## Doug Roble

Digital Domain 300 Rose Av Venice, CA 90291 (310) 314-2838 doug@d2.com 10906 Kelmore St. Culver City, CA 90230-5415 (310) 837-3976 (Home) (310) 945-8168 (Cell) doug\_roble@siggraph.org

Work	◊ Creative Director of Software, Digital Domain (Aug, 1993 – present)
Experience	$\cdot$ Designed and implemented a semi-Lagrangian, Level Set based fluid simulation package.
	· Designed and implemented <i>track</i> , a vision application and toolkit. It includes camera and object motion computation, automatic scene reconstruction and light-ing/texture extraction, pattern template following, optical flow and much more.
	$\cdot$ Designed and implemented most of the core Math library. This includes a complete optimization package and a system for solving PDEs.
	• Designed and implemented a motion capture editing system. This product was sold by Adaptive Optics under the name "Creative Motion Environment". It was also bundled with their motion capture rig.
	$\cdot$ Designed and implemented an animation system based on wavelet technology for manipulation of motion capture.
	$\cdot$ Designed and implemented translation packages for moving information from Softimage and Alias into and out of our in house system (Inventor-based).
	$\cdot$ Designed and implemented a general particle system/physical simulation package to accurately simulate skin.
	$\cdot$ Designed and implemented a wire removal application.
	· Designed and implemented a good chunk of the core libraries at Digital Domain including 2D and 3D libraries and the application classes.
	$\cdot$ All programming was done in C++, using Inventor, GL, OpenGl and X.
	◊ Instructor, Course Coordinator, Computer Science Department, The Ohio State University, (Sept 1992 – June 1993)
	◊ Graduate Teaching Associate, Computer Science Department, The Ohio State University, (Sept 1992 – June 1993)
	◊ Operator/Programmer, Pioneer Venus Satellite Project, University of Colorado (Sept 1981 – Dec 1984)
Honors	◊ Distinguished Alumnus Award, The Ohio State University, College of Engineering, 2002
	◊ Technical Achievement Academy Award, Academy of Motion Picture Arts and Sciences, 1998. For his contribution to tracking technology and for the design and imple- mentation of the TRACK system for camera position calculation and scene reconstruc- tion.

Education	<ul> <li>The Ohio State University, Columbus, OH Ph.D. in Computer Science, 1992 Thesis: Computer Assisted Three Dimensional Rotoscoping for Realistic Image Compo- sition</li> </ul>
	• Designed and implemented LIVE, a system that extracts three dimensional infor- mation from a digitized photograph or frame of film.
	$\cdot$ Created an X-Window based, intelligent paint system that fills areas in a hand-drawn image, even if there are gaps in the area.
	$\cdot$ Designed and implemented a nearly linear speed-up scanline Z-buffer renderer on the Intel Hypercube.
	• Wrote and designed an award winning computer animated film, "Once A Pawn A Foggy Knight". Directed by David Ebert.
	$\cdot$ Created several hand-drawn animated films in conjunction with the Film and Cinema Dept.
	◊ The Ohio State University, Columbus, OH Masters, Computer Science, 1987
	◊ University of Colorado, Boulder, CO B.S. Electrical Engineering and Computer Science, 1984
ACTIVITIES	◊ Editor in Chief, The Journal of Graphics Tools (A.K. Peters, publisher.), 2006 – present.
	$\diamond$ Member, SIGGRAPH Advisory Board, 2005 – 2007.
	◇ Member, Digital Imaging Subcommittee of the Technical Academy Awards Committee for the Academy of Motion Picture Arts and Sciences. (In 2006 I was co-chair of this committee with Rick Sayre from Pixar.) 2001 – present.
	$\diamond~$ Chair, SIGGRAPH Sketches and Applications program. 2002.
Refereed Publications	Kangyu Ni, Doug Roble, Tony Chan Texture Synthesis Approach to Elastica Inpainting, SIGGRAPH Sketch, 2007
	Nafees bin Zafar, Johan Akesson, Doug Roble, Ken Museth Scattered Spherical Har- monics Approximation for Accelerated Volume Rendering, SIGGRAPH Sketch, 2006
	Doug Roble, Nafees bin Zafar, Cartesian Grid Fluid Simulation with Irregular Boundary Voxels, SIGGRAPH Sketch, 2005
	Kjell Reutersward, John Flynn, Doug Roble, Ken Museth, Model Flowing: Capturing and tracking of deformable geometry, SIGGRAPH Sketch, 2005
	Henrik Falt, Doug Roble, A fast polymesh to level set algorithm, SIGGRAPH Sketch 2003
	Henrik Falt, Doug Roble, Fluids with extreme viscosity, SIGGRAPH Sketch, 2003
	Magnus Wrenninge, Doug Roble, <i>Fluid simulation interaction techniques</i> , SIGGRAPH Sketch, 2003
	Doug Roble, A Load Balanced Parallel Scanline Z-Buffer Algorithm for the iPSC Hyper- cube Proceedings of Pixim, Vol 1. pp. 177-192. October 1988
	Doug Roble, Computer Assisted Three Dimensional Rotoscoping for Realistic Image Composition Ph.D. Thesis, The Ohio State University December 1992
Other Publications	Doug Roble, Computer Vision in Visual Effects chapter in Emerging Topics in Computer Vision, Prentice-Hall 2003. Sing Bing Kang editor.
	Rick Parent, <i>Computer Animation Algorithms and Techniques</i> , Academic Press, 2002. I assisted on the sub-section on motion capture.

Doug Roble, Tony Chan Math in the Entertainment Industry chapter in the book Mathematics Unlimited - 2001 and Beyond, Springer 2001. Bjorn Engquist, Wilfried Schmid editors.

- PRESENTATIONS & Invited Speaker National University of Singapore, Symposium on Mathematics and Science in Digital Media, Technology and Entertainment, 2007
  - ♦ Invited Speaker American Association for the Advancement of Science (AAAS), 2007
  - $\diamond~{\bf Keynote~Address}$  Symposium on Computer Animation, 2005
  - $\diamond$  Invited Speaker Stanford University, 2005
  - ♦ Invited Speaker Microsoft Research, 2004
  - ◊ SIGGRAPH Course Fluid Simulation in a Production Environment, 2004
  - $\diamond$  Invited Speaker Conference on Computer Vision and Pattern Recognition, 2003
  - ♦ Invited Speaker Eurographics Rendering Workshop 2002.
  - $\diamond$  Invited Speaker MIT Image and Meaning Conference, June 2001
  - ◊ SIGGRAPH Course From Ivory Tower to Silver Screen, Aug 2001
  - ◊ SIGGRAPH Panel Newton's Nightmare: Reality Meets Faux Physics, Aug 2001
  - $\diamond$  Invited Speaker SMPTE Annual Conference, 2000
  - ♦ Invited Speaker OSU Animation Day, 2000
  - ◊ SIGGRAPH Panel 3D Tracking in FX Production, July 1999
  - ◊ UCLA Mathematics Conference Mathematics In Computer Graphics, May 1998

REFERENCE Available on request.