David S. Mark

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415.515.5540

Project Scientist / Project Manager

Stereoscopic Camera Systems, Computer System Integration, 3D Display and Printing in Autostereoscopic 3D

Award winning scientist, fine artist, inventor and patent holder offering over 20 years of experience in high resolution autostereoscopic 3D for use in fine art, scientific visualization, travel photography and historical documentation. Fluent in all aspects of image capture, convergence and display; including the design and development of stereoscopic and autostereoscopic camera systems, custom computer system integration for high end 3D visualization systems. Sophisticated fine arts training that informs a sophisticated sense of presentation and visual aesthetic in technological and scientific endeavors.

3D Portfolio includes a library of 20,000 super high resolution stereo photos taken with specialized portable stereoscopic camera constructed and tailored for 3D art photography and Super high resolution stereogram transparencies printed at 30K X 40K resolution in full color comprising 50 or more stereo views at sizes up to 4' X 4' for no-glasses 3D viewing.

- Architect of technologies that have successfully compiled and converged up to 50 views at 5K to 8K dpi into a single 3D stereogram
- Noteworthy innovations include 3D imaging and physical optics, as well as in scalable computer systems and their adjoining algorithms tailored for real-time large scale projection of high resolution, multi-perspective 3D imagery.
- Advanced expertise in 3D scientific visualization used to provide enhanced 3D spatial acuity for scientific analysis in molecular modeling, astronomy, geology, physics, and medicine. Author of multiple scientific publications pertaining to the pioneering use of the 3D stereoscopic and autostereoscopic visualization medium as new imaging tool in understanding the natural world.

Education

Master of Fine Arts, San Francisco Art Institute, Painting and Photography. 1997
Bachelor of Fine Arts, San Francisco Art Institute, Painting. 1992
Master of Sciences in Physics, San Francisco State University, Concentration in Astrophysics. 1985
Bachelor of Sciences in Communication Arts, University of Texas at Austin, Concentration in English and Philosophy. 1981

Core Skills

- Image Compiler Algorithms for 3D Applications
- Optical Modeling For Stereoscopic and Autostereoscopic Display
- Construction of High End Graphics Workstations
- Nanophotonic Modeling for Optoelectronic Devices
- Stereoscopic and Multi-view Digital Photography
- Customized Computer Chassis Design
- Adaption, Enhancement, and Graphical Representation of 3D Scientific Data Sets for all types of 3D Displays
- Design & Assembly of Stereoscopic Camera Devices, Optics & Systems
- Playback Optimization for Quad HD 3D Displays
- Multi-Operating System configuration for 3D usage
- Scientific Analysis of 3D Phenomena Displayed on High Resolution Autostereoscopic Displays

Optical Design Systems: 3d integration software for producing high resolution stereograms

- Light Tools
- CodeV (Optical Research Associates)

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- Photoshop in 3D
- Aftereffects

Scientific Work History and Career

Kerner Group (a spinoff of Lucas Arts) 2007 – 2009

Recruited to lead research and development programs for 3D visualization of special effects. Tasked with perfecting the convergence capabilities of projection-based 3D autosteroscopic displays. Built autostereoscopic lenses and computer systems that were used in cinema production and scientific visualization

- Built computer system capable of computing 20-50 perspective views at screen resolutions of 3840 x 2160 pixels. Intergrated multiple motherboards and graphics cards in specialized system integration architecture for optimizing 3D interaction with user
- Developed 3D experimental prototypes using high resolution LCD and OLED displays.
- Developed optical design algorithms for translation into C, C++ and CUDA for various operating systems
- Created multiple-camera autostereoscopic image capture systems.

Mark Resources USA 1999 - Present

Founded technology services organization dedicated to research, development and deployment of autostereoscopic 3D technologies.

- Exhibited computer systems and autostereoscopic display systems at the annual SPIE (an international organization for optical engineering) convention for 22 consecutive years.
- Translated USGS (United States Geological Society) data for use in autostereoscopic display. Developed high resolution frozen image 3D visualizations for the USGS used in the study of fossilized microorganisms embedded in fluorescent minerals
- Built custom computer systems using up to 15 racks for use in large 3D visualizations. Integrated multiple graphics processors in parallel processing arrays.
- Designed and built a large scale arrival and departure video wall system for British airways that was in use for over 10 years at Terminal Building 7 at the JFK airport in New York City. Built the custom computer array that powered the system. Implemented a prototype 3D visualization for air traffic control management and security.
- Created prototype demonstrations for 3D visualization for the Texas Tech Medical Center. Created high resolution visualizations of kidneys, heart, brain and skeletal structures.

Patents

United States Patent 6,803,312 (Real-time multiple display imaging system)
Untied States Patent Application US 2005/0062678 A1 (Autostereoscopic display system including lenticular lens display screen)

Scientific Awards

Navy Science Award
WestingHouse Science Award

Scientific Publications

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Mark, D., "New optical modalities utilizing curved focal plane imaging detector devices and large arrays for terrestrial and spaceborne telescopes" in High Energy, Optical, and Infrared Detectors for Astronomy IV, edited by Andrew D. Holland, David A. Dorn, Proceedings of SPIE Vol. 7742 (SPIE, Bellingham, WA 2010) 77422H.

Swain, P., Mark, D., "Curved CCD detector devices and arrays for multispectral astrophysical applications and terrestrial stereo panoramic cameras" in Optical and Infrared Detectors for Astronomy, edited by James D. Garnett, James W. Beletic, Proceedings of SPIE Vol. 5499 (SPIE, Bellingham, WA 2004) pp. 281-301.

Swain, P. K., Channin, D. J., Taylor, G. C., Lipp, S. A., Mark, D. S., "Curved CCDs and their application with astronomical telescopes and stereo panoramic cameras" in Sensors and Camera Systems for Scientific, Industrial, and Digital Photography Applications V, edited by , Proceedings of SPIE Vol. 5301 (SPIE, Bellingham, WA 2004) pp. 109-129.

Mark, D. S., Waste, C., "Role of stereoscopic imaging in the astronomical study of nearby stars and planetary systems" in Stereoscopic Displays and Virtual Reality Systems IV, edited by Scott S. Fisher, John O. Merritt, Mark T. Bolas, Proceedings of SPIE Vol. 3012 (SPIE, Bellingham, WA 1997) pp. 289-296.

Active International Affiliations

The International Society for Optical Engineering (SPIE)
The 3D Consortium
American Association for the Advancement of Science
The American Geophysical Union
National Stereoscopic Association
The Society for Information Display
Art and Science Collaborations Incorporated
The Planetary Society, Webmaster for the San Francisco Bay Area Chapter
The Furniture Society
The Fluorescent Mineral Society

Fine Arts Work History and Career

David Mark Fine Art Exhibition 1985 – Present

Built a 25-year professional fine arts career around the study of the origins of life from artistic and scientific viewpoints. Work in diverse media including oil painting, furniture design, sculpture and 3D photography. Paintings and collections of full color high resolution stereograms, reside in numerous private collections, and are exhibited regularly in galleries and museums throughout the world.

- Currently showing a major exhibition “On Distant World” at the Bank of America Building, 555 California Street, San Francisco
- Currently in discussions with IKEA and Knoll Furniture for the mass production of the “DNA Bookcase,” a free standing helicical bookcase design. Other designs include the Standing Wave Bookcase, utilizing bent laminated hardwood structure
- Produce dramatic narrative films that are projected on Coit Tower films as part of the San Francisco 4 th of July celebration. Project movies from various angles onto the tower, transforming it into a large scale cyclo-panoramic presentation visible by hundreds of thousands of people simultaneously, done as a singular shared visual experience.

Art Books and Publications

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"New Optical Modalities Utilizing Curved Focal Plane Imaging Detector Devices and Large Arrays for Terrestrial and Spaceborne Telescopes," SPIE Astronomical Telescopes and Instrumentation, San Diego, California; SPIE Proceedings Vol. 7742.
American Art Collector; Volume 4, Book 2; Alcove Books, Berkeley, CA; Painting
American Art Collector; Volume 3, Book 4;Alcove Books, Berkeley, CA; Painting
American Art Collector; Volume 3, Book 1; Alcove Books, Berkeley, California; Painting
"Curved CCD Detector Devices and Arrays for Multispectral Astrophysical Applications and Terrestrial Stereo Panoramic Cameras," SPIE Astronomical Telescopes and Instrumentation, Vol. 5499, Glasgow, Scotland, June, 2004.
"Curved CCD's and Their Application with Astronomical Telescopes and Stereo Panoramic Cameras," SPIE Electronic Imaging Science and Technology, Vol. 5301, San Jose, CA, January, 2004
American Art Collector; Volume 1, Book 1; Alcove Books, Berkeley, California; Painting
Art of Northern California; Alcove Books, Berkeley, California; Painting
"Role of Stereoscopic Imaging in the Astronomical Study of Nearby Stars and Planetary Systems," SPIE Stereoscopic Displays and Virtual Reality Systems IV,Vol. 3012, SPIE Electronic Imaging Science and Technology, San Jose, CA, January, 1997
Hatofsky, Monterey Peninsula Museum of Art; Photography
The San Francisco Art Institute ViewBook, The San Francisco Art Institute; Painting
Design Book Five, Fine Woodworking, The Taunton Press, Newtown, Connecticut; Furniture Design
Design Book Four, Fine Woodworking, The Taunton Press, Newtown, Connecticut; Furniture Design

Exhibitions

"On Distant World," One Person Painting Exhibition featuring 12 large paintings, Bank of America Plaza Gallery,555 California Street, downtown San Francisco, August 7 through October 16, 2010.
"Coit Tower Video Projection4," San Francisco, CA; With Ben Wood; Sponsored by The City of San Francisco Recreation and Parks, featuring 2 hour video presentation commemorating the 40th Anniversary of the Occupation of Alcatraz Island by Native American Indians, featuring a simultaneous live radio broadcast commentary and interviews with various Native Americans; Projection directed on Coit Tower from 3 Projectors covering a 360 degree cycloramic view of the movie presentation; November 25-26, 8:00 pm to dawn, 2009.
"Artists Warehouse Sale," San Francisco Museum of Modern Art Artists Gallery, May 2009.
"Coit Tower Video Projection3," San Francisco, CA; With Ben Wood, Sponsored by The City of San Francisco Recreation and Parks, featuring video sequences reflecting on the heritage of Native American Ohlone people, with simultaneous live radio broadcast commentary & interviews of individuals representing the Ohlone Nation; Projection directed on the South and West sides of Coit Tower, covering 270 degrees of view during the hours of 8 p.m. to 5:30 a.m., July 4, 2008.
"Autostereoscopic 3D Presentation at the Society for Information Display Conference and Festival," Los Angeles, CA, June 2008; Sponsored by the 3D Consortium.
"Artists Warehouse Sale," San Francisco Museum of Modern Art Artists Gallery, May 2008.
"Artists Warehouse Sale," San Francisco Museum of Modern Art Artist Gallery," Fort Mason Center, San Francisco; May, 2007.
"3D Exhibition at the Society for Information Display Conference", June, 2006, San Francisco Moscone Center; Sponsored by the 3D Consortium; Interactive Autostereoscopic 3D imagery created and displayed on large scale monitors.
"Students of Julius Hatofsky Painting Show," Evolving Art Gallery, Vallejo, CA; students of the late Julius Hatofsky exhibit paintings and provide eulogies of their teacher; June 2006.
"Coit Tower Video Projection2," San Francisco, CA; With Ben Wood; Sponsored by The City of San Francisco Recreation and Parks, The San Francisco Fire Department, and The 1906 Centennial Alliance, "1906 Dismantled," highlighting San Francisco's massive 1906 Earthquake and Fire and eventual renewal, April 17 & 18, 2006; Nighttime projection along South and West Sides of Coit Tower from 8 p.m. to 5:30 a.m., covering 270 degrees of view.
"Artists Warehouse Sale," San Francisco Museum of Modern Art Artists Gallery, May 2006.
2005 Siggraph Autostereoscopic Live Video Presentation featuring world's highest resolution 3' X 4'full color Stereograms; with Ben Wood, co-sponsored by 3DLabs and Creative Labs, Los Angeles, CA; August, 2005.

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InfoComm Stereo Exhibition featuring world's highest resolution 3' X 4' Full color Stereograms, 2D and 3D video sequences in collaboration with Akira Display; Las Vegas, Nevada, June 2005.

"Artists Warehouse Sale," San Francisco Museum of Modern Art Artists Gallery, May 2005.

Siggraph Autostereoscopic Imaging Installation with 3DLabs Co-Sponsorship; featured subject included Mission Dolores Video, Los Angeles, CA; August 2004.

"Coit Tower Video Projection1," San Francisco, July 4, 2004; With Ben Wood; Sponsored by The City of San Francisco Recreation and Parks,The San Francisco Art Institute, Telegraph Hill Dwellers, and The Mission Dolores Church; Large scale video projectors providing continuous video imagery along South and West side of Coit Tower covering 270 degree field of view, featuring Native American Ohlone history, "Ohlone Heritage in The Bay Area". Projection took place during nighttime hours from 8:00 p.m. to 5:00 p.m..

"Mission Dolores Basilica Dome Projection," Mission Dolores Church, San Francisco, CA. With Ben Wood; Video projection of hidden altar mural images directed onto interior Basilica dome, January, 2004.

"Artist Warehouse Sale," San Francisco Museum of Modern Art Artists Gallery; May 2004.

"Artists Warehouse Sale," San Francisco Museum of Modern Art Artists Gallery; June 2003.

"Restoration", Stereoscopic Video Installation, San Francisco Art Institute, Diego Rivera Gallery, October 2002. With Benjamin Wood

"Artists Warehouse Sale," San Francisco Museum of Modern Art Artists Gallery; May 2002.

"Artists Warehouse Sale," San Francisco Museum of Modern Art Artists Gallery; May 2001.

"Artists Warehouse Sale," San Francisco Museum of Modern Art Artists Gallery; May, 2000.

"Planetfest '99," Pasadena Convention Center, December 3, 1999,

The Planetary Society, Pasadena; Projections of stereoscopic 3D astronomy.

"What is Art for?", Oakland Museum of California, installation featuring digital stereograms and paintings, March 6 – July 25, 1999.

The Chestnut Street Drawing Group, Nov.15-Dec.12, 1997, Works on Paper

"Planetfest '97," Pasadena Convention Center, July 4, 1997, The Planetary Society, Pasadena

MFA Graduate Show, May, 1997, Herbst Pavilion, Fort Mason Center.

"Market Street Project," Kiosk installation on Market Street, San Francisco; Organized and curated by Kim Anno, SFAI; Stereogram transparencies on lighted panel; October, 1996.

Big Deal, Somar Gallery, San Francisco, CA

Fun-Ding 2, Catharine Clark Gallery, Event-Auction December 11,12, San Francisco, CA

COMA Computers and Art, "Art in the Time of Change," March 11, 1995, San Francisco Art Institute, Sponsored by OnLine Design Magazine and the San Francisco Art Institute Alumni Association

Spring Show, Walter/McBean Gallery, San Francisco, CA

Selected 2D and 3D Media Solo Exhibitions

"On Distant World," Paintings by David Mark, August 7-October 16, 2010, Bank of America Building, Plaza Gallery, 555 California Street; 315 Montgomery Street, San Francisco; Curated by Casey and Associates and Sandra Lee Gallery.

Video Art Installation, JFK Airport, Terminal Bldg 7; Commissioned and permanently installed by British Airways in Main Concourse, utilized by 5 additional airlines; Comprises 100 channels in 2D and 3D imagery, remotely managed and updated from San Francisco.

Stereoooscopic Displays and Applications XI, Society for Imaging Science and Technology, International Society for Optical Engineering, San Jose Convention Center, San Jose, CA; Autostereoscopic Installation.

Stereoscopic Displays and Applications VIIII, Society for Imaging Science and Technology; International Society for Optical Engineering, San Jose Convention Center, San Jose, CA; Digital Stereograms presented.

Stereoscopic Displays and Applications VIII, Society for Imaging Science and Technology; International Society for Optical Engineering, San Jose Convention Center, San Jose, CA; Digital Stereograms presented.

"PlanetDay San Francisco," Martin Luther King Middleschool, The Planetary Society, 3D Video Presentation.

Innerspace Gallery, Pacific Design Center, Los Angeles, CA; paintings and Furniture Design pieces

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