Ryan Kautzman

Objective

To obtain a position that will allow me to continue to advance my knowledge in Computer Graphics.

Professional Experience

UCDavis - CIPIC March 2000 ~ Present

Assisted in revision control and programming for Virtual Reality systems.

City of Vacaville February 2000 ~ Present

Web development including design and scripting.

Education & Course Work

University of California, Davis

Major: Computer Science
Emphasis: Computer Graphics and Scientific Visualization
Graduation date: June 2000 with Bachelor of Science

Related Course Work

Undergraduate Computer Graphics Courses

Computer Graphics
Geometric Modeling
Scientific Visualization

Graduate Computer Graphics Courses

Advanced Visualization

Computer Science Courses

Algorithm Design and Analysis
Computer Architecture I, II
Computer Networks
Data Structures and Programming
Programming Languages
Operating Systems and System Programming
Theory of Computation

Math Courses

Abstract Mathematics
Calculus I, II, III
Combinatorial Mathematics
Differential Equations
Linear Algebra
Number Theory

Other Course Work

Business Writing
Performing Arts Production Management
Photography
Theater Laboratory (Lighting Technician)
Theater Laboratory (Sound Board Operator)

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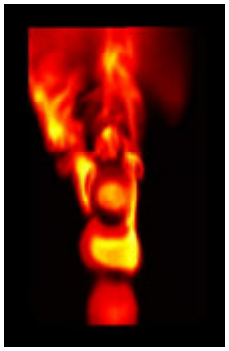
Projects

Winter 2000

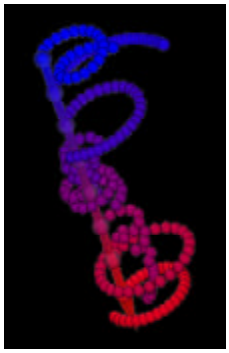
A rendering program that used a trackball for interactive viewing was implemented. The following projects were all based on this program.



Slicing plane project
Implemented a slice tool that sliced a rectilinear volume interactively along planes perpendicular to the x, y, and z axes, as well as an arbitrary plane.
Platform: IRIX 6.3
Used: C++, OpenGL, and X Forms GUI Library

Isosurface generation project
Implemented an interactive isosurface generator for rectilinear volumes. Marching tetrahedra and Phong shading were used.
Platform: IRIX 6.3
Used: C++, OpenGL, and X Forms GUI Library

Volume rendering project
Implemented a ray caster for rendering of a rectilinear volume. Alpha blending was utilized in rendering materials of arbitrary opacity.
Platform: IRIX 6.3
Used: C++, OpenGL, and X Forms GUI Library



Vector field project
Implemented a rectilinear vector field renderer with the following functions: particle animation, streamlines, rake particles, rake streamlines, and stream surfaces. Paths were traced using Runge-Kutta, Modified Euler's, or Euler's method. All parameters were fully interactive and all particles could be placed arbitrarily within the vector field.
Platform: IRIX 6.3
Used: C++, OpenGL, and X Forms GUI Library

Full size images can be found at my web site.

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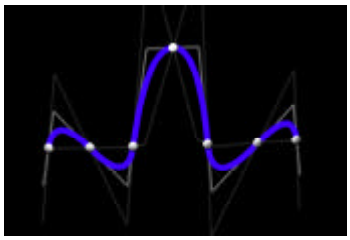
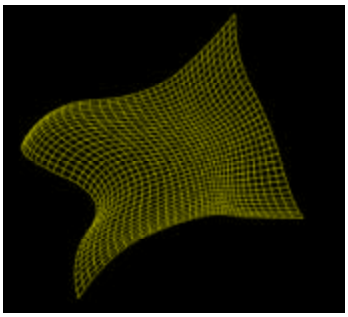
Projects Continued

Fall 1999



Computer aided geometric design project - Curves
Implemented an interactive curve editor that supported deCasteljau, Aitken, C1 continuous, C2 continuous, deBoor, and C1 continuous B-spline curves. Degree elevation, degree reduction, curve subdivision, and control of algorithm specific parameters was supported.
Platform: IRIX 6.3
Used: C++, OpenGL, and X Forms GUI Library



Computer aided geometric design project - Surfaces
Implemented an interactive NURBS surface editor. Parameters for the surface were interactively adjustable, and computation of the exact normals to the surface was computed.
Platform: IRIX 6.3
Used: C++, OpenGL, and X Forms GUI Library

Winter 1999

Polygonal modeling project
Implemented a polygonal hierarchical modeling system called the Modular Integrated Digital Animation System (MIDAS). Clipping, transformations, scaling, extrusion, and camera modeling was done in software.
Platform: IRIX 6.1
Used: C++, OpenGL, and X Forms GUI Library

Volume of revolution project
Volumes were constructed via rotations of B-splines about an arbitrary axis.
Platform: IRIX 6.1
Used: C++, MIDAS for display

Bézier patch project
Bézier patches were constructed from B-splines of arbitrary degree.
Platform: IRIX 6.1
Used: C++, MIDAS for display

Full size images can be found at my web site.

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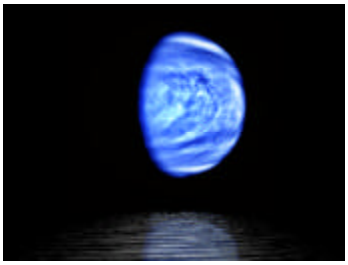
Other Projects

Spring 1999



Ray tracing project
Worked with ray tracing, texture mapping, and bump mapping.
Platform: Windows NT 4.0
Used: POV Ray Tracer

Computer Skills

Programming Languages

Experienced C++ programmer for 3 years.
Experienced C programmer for 5 years.
Knowledge of OpenGL for 2 years.
Some Java, Visual Basic, and HTML experience.

Platforms

Knowledge of UNIX, LINUX, and IRIX for 3 years.
Knowledge of Windows NT and Windows 9X for 5 years.

Applications

Adobe Acrobat, Illustrator, PageMaker, and Photoshop
Macromedia Dreamweaver and Flash
MetaCreations Bryce

Organizations

Member of the Association for Computing Machinery, SIGGRAPH
Member of the UCDavis Computer Science Club

Personal

My other areas of interest include web development, watching movies, classical and Spanish guitar, photography, and tennis.

References & Work History

Available upon request.

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