CONTACT INFORMATION

• Administrator
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Bio

BIO
Professor Hanrahan's current research involves rendering algorithms, high performance graphics architectures, and systems support for graphical interaction. He also has worked on raster graphics systems, computer animation and modeling and scientific visualization, in particular, volume rendering.

ACADEMIC APPOINTMENTS

• Emeritus (Active) Professor, Computer Science
• Emeritus (Active) Professor, Electrical Engineering
• Member, Institute for Computational and Mathematical Engineering (ICME)

HONORS AND AWARDS

• Visualization Career Award, Institute of Electrical and Electronics Engineers (2006)
• Two Technical Awards, American Academy of Motion Picture Arts and Sciences (2013)
• Stephen A. Coons Award, ACM SIGGRAPH (2013)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

• Member, National Academy of Engineering (2013 - present)
• Member, American Academy of Arts and Sciences (2013 - present)

PROFESSIONAL EDUCATION

• PhD, Wisconsin (1986)

LINKS

Teaching

COURSES

2022-23
• Computer Systems from the Ground Up: CS 107E (Win)

2021-22
• Computer Systems from the Ground Up: CS 107E (Win)

2020-21
• Computer Graphics: Image Synthesis Techniques: CS 348B (Spr)
• Computer Systems from the Ground Up: CS 107E (Win)
• Domain-Specific Programming Models and Compilers: CS 343D (Aut)

2019-20
• Computer Graphics: Image Synthesis Techniques: CS 348B (Spr)
• Computer Systems from the Ground Up: CS 107E (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)
Nikhil Bhagdikar, Taeyoung Kong

Doctoral Dissertation Advisor (AC)
Ross Daly

Orals Evaluator
Ross Daly, Caleb Donovick

Master's Program Advisor
Kai Bartolone, Sreya Halder, Cole Sohn, Utkarsh Tandon

Doctoral Dissertation Co-Advisor (AC)
Caleb Donovick, Teguh Hofstee

Doctoral (Program)
Ross Daly, Raj Setaluri, Lenny Truong

Publications

PUBLICATIONS

  2023; 22 (2)

• fault: A Python Embedded Domain-Specific Language for Metaprogramming Portable Hardware Verification Components International Conference on Computer Aided Verification
  Truong, L., Herbst, S., Setaluri, R., Mann, M., Daly, R., Zhang, K., Donovick, C., Stanley, D., Horowitz, M., Barrett, C., Hanrahan, P.
  2020

• Space-Time Hierarchical Occlusion Culling for Micropolygon Rendering with Motion Blur High Performance Graphics
  Boulos, S., Luong, E., Fatahalian, K., Moreton, H., Hanrahan, P.
2010

• Hardware Implementation of Micropolygon Rasterization with Motion and Defocus Blur *High Performance Graphics*
  Brunhaver, John, S., Fatahalian, K., Hanrahan, P.
  2010

• Data-Parallel Rasterization of Micropolygons with Defocus and Motion Blur *High Performance Graphics*
  Fatahalian, K., Luong, E., Boulos, S., Akeley, K., Mark, William, R., Hanrahan, P.
  2009

• Interactive k-D Tree GPU Raytracing
  Horn, D., Sugerman, J., Houston, M., Hanrahan, P.
  2007

• Enhancing Visual Analysis of Network Traffic Using Knowledge Representation
  Xiao, L., Gerth, J., Hanrahan, P.
  2006

• Sequoia: Programming the Memory Hierarchy *IEEE Supercomputing*
  Fatahalian, K., Dally, William, J., Hanrahan, P., Knight, T., Houston, M., Erez, M.
  2006

• Light Field Photography with a Hand-Held Plenoptic Camera *Technical Report CSTR 2005-02, Computer Science Department*
  Ng, R., Levoy, M., Bredif, M., Duval, G., Horowitz, M., Hanrahan, P.
  2005

• Understanding the Efficiency of GPU Algorithms for Matrix-Matrix Multiplication
  Fatahalian, K., Sugerman, J., Hanrahan, P.
  2004

• Triple Product Wavelet Integrals for All-Frequency Relighting
  Ng, R., Ramamoorthi, R., Hanrahan, P.
  2004

• Efficient Partitioning of Fragment Shaders for Multiple-Output Hardware
  Foley, T., Houston, M., Hanrahan, P.
  2004

• Identification and Validation of Cognitive Design Principles for Automated Generation of Assembly Instructions
  Heiser, J., Phan, D., Agrawala, M., Tversky, B., Hanrahan, P.
  2004

• Photon Mapping on Programmable Graphics Hardware
  Purcell, Timothy, J., Donner, C., Cammarano, M., Jensen, H. W., Hanrahan, P.
  2003

• Viewing Complex Environment with Hierarchical Light Fields *Technical Report CS-TR-2002-03, Computer Science Department*
  Chen, X., Pereira, L., Hanrahan, P.
  2002

• Efficient Partitioning of Fragment Shaders for Multipass Rendering on Programmable Graphics Hardware
  Chan, E., Ng, R., Sen, P., Proudfoot, K., Hanrahan, P.
  2002

• A Signal-Processing Framework for Reflection *ACM Transactions on Graphics*
  Ramamoorthi, R., Hanrahan, P.
  2002

• Query, Analysis, and Visualization of Hierarchically Structured Data using Polaris *ACM SIGKDD Knowledge Discovery and Data Mining*
  Stolte, C., Tang, D., Hanrahan, P.
2002

- **ICrafter: A Service Framework for Ubiquitous Computing Environments**
  2001

- **A Practical Model for Subsurface Light Transport**
  Jensen, H. W., Marschner, S., Levoy, M., Hanrahan, P.
  2001

- **Rivet: A Flexible Computer Systems Visualization Environment** *Computer Graphics*
  Bosch, R., Stolte, C., Tang, D., Gerth, J., Rosenblum, M., Hanrahan, P.
  2000

- **Distributed Rendering for Scalable Displays** *IEEE Supercomputing*
  Humphreys, G., Buck, I., Eldridge, M., Hanrahan, P.
  2000

- **Tracking Graphics State For Networked Rendering**
  Buck, I., Humphreys, G., Hanrahan, P.
  2000

- **Visualizing Application Behavior on Superscalar Processors**
  Stolte, C., Bosch, R., Hanrahan, P., Rosenblum, M.
  1999

- **Parallel Texture Caching**
  Igehy, H., Eldridge, M., Hanrahan, P.
  1999

- **Simple Models of the Impact of Overlap in Bucket Rendering**
  Chen, M., Stoll, G., Igehy, H., Proudfoot, K., Hanrahan, P.
  1998

- **The Design of a Parallel Graphics Interface**
  Igehy, H., Stoll, G., Hanrahan, P.
  1998

- **Realistic Modeling and Rendering of Plant Ecosystems**
  Hanrahan, P., Deussen, O., Hanrahan, P., Lintermann, B., Mech, R., Pharr, M.
  1998

- **The Two-User Responsive Workbench: Support for Collaboration Through Individual Views of a Shared Space**
  Agrawala, M., Beers, A., Froehlich, B., Hanrahan, P., McDowall, I., Bolas, M.
  1997

- **Rendering Complex Scenes with Memory-Coherent Ray Tracing**
  Pharr, M., Kolb, C., Gershbein, R., Hanrahan, P.
  1997

- **Geometry Caching for Ray-Tracing Displacement Maps**
  Pharr, M., Hanrahan, P.
  1996

- **Flow and Changes in Appearance**
  Dorsey, J., Pedersen, H., Hanrahan, P.
  1996

- **Light Field Rendering**
  Levoy, M., Hanrahan, P.
• Modeling and Rendering of Metallic Patinas
  Dorsey, J., Hanrahan, P.
  1996

• A Realistic Camera Model for Computer Graphics
  Kolb, C., Mitchell, D., Hanrahan, P.
  1995

• Partitioning and Ordering Large Radiosity Computations
  Teller, S., Fowler, C., Funkhouser, T., Hanrahan, P.
  1994

• Wavelet Methods for Radiance Computations
  Schroeder, P., Hanrahan, P.
  1994

• Compression Performance of the Xremote Protocol
  Danskin, J., Hanrahan, P.
  1994

• Profiling the X Protocol
  Danskin, J., Hanrahan, P.
  1994

• Textures and Radiosity: Controlling Emission and Reflection with Texture Maps
  Gershbein, R., Schroeder, P., Hanrahan, P.
  1994

• On the Form Factor between Two Polygons
  Schroeder, P., Hanrahan, P.
  1993

• Visibility Computations for Global Illumination Algorithms
  Teller, S., Hanrahan, P.
  1993

• Reflection from Layered Surfaces due to Subsurface Scattering
  Hanrahan, P., Krueger, W.
  1993

• A Hierarchical Illumination Algorithm for Surfaces with Glossy Reflection
  Hanrahan, P., Aupperle, L.
  1993

• Wavelet Projections for Radiosity
  Schroeder, P., Gortler, S., Cohen, M., Hanrahan, P.
  1993

• Wavelet Projections for Radiosity
  Hanrahan, P., Schroeder, P., Gortler, S., Cohen, M., Hanrahan, P.
  1993

• Importance and Discrete Three Point Transport
  Hanrahan, P., Aupperle, L.
  1993

• Wavelet Radiosity
  Gortler, S., Schroeder, P., Cohen, M., Hanrahan, P.
1993

- **Illumination from Curved Reflectors**
  Hanrahan, P., Mitchell, D.
  1992

- **Fast Algorithms for Volume Ray Tracing**
  Hanrahan, P., Danskin, J., Hanrahan, P.
  1992

- **A Hierarchical Radiosity Algorithm**
  Hanrahan, P., Salzman, D., Aupperle, L.
  1991

- **Hierarchical Splatting: A Progressive Refinement Algorithm for Volume Rendering**
  Hanrahan, P., Hanrahan, P., Laur, D.
  1991

- **A Rapid Hierarchical Radiosity Algorithm for Unoccluded Environments**
  Hanrahan, P., Salzman, D.
  1990

- **Effects of Visual and Verbal Presentation on Cognitive Load in Vigilance, Memory and Arithmetic Tasks** *Psychophysiology*
  Klingner, J., Tversky, B., Hanrahan, P.

- **Performance Analysis and Visualization of Parallel Systems Using SimOS and Rivet: A Case Study**
  Bosch, R., Stolte, C., Stoll, G., Rosenblum, M., Hanrahan, P.