in the basic graphics software, Zachrisen’s technique is a step toward portable, easy-to-use applications programs.

Our sixth article, by Mike Pratt in England, is a thoughtful discussion of the problems still in the path of full realization of automated design and manufacturing. Pratt focuses on the need to develop integrated process-planning systems that incorporate not only geometric modeling information, but technological manufacturing information as well.

Another article from West Germany, “A VLSI Support for GKS,” by Max E. Mehl and Stefan J. Noll, originally scheduled for the special issue, will appear in the August issue. The article details the design of a VLSI chip supporting the Graphical Kernel System standard now gaining international acceptance.

A number of countries are not represented here—Belgium, the Netherlands, Hungary, Portugal, Spain, and Switzerland, for example—although very interesting activities are going on and important contributions are being made in those countries. As in the first European special issue, time and space limitations forced us to a personal choice—nevertheless, we think this selection will give IEEE CG&A readers a good overview of the main areas of computer graphics work in Europe.

We also want to call readers’ attention to Eurographics 84, being held September 10-14 in Copenhagen. The fifth annual conference of the European Association for Computer Graphics, Eurographics 84 will present the latest technologies, applications, and management issues in international computer graphics, with special emphasis on European activities. The event will include tutorials, a pro-
professional program, an exhibition, industrial seminars, special panel sessions, and art and film shows. (For contact information, see the Professional Calendar on page 94.) We look forward to meeting many of you in Copenhagen.

We extend our appreciation to the authors and others who contributed to this special issue.

José L. Encarnação is a professor of computer science at the Technische Hochschule Darmstadt (Technical University of Darmstadt), head of its Interactive Graphics Research Group and chair of the board of the Darmstadt Computer Graphics Center. He began his work in computer graphics in 1967 at the Technische Universität Berlin and has held research and academic positions at the Heinrich-Hertz-Institut in Berlin and at the Universität Saarbrücken. He serves as a consultant to government and industry and has taught short courses for universities, associations, and industrial groups in Europe and abroad.

A native of Portugal who has resided in the Federal Republic of Germany since 1959, Encarnação holds a diploma and a doctorate in electrical engineering from the Technische Universität Berlin. He chaired the DIN activities, from which the graphics standard GKS evolved. He is author of two textbooks—one on computer graphics (in German) and a second on CAD (in English)—and editor of several other books and proceedings in the areas of computer graphics and CAD. He is the editor-in-chief of Computers & Graphics (Pergamon Press) and a member of the editorial boards of several professional and scientific journals on computer graphics and CAD/CAM. Encarnação is a member of the executive boards of the special interest groups for computer graphics and CAD within the German Gesellschaft für Informatik (GI). He is the West German representative at the IFIP TC5 (computers in industry) working group, and he is chair of Eurographics, the European Association for Computer Graphics. He is a member of GI, VDE, ACM, and ACM Siggraph.

Frank M. Lillegren is a company director and manager of CAD/CAM systems with ICAN (Interactive Computer Aids of Norway), a company specializing in computer-aided design systems, in Horten, Norway. From 1969 to 1972, he worked in the Autokon system development group at the Central Institute for Industrial Research (SI). In 1974 he was appointed research manager of CAD/CAM at SI. His group of nearly 30 people worked in close cooperation with Norwegian industries and system vendors to develop CAD/CAM systems for the ship and offshore industries, for mechanical machines, for modular wooden houses, and for printed circuit boards. Now, his research and development goal is the generation of CAD/CAM systems, based on modular system building blocks, supporting the optimal design and manufacture of industrial products. He is involved in projects on workstations, engineering databases, product modeling, and mechanical CAD/CAM.

Lillegren received a BSc in electrical engineering from the University of Strathclyde in 1968 and the MSc in computer science from the University of Utah in 1973. He is a member of ACM, DND, Eurographics, IFIP WG 5.2, and SCCF. He serves on the editorial advisory boards of several publications.

Computer Graphics Research

The Integrated Systems Group of the Computer Research Laboratory is looking for a senior computer graphics researcher to join our High Performance 3-D Graphics program. Our charter is to research and develop advanced VLSI-based 3-D graphics systems for CAD applications.

The successful applicant will research topics in computer graphics such as hybrid methods for surface modeling, hidden surface algorithms, and hardware-implementable lighting models. He or she will be expected to provide technical leadership to a multi-disciplinary team implementing prototype 3-D graphics systems.

Required background for this position includes knowledge of current surface modeling techniques and their application to computer-aided design. Knowledge of digital systems and VLSI design is desirable. Also required are a solid educational background in graphics and a proven ability to contribute in a research environment.

Our lab is a part of Tektronix' Applied Research Laboratories, whose function is to develop emerging technologies, providing new product opportunities to our operating divisions.

Our campus-like industrial park is located near Portland, Oregon, and is within a two-hour drive of the Cascade mountains and Pacific beaches. These close-by natural playgrounds and the city of Portland provide a wide variety of recreational and cultural opportunities.

We offer competitive salaries and excellent benefits, including liberal educational support, insurance, and profit-sharing programs.

If you would like to find out more about this opportunity, please send your resume to: Mr. Kit Bradley, Manager, Integrated Systems Group, MS 50-662, Tektronix, Inc., P.O. Box 500, ALU1, Beaverton, OR 97077. Phone: (503) 627-1497 (collect).

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