# Hanspeter Pfister

School of Engineering and Applied Sciences
Harvard University
150 Western Ave, SciEng 4.303
Allston, MA 02134
Tel: (617) 496-8269
pfister@seas.harvard.edu

6 Pioneer Rd.
Arlington, MA 02474
(781) 648-2708

## EDUCATION

⋄ **State University of New York at Stony Brook**, Stony Brook, NY
Ph.D. in Computer Science, 1996
Advisor: Prof. Arie Kaufman; Thesis: Architectures for Real-Time Volume Visualization

⋄ **State University of New York at Stony Brook**, Stony Brook, NY
M.Sc. in Computer Science, 1994

⋄ **Swiss Federal Institute of Technology (ETH) Zürich**, Switzerland
M.Sc. in Electrical Engineering, 1991

## RESEARCH INTERESTS

Computer graphics, computer vision, visualization, and data science.

## EMPLOYMENT

⋄ **Harvard University, School of Engineering and Applied Sciences, Cambridge, MA**
Academic Dean for Computational Sciences and Engineering, 2021–present
An Wang Professor of Computer Science, 2012–present
Affiliate Faculty Member, Harvard Center for Brain Science, 2012–present
Director, Institute of Applied Computational Science, 2013–2017
Professor of the Practice of Computer Science, 2007–2011

⋄ **Harvard University, Initiative in Innovative Computing, Cambridge, MA**
Director of Visual Computing, 2007–2009

⋄ **Consultant**
Expert witness in patent infringement and patent reexamination cases, source code copyright infringement, computer graphics hardware, computer graphics, computer vision, and other issues, 2007–present
Consultant for technology companies and research laboratories, 2007–present

⋄ **Mitsubishi Electric Research Laboratories, Cambridge, MA**
Associate Director, 2001–2006
Senior Research Scientist, 1996–2007

⋄ **Visualization Laboratory, SUNY Stony Brook, NY**
Research Assistant, 1992–1996

⋄ **Integrated Systems Laboratory, ETH Zürich, Switzerland**
Research Assistant, 1990–1991

⋄ **Sulzer Corp., Industrial Electronics Laboratory, Winterthur, Switzerland**
Consulting Engineer, 1988–1991

## HONORS AND AWARDS

⋄ **ACM Fellow** "for contributions to volume rendering, visualization, computer graphics, and computer vision applications," elected in 2019

- ◇ **IEEE Fellow** "for contributions to computer vision applications," elected in 2023
- ◇ **ACM SIGGRAPH Academy**, elected member, 2020
- ◇ **IEEE Visualization Academy**, elected member, 2019
- ◇ **IEEE Visualization Technical Achievement Award** "in recognition of seminal technical achievements in real-time volume rendering," 2010
- ◇ **IEEE Golden Core Award**, 2010
- ◇ **IEEE Meritorious Service Award**, 2009
- ◇ **Petra T. Shattuck Excellence in Teaching Award**, Harvard Extension School, 2009
- ◇ **Dean's Thesis Prize**, Harvard Extension School ALM in Information Technology, for Michael Tracey Zellman's thesis "Creating and Visualizing Congressional Districts", 2011
- ◇ **Dean's Thesis Prize**, Harvard Extension School ALM in Information Technology, for Manish Kumar's thesis "View-Dependent FTLV", 2009
- ◇ **Dean's Thesis Prize**, Harvard Extension School ALM in Information Technology, for Joseph Weber's thesis "ProteinShader: Cartoon-Type Visualization of Macromolecules Using Programmable Graphics Cards", 2007
- ◇ **Dean's Thesis Prize**, Harvard Extension School ALM in Information Technology, for George P. Stathis' thesis "Aspect-Oriented Shade Trees", 2005
- ◇ **Distinguished Teaching Performance**, Harvard Extension School, 2002, 2003, and 2004
- ◇ **Mitsubishi Electric President's Award**, 2000
- ◇ **Innovation Awards and Top 100 Products Award** for VolumePro, 1999
- ◇ **The Jack Heller Award** for Outstanding Contribution to the CS Department, SUNY Stony Brook, 1994
- ◇ **Swiss Academy of Technical Sciences Fellowship**, 1992
- ◇ **ABB Switzerland Research Fellowship**, 1991 and 1992
- ◇ **U.S. Government Fulbright Scholarship**, 1991–1996

## PEER-REVIEWED PUBLICATIONS

- ◇ **ACM SIGGRAPH**

  1. Selective Region-based Photo Color Adjustment for Graphic Designs
     N. Zhao, Q. Zheng, J. Liao, Y. Cao, H. Pfister, R. WH Lau, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), vol. 40, no. 4, 2021.

  2. PhotoApp: Photorealistic Appearance Editing of Head Portraits
     B.R. Mallikarjun, A. Tewari, A. Dib, T. Weyrich, B. Bickel, H-P Seidel, H. Pfister, W. Matusik, L. Chevallier, M. Elgharib, C. Theobalt, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), vol. 40, no. 4, 2021.

  3. An Interaction-Aware, Perceptual Model for Non-Linear Elastic Objects
     M. Piovarči, D. Levin, J. Rebello, D. Chen, R. Ďurikovič, H. Pfister, W. Matusik, P. Didyk, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), vol. 35, no. 4, 2016.

  4. Generalizing Wave Gestures from Sparse Examples for Real-Time Character Control
     H. Rhodin, J. Tompkin, K. In Kim, E. De Aguiar, H. Pfister, H-P Seidel, C. Theobalt, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), vol. 34, no. 6, 2015.

  5. Blind Video Temporal Consistency
     N. Bonneel, J. Tompkin, K. Sunkavalli, D. Sun, S. Paris, H. Pfister, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), vol. 34, no. 6, 2015.

  6. Computational Design of Metallophone Contact Sounds
     G. Bharaj, D. Levin, J. Tompkin, Y. Fei, H. Pfister, W. Matusik, C. Zheng, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), vol. 34, no. 6, 2015.

7. Interactive Intrinsic Video Editing
N. Bonneel, K. Sunkavalli, J. Tompkin, D. Sun, S. Paris, and H. Pfister, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), vol. 33, no. 6, 2014.

8. Facial Performance Enhancement Using Dynamic Shape Space Analysis
Bermano AH, Bradley D, Beeler T, Zünd F, Nowrouzezahrai D, Baran I, Sorkine O, Pfister H, Sumner W, Bickel B, ACM Transactions on Graphics (Proc. ACM SIGGRAPH). 2014.

9. Example-Based Video Color Grading
Bonneel N, Sunkavalli K, Paris S, Pfister H., ACM Transactions on Graphics (Proc. ACM SIGGRAPH). 2013; 32(4).

10. Fabricating Articulated Characters from Skinned
Meshes.Baecher M, Bickel B, James DL, Pfister H., ACM Transactions on Graphics (Proc. ACM SIGGRAPH). 2012; Vol. 31.

11. Video Face Replacement
K. Dale, K. Sunkavalli, M.K. Johnson, D. Vlasic, W. Matusik, H. Pfister, ACM Transactions on Graphics (Proc. ACM SIGGRAPH Asia), Vol. 30, 2011

12. Design and Fabrication of Materials with Desired Deformation Behavior
B. Bickel, M. Baecher, M. Otaduy, H. R. Lee, W. Matusik, H. Pfister, M. Gross, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 29, No. 3, July 2010, pp. 63:1-63:10

13. Physical Reproduction of Materials with Specified Subsurface Scattering
M. Hasan, M. Fuchs, W. Matusik, H. Pfister, S. Rusinkiewicz, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 29, No. 3, July 2010, pp. 61:1-61:10

14. Multi-scale Image Harmonization
K. Sunkavalli, M. K. Johnson, W. Matusik, H. Pfister, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 29, No. 3, July 2010, pp. 125:1-125:10

15. Capture and Modeling of Non-Linear Heterogeneous Soft Tissue
B. Bickel, M. Baecher, M. Otaduy, W. Matusik, H. Pfister, M. Gross, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 28, No. 3, July 2009, pp. 89:1-89:9

16. Factored Time-Lapse Video
K. Sunkavalli, W. Matusik, H. Pfister, S. Rusinkiewicz, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 26, No. 3, July 2007, pp. 101-111

17. Multi-Scale Capture of Facial Geometry and Motion
B. Bickel, M. Botsch, R. Angst, W. Matusik, H. Pfister, M. Gross, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 26, No. 3, July 2007, pp. 33-41

18. Analysis of Human Faces Using a Measurement-Based Skin Reflectance Model
T. Weyrich, W. Matusik, H. Pfister, B. Bickel, C. Donner, C. Tu, J. McAndless, J. Lee, A. Ngan, H.W. Jensen, M. Gross, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 25, No. 3, July 2006, pp. 1013-1024

19. A Statistical Model for Synthesis of Detailed Facial Geometry
A. Golovinskiy, W. Matusik, H. Pfister, S. Rusinkiewicz, T. Funkhouser, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 25, No. 3, July 2006, pp. 1025-1034

20. Inverse Shade Trees for Non-Parametric Material Representation and Editing
J. Lawrence, A. Ben-Artzi, C. DeCoro, W. Matusik, H. Pfister, R. Ramamoorthi, S. Rusinkiewicz, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), July 2006, pp. 735-745

21. Defocus Video Matting
M. McGuire, W. Matusik, H. Pfister, J. Hughes and F. Durand, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 24, No. 3, August 2005, pp. 567-576

22. Face Transfer with Multilinear Models
D. Vlasic, M. Brand, H. Pfister, and J. Popovic, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 24, No. 3, August 2005, pp. 426-433

23. 3D TV: A Scalable System for Real-Time Acquisition, Transmission, and Autostereoscopic Display of Dynamic Scenes
    W. Matusik and H. Pfister, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 23, No. 3, August 2004, pp. 811-821

24. A Data-Driven Reflectance Model
    W. Matusik, H. Pfister, M. Brand, L. McMillan, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 22, No. 3, July 2003, pp. 759-770

25. Image-Based 3D Photography using Opacity Hulls
    W. Matusik, H. Pfister, P. Beardsley, A. Ngan, R. Ziegler, L. McMillan, ACM Transactions on Graphics (Proc. ACM SIGGRAPH), Vol. 21, No. 3, July 2002, pp. 427-437

26. Surface Splatting
    M. Zwicker, H. Pfister, J. van Baar, M. Gross, Proceedings of ACM Proceedings of ACM SIGGRAPH, July 2001, pp. 371-378

27. Surfels—Surface Elements as Rendering Primitives
    H. Pfister, M. Zwicker, J. van Baar, M. Gross, Proceedings of ACM SIGGRAPH, July 2000, pp. 335-342

28. The VolumePro Real-Time Ray-Casting System
    H. Pfister, J. Hardenbergh, J. Knittel, H. Lauer, and L. Seiler, Proceedings of ACM SIGGRAPH, August 1999, pp. 251-260

29. Design Galleries: A General Approach to Setting Parameters for Computer Graphics and Animation
    J. Marks, B. Andalman, P.A. Beardsley, W. Freeman, S. Gibson, J. Hodgins, T. Kang, B. Mirtich, H. Pfister, W. Ruml, K. Ryall, J. Seims, and S. Shieber, Proceedings of ACM SIGGRAPH, August 1997, pp. 389-400

⋄ **Journals**

30. Genopathomic Profiling Identifies Signatures for Immunotherapy Response of Lung Adenocarcinoma via Confounder-Aware Representation Learning
    Deng J, Yang J, Hou L, Wu J, He Y, Zhao M, Ni B, Wei D, Pfister H, Zhou C, Jiang T, She Y, Wu C, and Chen C. iScience, vol. 25, nbr. 11, 2022.

31. Sporthesia: Augmenting Sports Videos Using Natural Language
    Chen Z, Yang Q, Xie X, Beyer J, Xia H, Wu Y, and Pfister H. IEEE Transactions on Visualization and Computer Graphics, 2022.

32. The Quest for Omnioculars: Embedded Visualization for Augmenting Basketball Game Viewing Experiences
    Lin T, Chen Z, Yang Y, Chiappalupi D, Beyer J, and Pfister H. IEEE Transactions on Visualization and Computer Graphics, 2022. **IEEE VIS Best Paper Honorable Mention Award.**

33. Visinity: Visual Spatial Neighborhood Analysis for Multiplexed Tissue Imaging Data
    Warchol S, Krueger R, Nirmal A, Gaglia G, Jessup J, Ritch C, Hoffer J, Muhlich J, Burger M, Jacks T, Santagata S, Sorger P, and Pfister H. IEEE Transactions on Visualization and Computer Graphics, 2022.

34. Interactive and Visual Prompt Engineering for Ad-hoc Task Adaptation with Large Language Models
    Strobelt H, Webson A, Sanh V, Hoover B, Beyer J, Pfister H, and Rush A. IEEE Transactions on Visualization and Computer Graphics, 2022.

35. The Ball is in Our Court: Conducting Visualization Research with Sports Experts
    Lin T, Chen Z, Beyer J, Wu Y, Pfister H, and Yang Y. IEEE Computer Graphics and Applications, 2022.

36. MedMNIST v2: A Large-Scale Lightweight Benchmark for 2D and 3D Biomedical Image Classification

Yang J, Shi R, Wei D, Liu Z, Zhao L, Ke B, Pfister H, and Ni B. Nature Scientific Data, 2022.

37. Three approaches to facilitate invariant neurons and generalization to out-of-distribution orientations and illuminations
Sakai A, Sunagawa T, Madan S, Suzuki K, Katoh T, Kobashi H, Pfister H, Sinha P, Boix X, and Sasaki T. Neural Networks, vol. 155, 2022.

38. Edge-Colored Directed Subgraph Enumeration on the Connectome
Matejek B, Wei D, Chen T, Tsourakakis C, Mitzenmacher M, and Pfister H. Nature Scientific Reports, 2022.

39. A Survey of Visualization and Analysis in High-Resolution Connectomics
Beyer J, Troidl J, Boorboor S, Hadwiger M, Kaufman A, and Pfister H. Computer Graphics Forum, 2022.

40. Barrio: Customizable Spatial Neighborhood Analysis and Comparison for Nanoscale Brain Structures
Troidl J, Cali C, Grïoller E, Pfister H, Hadwiger M, and Beyer J. Computer Graphics Forum, 2022.

41. Scalable Biologically-Aware Skeleton Generation for Connectomic Volumes
Matejek B, Franzmeyer T, Wei D, Wang X, Zhao J, Pal agyi K, Lichtman J, and Pfister H. IEEE Transactions on Medical Imaging, 2022.

42. When and how convolutional neural networks generalize to out-of-distribution categorym-dash;viewpoint combinations
Madan S, Henry T, Dozier J, Ho H, Bhandari N, Sasaki T, Durand F, Pfister H, Boix X. Nature Machine Intelligence, vol. 4, nbr. 2, 2022.

43. Labeling Out-of-View Objects in Immersive Analytics to Support Situated Visual Searching
Lin T, Yang Y, Beyer J, and Pfister H. IEEE Transactions on Visualization and Computer Graphics, 2021.

44. Narrative Online Guides for the Interpretation of Digital-Pathology Images and Tissue-Atlas Data
Rashid R, Chen Y, Hoffer J, Muhlich JL, Lin J, Krueger R, Pfister H, Mitchell R, Santagata S, and Sorger PK. Nature Biomedical Engineering, 2021.

45. GenNI: Human-AI Collaboration for Data-Backed Text Generation
Strobelt H, Kinley J, Krueger R, Beyer J, Pfister H, and Rush AM. IEEE Transactions on Visualization and Computer Graphics, 2021.

46. Visualization Design Sprints for Online and On-Campus Courses
J. Beyer, Y. Yang, and H. Pfister. IEEE Computer Graphics and Applications, 2021.

47. Scope2Screen: Focus+Context Techniques for Pathology TumorAssessment in Multivariate Image Data
Jessup J, Krueger R, Warchol S, Hoffer J, Muhlich J, Ritch CC, Gaglia G, Coy S, Chen Y, Lin J, Santagata S, Sorger PK, and Pfister H. IEEE Transactions on Visualization and Computer Graphics (IEEE VIS), 2021.

48. Exploring the Gap between Informal Mental and Formal Statistical Models
Pfister H, Wattenberg M, Beyer J, and Nobre C. Harvard Data Science Review, 2021.

49. VICE: Visual Identification and Correction of Neural Circuit Errors
Gonda F, Wang X, Beyer J, Hadwiger M, Lichtman J, and Pfister H. Computer Graphics Forum, 2021.

50. Visualizing and Interacting with Geospatial Networks: A Survey and Design Space
S. Schöttler, Y. Yang, H. Pfister, and B. Bach. Computer Graphics Forum, 2021.

51. Genome-wide enhancer maps link risk variants to disease genes
Joseph Nasser, Drew T. Bergman, Charles P. Fulco, Philine Guckelberger, Benjamin R. Doughty, Tejal A. Patwardhan, and others. Nature, 2021.

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