

# Eric Shaffer

---

Siebel School of Computing and Data Science  
University of Illinois at Urbana-Champaign  
201 N. Goodwin Avenue  
Urbana, IL 61801

Voice: 217-372-4190  
E-mail: shaffer1@illinois.edu  
WWW: <https://shaffer1.github.io/>

EDUCATION      **PhD Computer Science**, University of Illinois at Urbana-Champaign, 2005  
                  **Thesis:** Scalable Methods for Processing Massive Geometric Meshes  
                  **Advisor:** Professor Michael Garland  
                  **MS Computer Science**, University of Minnesota, Minneapolis, 1996  
                  **BS Mathematics and Computer Science**, University of Illinois at Urbana-Champaign, 1992

EXPERIENCE      **Assoc. Director of Academics**      **April 2026 – present**  
                  **Director of Undergrad Programs**      **August 2024 – April 2026**  
                  **Assoc. Director of Undergrad Programs**      **August 2022 – August 2024**  
                  **Teaching Professor**      **August 2026 – Present**  
                  **Teaching Associate Professor**      **August 2020 – August 2026**  
                  **Teaching Assistant Professor**      **August 2016 – August 2020**  
                  **Lecturer**      **August 2014 – August 2016**  
  
                  **Siebel School of Computing**      **University of Illinois**  
                  **and Data Science**  
  
                  **Assistant Director**      **January 2013 – August 2014**  
                  **Technical Program Manager**      **August 2010 – January 2013**  
                  **Research Scientist**      **August 2007 – August 2010**  
                  **Computational Science and Engineering**      **University of Illinois**  
  
                  **Postdoctoral Research Associate**      **2005 – 2007**  
                  **Center for Simulation of Advanced Rockets**      **University of Illinois**  
  
                  **Research Programmer**      **1996 – 2002**  
                  **Pablo Research Group**      **University of Illinois**  
  
                  **Programmer**      **1992 – 1994**  
                  **IBM**      **Rochester, MN**

TEACHING AWARDS      **Rose Award for Teaching Excellence 2024**  
                                  Grainger College of Engineering, University of Illinois  
  
                  **Scott H. Fisher Computer Science Teaching Award 2024**  
                  Department of Computer Science, University of Illinois  
  
                  **Named as Teacher Ranked as Excellent by Their Students**  
                  • Fall 2013, 2016, 2017, Spring 2016, 2017, 2023, Summer 2022, 2025

COURSES TAUGHT      • CS 415: Game Development, Fall 2021 – 25, Spring 2022 – 2025  
                                  • CS 519: Scientific Visualization, Fall 2015 – 17, 2020 – 21, Summer 2021 – 25  
                                  • CS 418: Interactive Computer Graphics, Fall 2014–2020, Spring 2017–2022

- CS 419: Production Computer Graphics, Fall 2014 and 2018, Spring 2016, 2017, 2021
- CS 357: Numerical Methods , Spring 2013, 2015, 2016
- CS 450: Numerical Analysis, Online MCS Spring 2019, 2020
- CS 498VR: Virtual Reality, Fall 2018, Spring 2019, Spring 2020
- CS 199GAM: Elements of Game Design, Winter Session 2018, 2019
- CS 498ES: Undergraduate Research Lab, Fall 2013
- INFO 103: Introductory Programming for Informatics, Fall 2009–Fall 2012
- CS 173: Discrete Structures, Fall 2008–Spring 2009
- CS 225: Data Structures, Fall 2007, Spring 2008

#### PATENTS AND PATENT APPLICATIONS

U.S. Patent Application No.: 63/617,821  
 Title: Gaze-depth Interaction in Virtual, Augmented, or Mixed Reality  
 Filing date: January 5, 2024  
 Inventors: C. Zhang, T. Chen, R. Nedungadi, E. Shaffer, E. Soltanaghahi

#### CURRENT AND PAST GRANTS

UIUC SIIP: *Virtual Reality as a Vehicle for Education in the Domains of Building Systems and Construction Materials.* **2024-2025**

UIUC Insper: *Leveraging Focal Depth for Gaze-based Interaction in Extended Reality.* **2024**

UIUC SIIP: *Game for Community Resilience-Based Decision-Making Education.* **2023-2025**

DPI Science Team Award *Bridge Deck Rapid Assessment Using AI Structural Sensing and Augmented Reality* **2021-22**

UIUC SIIP: *Learning by Immersion: VR Labs for Electromagnetism Courses* **2019 - 2022**

Microsoft: Gift of 30 HMDs for the VR Lab **2018**

UIUC SIIP: *Implementing Process Oriented Guided Inquiry Learning* **2018 - 2019**

Exxon-Mobil: *Computational Tools for Analysis of Disparate Reservoir Models* **2013 –2018**

Dept. of Energy: *3-D Visualization and Analysis of Oil and Gas Resources.* **2011 – 2015**

The Boeing Company: *Boeing-UIUC Uncertainty Quantification for CFD* **2012 – 2013**

The Boeing Company: *Boeing-UIUC Meshing Collaboration* **2007 – 2012**

The Boeing Company: *Fluid-Structure Interaction Coupling for Aeroelastic Simulations* **2010**

Caterpillar Inc.: *Meshing and Visualization for Cut-Cell Methods* **2007 – 2008**

#### SELECTED PUBLICATIONS

*Best Practices for Assessing Students’ Programming Skills in the Era of Large Language Models.*  
 Iris Xu, Michael Nowak, and Eric Shaffer. In Proceedings of the 2026 ACM Conference on International Computing Education Research (ICER ’26)

*Crystal Vision: An Interactive Video Game for Engineering Materials* N Tabassum, JR Amos, J Henschen, EG Shaffer, N Garg 2026 ASEE Annual Conference & Exposition

*Virtual Reality as a Vehicle for Education in the Domain of Structural Building Systems.* CJ Rodgers, J Henschen, E Shaffer, AC Sychterz Computers & Education. 2025

*Crystal Vision: A Virtual Reality Game for Learning Materials Crystallography* N Tabassum, E Shaffer, N Garg Structural Dynamics. 2025.

*Visualizing Polarization Effects of Gravitational Waves Using Particle Rings and Surfaces in Virtual Reality.* K. Schumacher, S. Joshi, D. Srivastava, A. Shaffer, A. Jog, J. Shih, E. Shaffer. ISVC 2024.

*Hybrid Voxel Formats for Efficient Ray Tracing.* R Arbore, J. Liu, A. Wefel, S. Gao, E. Shaffer. ISVC 2024.

*Real-time Raytracing of Large Voxel Scenes.* R. Arbore, S. Gao, J. Liu, A. Wefel, E. Shaffer. GPU Zen Vol. 3. 2024

*FocusFlow: Leveraging Focal Depth for Gaze Interaction in Virtual Reality.* C. Zhang, T. Chen, R. Nedungadi, E. Shaffer, E. Soltanaghahi. ACM CHI 2024

*Enhancing Learning Outcomes for Materials Crystallography via Virtual Reality: Role of User Comfort and Game Design.* DS Bejjarapu, Y Chen, J Xu, E Shaffer, N Garg. Journal of Chemical Education. 2024

*What Goes into an Engineering Decision: An Infrastructure Decision-Making Game for Exploratory Equity Learning - Phase 2 Multiple Stakeholders.*A. Beck, Eun Jeong Cha, L. Paquette, E. Shaffer. ASEE 2024.

*FocusFlow: Leveraging Focal Depth for Gaze Interaction in Virtual Reality.*C. Zhang, T. Chen, R. Nedungadi, E. Shaffer, E. Soltanaghahi. Adjunct Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology. 2023.

*3D Visualization of Plasma Sheet Properties Based on the Reconstruction of Minimum Magnetic Field Surface..* E. Shaffer, R. Ilie, and J. Liu. AGU23 2023.

*GR in VR: Using Immersive Virtual Reality as a Learning Tool for General Relativity.* K. Schumacher, S. Joshi, J Kang, E. Shaffer, J Raley, et al. ASEE 2023.

*Virtual Reality Laboratory Experiences for Electricity and Magnetism Courses.* R. Ilie, E. Shaffer, C. D'Angelo, D. Cermak, E. Kudeki, M. Lin, H. Chen. ASEE 2021.

*A Case Study of Early Performance Prediction and Intervention in a Computer Science Course.* M. Silva, E Shaffer, N Nytko, J. Amos. in Proceedings of the 2020 ASEE Annual Conference. 2020.

*Using Visual Analytics to Understand Emoji-first Communication.* J. Shih, R. Kumar, E. Shaffer, and S. Khandekar. IEEE VIS 2019. Poster. 2019.

*Efficient Parallel Optimization of Volume Meshes on Heterogeneous Computing Systems.* Z. Cheng, E. Shaffer, R.Yeh, G. Zagaris, L. Olson. Engineering with Computers. 2017.

*Deferred Ray Tracing Using Intersection Binning.* A.I. Ellis, E. Shaffer, J.C. Hart. High-Performance Graphics, Poster, 2017

*How Does the Connectivity of Open-framework Conglomerates within Multi-scale Hierarchical Fluvial Architecture Affect Oil-sweep Efficiency in Waterflooding?* N. Gershenson, M. Soltanian, R. Ritzi, D. Dominic, D. Keefer, E Shaffer. Geosphere. 2015.

*Efficient GPU-based Optimization of Volume Meshes.* E. Shaffer, Z. Cheng, R. Yeh, G. Zagaris, L. Olson. International Conference on Parallel Computing - ParCo2013. Sept. 2013.

*Mining for Hydrologic Features in LiDAR Data.* R. Reizner, E. Shaffer, B. Birman. DMIN'13: The 9th International Conference on Data Mining. July 2013.

*GPU Accelerated Derivative-free Mesh Optimization.* E. Shaffer and G. Zagaris. GPU Computing Gems Vol. 2. Oct. 2011

*Robust Classification of Curvilinear and Surface-Like Structures in 3d Point Cloud Data.* M. Kamali, M. Stroila, J. Cho, E. Shaffer, J. C. Hart. ISVC 2011

*CoMoTo - the Collaboration Modeling Toolkit.* Charlie Meyer, C. Heeren, E. Shaffer, and J. Tedesco. ACM ITiCSE. June 2011.

*A Toolkit for Parallel Overset Grid Assembly Targeting Large-Scale Moving Body Aerodynamic Simulations* G. Zagaris, M.T. Campbell, D.J. Bodony, E. Shaffer and M. D. Brandyberry. Proceedings of the 19th International Meshing Roundtable. Oct. 2010.

*Streaming Mesh Optimization for CAD.* Tian Xia, Eric Shaffer. 4th International Symposium on Visual Computing. Dec. 2008.

*Streaming Tetrahedral Mesh Optimization.* T. Xia and E. Shaffer. Poster paper, ACM Solid and Physical Modeling Symposium Proceedings, June 2008.

*Parallel Mesh Adaptation for Highly Evolving Geometries with Application to Solid Propellant Rockets.* D. Guoy, T. Wilmarth, P. Alexander, X. Jiao, M. Campbell, E. Shaffer, R. Fiedler, W. Cochran, and P. Suriyamongkol. Proceedings 16th Int. Meshing Roundtable, October 2007.

*A Multiresolution Representation for Massive Meshes.* E. Shaffer and M. Garland. IEEE Transactions on Visualization and Computer Graphics, March-April 2005.

*A Multiphase Approach to Efficient Surface Simplification.* M. Garland and E. Shaffer. Proceedings of IEEE Visualization 2002, October 2002.

*Efficient Adaptive Simplification of Massive Meshes.* E. Shaffer and M. Garland. Proceedings of IEEE Visualization 2001, October 2001.

*Real-Time Immersive Performance Visualization and Steering.* E. Shaffer and D. Reed. ACM SIGGRAPH Computer Graphics Newsletter, May 2000.

*Virtue: Immersive Performance Visualization of Parallel and Distributed Applications.* E. Shaffer, S. Whitmore, B. Schaeffer, and D. Reed. IEEE Computer, December 1999.

## Thesis Committees

*Kristen Schumacher*  
**PhD Physics, University of Illinois, 2025**

*Zoufu Cheng*  
**PhD Electrical and Computer Engineering, University of Illinois, 2014**

## Service

- *Director of Undergraduate Programs, Siebel School of Computing and Data Science 2024-present*
- *Associate Director for Undergraduate Programs, Department of Computer Science 2022-2024*
- *Undergraduate Study Committee 2020-present*

- *CS CARES Committee 2021-2024*
- *Associate Director for Education, IMMERSE Center for Immersive Computing 2022-2023*
- *Capricious Grading Committee 2022-2023*
- *Faculty Senate 2021-2023*
- *Undergraduate Awards Committee 2021-2022*
- *Maker Space Committee 2021-2022*
- *Game Studies and Design Curriculum Committee 2022-Present*
- *INFO Minor Education Committee 2022-Present*

PROFESSIONAL  
ACTIVITIES

*Reviewer for ASEE IL-IN 2021, 2022*  
*Reviewer for ACM SIGCSE 2020, 2021, 2022, 2023*  
*Reviewer for the International Meshing Roundtable 2012, 2015, 2016*  
*Reviewer for ACM SIGGRAPH 2003, 2010*  
*Reviewer for IEEE Visualization 2004 – 2007*  
*Reviewer for InfoVis 2004 – 2007*  
*Reviewer for Elsevier journal Parallel Computing*  
*Reviewer for IEEE Computer Graphics and Applications*  
*Member of the IEEE Computer Society*