

# Hanqi Guo

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## CONTACT

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## RESEARCH HIGHLIGHTS

I work on **big data visualization and visual analytics**, which are increasingly important for analyzing and understanding insights hidden in the data. My research focus is on visualizing large-scale multivariate and uncertain data, which requires **theories**, **scalabilities**, and **designs** in visualization techniques. The applications include climate, weather, transportation, high performance computing, and material sciences.

I have published more than 30 refereed research papers in top visualization journals and conferences since 2010, including 11 papers in IEEE Transactions on Visualization and Computer Graphics (8 from IEEE VIS conferences) and 12 papers in IEEE Pacific Visualization Symposiums. I also received the 2017 Postdoctoral Performance Award in Basic Research in Argonne National Laboratory.

## POSITIONS HELD

**Assistant Computer Scientist**, Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, IL, **August 2017–present**

**Fellow**, Northwestern University Argonne National Laboratory Institute for Science and Engineering, Northwestern University, Evanston, IL, **September 2017–present**

**Postdoctoral Appointee**, Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, IL, **August 2014–August 2017**

## EDUCATION

**Ph.D.** in Computer Science **September 2009–July 2013**  
Peking University, Beijing, China  
Dissertation: “Scalable Visual Analysis on Pathlines in Large-Scale Flow Field Data”  
Advisor: Prof. Xiaoru Yuan

**B.S.** in Mathematics and Applied Mathematics **September 2005–June 2009**  
Beijing University of Posts and Telecommunications, Beijing, China

## REFEREED JOURNAL PAPERS

- **Hanqi Guo**, Wenbin He, Sangmin Seo, Han-Wei Shen, Emil Mihai Constantinescu, Chunhui Liu, and Tom Peterka, “Extreme-Scale Stochastic Particle Tracing for Uncertain Unsteady Flow Visualization and Analysis.” *IEEE Transactions on Visualization and Computer Graphics*, 2018. (Accepted)
- Sheng Di, **Hanqi Guo**, Rinku Gupta, Eric R. Pershey, Marc Snir, and Franck Cappello, “Exploring Properties and Correlations of Fatal Events in a Large-Scale HPC System.” *IEEE Transactions on Parallel and Distributed Systems*, 2018. (Accepted)
- Jun Tao, Martin Imre, Chaoli Wang, Nitesh V. Chawla, **Hanqi Guo**, Gökhan Sever, and Seung Hyun Kim, “Exploring Time-Varying Multivariate Volume Data Using Matrix of Isosurface Similarity Maps.” *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis ’18)*, 2018. (Accepted)
- Jun Han, Jun Tao, **Hanqi Guo**, Danny Z. Chen, and Chaoli Wang, “Flow Field Reduction via Reconstructing Vector Data from 3D Streamlines Using Deep Learning.” *IEEE Computer Graphics and Applications*, 2018. (Accepted; Argonne Summer Student Work)
- Jiang Zhang, **Hanqi Guo**, Xiaoru Yuan, Fan Hong, and Tom Peterka, “Dynamic Load Balancing Based on Constrained K-D Tree Decomposition for Parallel Particle Tracing.” *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis ’17)*, 24(1):954–963, 2018. (Acceptance rate: 23/120=19.2%; Argonne summer student work)
- Fan Hong, Chongke Bi, **Hanqi Guo**, Kenji Ono, and Xiaoru Yuan, “Compression-based Integral Curve Data Reuse Framework for Flow Visualization.” *Journal of Visualization*, 20(4):859–874, 2017.
- Richen Liu, **Hanqi Guo**, and Xiaoru Yuan, “User-Defined Feature Comparison for Vector Field Ensembles.” *Journal of Visualization*, 20(2):217–229, 2017.
- Dingwen Tao, Sheng Di, **Hanqi Guo**, Zizhong Chen, and Franck Cappello, “Z-checker: A Framework for Assessing Lossy Compression of Scientific Data.” *International Journal of High Performance Computing Applications*, 2017. (Accepted)

- **Hanqi Guo**, Wenbin He, Tom Peterka, Han-Wei Shen, Scott M. Collis, and Jonathan J. Helmus, “Finite-Time Lyapunov Exponents and Lagrangian Coherent Structures in Uncertain Unsteady Flows.” *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE PacificVis ’16)*, 22(6):1672–1682, 2016. (Acceptance rate: 30/97=30.92%; directed to TVCG 6/97=6.2%)
- Carolyn L. Phillips, **Hanqi Guo** (Co-First Author), Tom Peterka, Dmitry Karpeyev, and Andreas Glatz, “Tracking Vortices in Superconductors: Extracting Singularities from a Discretized Complex Scalar Field Evolving in Time.” *Physical Review E: Statistical, Nonlinear, and Soft Matter Physics*, 93(023305), 2016.
- **Hanqi Guo**, Carolyn L. Phillips, Tom Peterka, Dmitry Karpeyev, and Andreas Glatz, “Extracting, Tracking, and Visualizing Vortices in 3D Complex-Valued Superconductor Simulation Data.” *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis ’15)*, 22(1):827–836, 2016. (Acceptance rate: 33/134=24.6%)
- **Hanqi Guo**, Jiang Zhang, Richen Liu, Lu Liu, Xiaoru Yuan, Jian Huang, Xiangfei Meng, and Jingshan Pan, “Advection-based Sparse Data Management for Visualizing Unsteady Flow.” *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis ’14)*, 20(12):2555–2564, 2014. (Acceptance rate: 35/136=25.7%)
- Fan Hong, Chufan Lai, **Hanqi Guo**, Enya Shen, Xiaoru Yuan, and Sikun Li, “FLDA: Latent Dirichlet Allocation Based Unsteady Flow Analysis.” *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis ’14)*, 20(12):2545–2554, 2014. (Acceptance rate: 35/136=25.7%)
- Richen Liu, **Hanqi Guo**, and Xiaoru Yuan, “Seismic Structure Extraction Based on Multi-scale Sensitivity Analysis.” *Journal of Visualization*, 17(3):157–166, 2014.
- **Hanqi Guo**, Xiaoru Yuan, Jian Huang, and Xiaomin Zhu, “Coupled Ensemble Flow Line Advection and Analysis.” *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE SciVis ’13)*, 19(12):2733–2742, 2013. (Acceptance rate: 31/126=24.6%)
- **Hanqi Guo**, He Xiao, and Xiaoru Yuan, “Scalable Multivariate Volume Visualization and Analysis based on Dimension Projection and Parallel Coordinates.” *IEEE Transactions on Visualization and Computer Graphics*, 18(9):1397–1410, 2012.
- **Hanqi Guo**, Ningyu Mao, and Xiaoru Yuan, “WYSIWYG (What You See Is What You Get) Volume Visualization.” *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE Vis ’11)*, 17(3):2106–2114, 2011. (Acceptance rate: 49/194=25.3%)
- Xiaoru Yuan, He Xiao, **Hanqi Guo**, Peihong Guo, Wesley Kendall, Jian Huang, and Yongxian Zhang, “Scalable Multi-variate Analytics of Seismic and Satellite-based Observational Data.” *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEE Vis ’10)*, 16(3):1413–1420, 2010. (Acceptance rate: 49/185=26.4%)
- Wenbin He, **Hanqi Guo**, Tom Peterka, Sheng Di, Franck Cappello, and Han-Wei Shen, “Parallel Partial Reduction for Large-Scale Data Analysis and Visualization.” In *Proceedings of IEEE Symposium on Large Data Analysis and Visualization*, Berlin, Germany, October 21, 2018. (Accepted, Honorable Mention Award, Argonne summer student work)
- **Hanqi Guo**, Sheng Di, Rinku Gupta, Tom Peterka, and Franck Cappello, “La VALSE: Scalable Log Visualization for Fault Characterization in Supercomputers.” In *Proceedings of EuroGraphics Symposium on Parallel Graphics and Visualization (EGPGV ’18)*, pages 91–100, Brno, Czech Republic, June 4, 2018.
- Jiang Zhang, **Hanqi Guo**, Xiaoru Yuan, and Tom Peterka, “Dynamic Data Repartitioning for Load-Balanced Parallel Particle Tracing.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’18)*, pages 86–95, Kobe, Japan, April 10–13, 2018. (Argonne summer student work)
- Xin Liang, Sheng Di, Dingwen Tao, Sihuan Li, Shaomeng Li, **Hanqi Guo**, Zizhong Chen, and Franck Cappello, “Error-Controlled Lossy Compression Optimized for High Compression Ratios of Scientific Datasets.” In *Proceedings of IEEE International Conference on BIG DATA*, Seattle, WA, December 10–13, 2018. (Accepted; Acceptance rate: 98/518=18.9%)
- Jong Youl Choi, Choong-Seock Chang, Julien Dominski, Scott Klasky, Gabriele Merlo, Eric Suchyta, Mark Ainsworth, Bryce Allen, Franck Cappello, Michael Churchill, Philip Davis, Sheng Di, Greg Eisenhauer, Stephane Ethier, Ian Foster, Berk Geveci, **Hanqi Guo**, Kevin Huck, Frank Jenko, Mark Kim, James Kress, Seung-Hoe Ku, Qing Liu, Jeremy Logan, Allen Malony, Kshitij Mehta, Kenneth Moreland, Todd Munson, Manish Parashar, Tom Peterka, Norbert Podhorszki, Dave Pugmire, Ozan Tugluk, Ruonan Wang, Ben Whitney, Matthew Wolf, and Chad Wood, “Coupling Exascale Multiphysics Applications: Methods and Lessons Learned.” In *Proceedings of IEEE International Conference on eScience 2018*, Amsterdam, Netherlands, October 29–November 1, 2018. (Accepted)

- Fan Hong, Siming Chen, **Hanqi Guo**, Xiaoru Yuan, Jian Huang, and Yongxian Zhang, “Visual Eexploration of Ionosphere Disturbances for Earthquake Research.” *SA’17: Proceedings of SIGGRAPH Asia 2017 Symposium on Visualization*, Bangkok, Thailand, November 27–30, 2017.
- **Hanqi Guo**, Tom Peterka, and Andreas Glatz, “In Situ Magnetic Flux Vortex Visualization in Time-Dependent Ginzburg-Landau Superconductor Simulations.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’17)*, pages 71–80, Seoul, Korea, April, 18–21, 2017. (Acceptance rate: 29/99=29.3%)
- Qingya Shu, **Hanqi Guo**, Jie Liang, Limei Che, Junfeng Liu, and Xiaoru Yuan, “*EnsembleGraph*: Interactive Visual Analysis of Spatialtemporal Behaviors for Ensemble Simulation Data.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’16)*, pages 56–63, Taipei, April 12–15, 2016. (Acceptance rate: 30/97=30.9%)
- Jiang Zhang, **Hanqi Guo**, and Xiaoru Yuan, “Efficient Unsteady Flow Visualization with High-Order Access Dependencies.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’16)*, pages 82–97, Taipei, April 12–15, 2016. (Acceptance rate: 30/97=30.9%)
- Richen Liu, **Hanqi Guo**, Jiang Zhang, and Xiaoru Yuan, “Comparative Visualization of Vector Field Ensembles Based on Longest Common Subsequence.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’16)*, pages 96–103, Taipei, April 12–15, 2016. (Acceptance rate: 30/97=30.9%)
- Richen Liu, **Hanqi Guo**, and Xiaoru Yuan, “A Bottom-Up Scheme for User-Defined Feature Comparison in Ensemble Data.” In *Proceedings of SIGGRAPH Asia 2015 Symposium on Visualization in High Performance Computing*, pages 10:1–10:4, Kobe, Japan, November 2–5, 2015.
- **Hanqi Guo**, Fan Hong, Qingya Shu, Jiang Zhang, Jian Huang, and Xiaoru Yuan, “Scalable Lagrangian-based Attribute Space Projection for Multivariate Unsteady Flow Data.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’14)*, pages 33–40, Yokohama, Japan, Mar. 4–7, 2014. (Acceptance rate: 29/99=29.3%)
- **Hanqi Guo**, Wei Li, and Xiaoru Yuan, “Transfer Function Map.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’14)*, Notes Paper, pages 262–266, Yokohama, Japan, Mar. 4–7, 2014.
- **Hanqi Guo** and Xiaoru Yuan, “Local WYSIWYG Volume Visualization.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’13)*, pages 65–72, Sydney, NSW, Australia, Feb. 26–Mar. 1, 2013. (Acceptance rate: 34/118=28.8%)
- **Hanqi Guo**, Xiaoru Yuan, Jie Liu, Guihua Shan, Xuebin Chi, and Fei Sun, “Interference Microscopy Volume Illustration for Biomedical Data.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’12)*, pages 177–184, Songdo, Korea, Feb. 28–Mar. 2, 2012. (Acceptance rate: 30/89=33.7%)
- **Hanqi Guo**, He Xiao, and Xiaoru Yuan, “Multi-Dimensional Transfer Function Design based on Flexible Dimension Projection Embedded in Parallel Coordinates.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’11)*, pages 19–26, Hong Kong, March 1–4, 2011. (Acceptance rate: 27/81=33.3%)
- **Hanqi Guo**, Zuchao Wang, Bowen Yu, Huijing Zhao, and Xiaoru Yuan, “TripVista: Triple Perspective Visual Trajectory Analytics and Its Application on Microscopic Traffic Data at a Road Intersection.” In *Proceedings of IEEE Pacific Visualization Symposium (PacificVis ’11)*, pages 163–170, Hong Kong, March 1–4, 2011. (Acceptance rate: 27/81=33.3%)

REFEREED  
WORKSHOP  
PAPERS

- Mark Kim, James Kress, Jong Youl Choi, Norbert Podhorszki, Scott Klasky, Matthew Wolf, Kshitij Mehta, Kevin Huck, Berk Geveci, Sujin Phillip, Robert Maynard, **Hanqi Guo**, Tom Peterka, Kenneth Moreland, Choong-Seock Chang, Julien Dominski, Michael Churchill, and David Pugmire, “In Situ Analysis and Visualization of Fusion Simulations: Lessons Learned.” *ISC Workshop on In Situ Visualization*, 2018.

UNREFEREED  
PAPERS

- Ian Foster, Mark Ainsworth, Bryce Allen, Julie Bessac, Franck Cappello, Jong Youl Choi, Emil Constantinescu, Philip E. Davis, Sheng Di, Wendy Di, **Hanqi Guo**, Scott Klasky, Kerstin Kleese Van Dam, Tahsin Kurc, Qing Liu, Abid Malik, Kshitij Mehta, Klaus Mueller, Todd Munson, George Ostouchov, Manish Parashar, Tom Peterka, Line Pouchard, Dingwen Tao, Ozan Tugluk, Stefan Wild, Matthew Wolf, Justin M. Wozniak, Wei Xu, and Shinjae Yoo, “Computing Just What You Need: Online Data Analysis and Reduction at Extreme Scales.” In *Proceedings of International Conference on Parallel and Distributed Computing (EuroPar ’17)*, pages 3–19, 2017.

PAPERS UNDER  
REVIEW

- Wenbin He, **Hanqi Guo**, Han-Wei Shen, and Tom Peterka, “eFESTA: Ensemble Feature Exploration with Surface Density Estimates.” Submitted to *IEEE Transactions on Visualization and Computer Graphics*, 2018. (Minor Revision; Argonne Summer Student Work)

CONFERENCE  
POSTERS  
(SELECTED)

- Qingya Shu, **Hanqi Guo**, Limei Che, Weicong Lyu, and Xiaoru Yuan, “*EnsembleGraph*: Visualizing Variations for Ensemble Simulation Exploration.” *IEEE VIS 2014 (Poster)*, Paris, France, November 9–14, 2014. (Honorable Mention Award)
- **Hanqi Guo**, He Xiao, Min Lu, and Xiaoru Yuan, “Scalable Multivariate Volume Visualization and Analysis.” *IEEE Symposium on Large-Scale Data Analysis and Visualization 2011 (Poster)*. Providence, RI, October 23–24, 2011.
- **Hanqi Guo**, Carolyn L. Phillips, Tom Peterka, Dmitry Karpeyev, and Andreas Glatz, “Extracting, Tracking, and Visualizing Magnetic Flux Vortices in 3D Complex-Valued Superconductor Simulation Data.” *SciDAC PI Meeting*, Bethesda, MD, July 22–24, 2015.

PROFESSIONAL  
SERVICE

#### Conference Program Committee Members

- IEEE VIS (SciVis) 2015–2017
- IEEE Pacific Visualization Symposium 2016–2017
- IEEE Pacific Visualization Symposium, Visualization Notes 2015–2019
- SIGGRAPH Asia Symposium on Visualization 2017
- Eurographics Symposium on Parallel Graphics and Visualization (EGPGV) 2017–2019
- International Symposium on Visual Computing (ISVC) 2018
- China Visualization and Visual Analytics Conference (ChinaVis) 2014–2018
- HPC China, Visualization Track 2014–2018
- ISAV 2016: In Situ Infrastructures for Enabling Extreme-scale Analysis and Visualization 2016

#### Conference Organizing Committee Members

- IEEE VIS Conference, Fast Forwards & Video Previews Co-Chair 2017
- IEEE VIS Conference, Student Volunteer Co-Chair 2015
- China Visualization and Visual Analytics Conference (ChinaVis) 2017–2018

#### Conference Best Paper Committee Members

- Eurographics Symposium on Parallel Graphics and Visualization (EGPGV) 2018

#### Journal Guest Editors

- Journal of Scientific Computing, Springer, Special Issue on In Search of Extreme Scale Scientific Computing Paradigms 2019

#### Journal Paper Reviewers

- Transactions on Visualization and Computer Graphics (TVCG), IEEE 2014, 2016–2017
- Transactions on Parallel and Distributed Systems (TPDS), IEEE 2018
- Computer Graphics Forum (CGF), Wiley 2015, 2018
- The Visual Computer, Springer 2017
- Journal of Visualization (JOV), Springer 2014–2018
- Information Visualization, SAGE Publications 2016, 2018
- Journal of Visual Languages and Computing, Elsevier 2018
- Journal of Computer Science and Technology (JCST), Springer 2013

#### Conference Paper External Reviewers

- IEEE Scientific Visualization Conference (IEEE SciVis) 2012, 2014, 2018
- IEEE Information Visualization Conference (IEEE InfoVis) 2016
- Eurographics/IEEE-VGTC Symposium on Visualization (EuroVis) 2015–2018
- IEEE Pacific Visualization Symposium (PacificVis) 2014–2015
- Eurographics/IEEE-VGTC Symposium on Visualization (EuroVis), State-of-the-Art Reports (STARs) 2016–2017
- IEEE Symposium on Biological Data Visualization (BioVis) 2013
- International Conference on Computer-Aided Design and Computer Graphics (CAD/CG) 2013
- International Conference on Information Visualization Theory and Applications (IVAPP) 2014

#### Proposal Reviewers

- U.S. National Science Foundation 2015

#### Conference Session Chairs

- IEEE VIS, Flow Visualization Session 2017

- IEEE Symposium on Large Data Analysis and Visualization, Uncertain Data Session **2018**
- IEEE Pacific Visualization Symposium (PacificVis), Molecular Visualization Session **2016**

POSTDOC  
SUPERVISION

**Argonne National Laboratory**

- Mukund Raj, since May 2018. Working on uncertainty visualization

STUDENT  
SUPERVISION

**Argonne National Laboratory**

- Martin Imre (University of Notre Dame), Summer 2018. Worked on in situ feature tracking using deep learning
- Jun Han (University of Notre Dame), Summer 2018. Worked on vector field reconstruction using deep learning, which is accepted by IEEE CG&A in 2018
- Wenbin He (Ohio State University), Summer 2016. Worked on parallel partial reduction algorithms for large-scale data analysis and visualization, which led to an honorable mention award paper at IEEE LDAV in 2018
- Jiang Zhang (Peking University), Summer 2016. Worked on dynamic load balancing algorithms for flow visualization, which led to one IEEE VIS/TVCG paper in 2017 and one PacificVis paper in 2018
- Wenbin He (Ohio State University), Summer 2015. Worked on FTLE and LCS computation of uncertain flows, which led to an IEEE PacificVis/TVCG publication in 2016

TEACHING

- **Tutorial Organizer**, Recent Feature Tracking Techniques, Co-Organized with Harsh Bhatia, Tino Weinkauff, Gunther H. Weber, and Han-Wei Shen. IEEE VIS 2018, Berlin, Germany
- **Tutorial Organizer**, Recent Advancement in Feature-based Flow Visualization, Co-Organized with Jun Tao, Bei Wang, Christoph Garth, and Tino Weinkauff. IEEE VIS 2016, Baltimore, Maryland, October 23, 2016
- **Invited Speaker**, the 7th Visualization Summer School of Peking University, Beijing, China, July 9–16, 2015
- **Invited Speaker**, the 6th Visualization Summer School of Peking University, Beijing, China, July 17–24, 2014
- **Teaching Assistant**, the 3rd Visualization Summer School of Peking University, Beijing, China, July 15–25, 2011

INVITED TALKS

- 4/25/2018, Dynamic Load Balancing for Particle Tracing. Department of Energy Computer Graphics Forum (DOECGF), Savannah, GA
- 10/20/2017, Uncertainties in Big Data Visualization: Theory, Scalability, and Design. University of Notre Dame, South Bend, IN
- 6/1/2017, Scalable Algorithms for the Visualization and Analysis of Uncertain Flows. Department of Electrical Engineering and Computer Science, University of Tennessee, Knoxville, TN
- 5/3/2017, In Situ Magnetic Flux Vortex Visualization in Time-Dependent Ginzburg-Landau Superconductor Simulations. Department of Energy Computer Graphics Forum (DOECGF), National Renewable Energy Laboratory (NREL), Golden, CO
- 4/19/2017, Scalable Algorithms for the Visualization and Analysis of Uncertain Flows. Department of Computer Science, Purdue University, West Lafayette, IN
- 4/12/2017, Uncertainties in Big Data Visualization: Theory, Scalability, and Design. Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, IL
- 10/23/2016, Scalable Ensemble and Uncertain Flow Field Visualization, IEEE VIS 2016 Tutorial “Recent Advancements of Feature-based Flow Visualization and Analysis” with Jun Tao, Bei Wang, Christoph Garth, and Tino Weinkauff. Baltimore, MD
- 4/28/2016, FTLE and LCS in Uncertain Unsteady Flows. Department of Energy Computer Graphics Forum (DOECGF), Pacific Grove, CA
- 7/18/2015, Panelist, How to Write a High Quality Paper. ChinaVis 2015 Conference, Tianjin, China
- 7/11/2015, Large Data Visualization Combining SciVis and InfoVis. the 7th Visualization Summer School, Peking University, Beijing, China
- 7/7/2014, Large Scientific Data Visualization and Visual Analytics. the 6th Visualization Summer School, Peking University, Beijing, China
- 1/21/2014, Scalable Lagrangian-based Visual Analysis on Multivariate Ensemble Simulations. Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, IL

HONOURS AND  
AWARDS

- Honorable Mention Paper Award, IEEE Symposium on Large Data Analysis and Visualization, Berlin, Germany **2018**

- Outstanding Postdoctoral Performance Award in Basic Research, Argonne National Laboratory, Argonne, IL **2017**
- Honorable Mention Paper Award, SIGGRAPH Asia 2017 Symposium on Visualization, Bangkok, Thailand **2017**
- Honorable Mention Poster Award, IEEE VIS, Paris, France **2014**
- Excellent Paper Award, The Annual Academic Conference for Ph.D. Candidates, China Association for Science and Technology, Kunming, China **2014**
- Top 10 Student Paper Award, School of EECS, Peking University **2014**
- SEMPIO Scholarship, Peking University **2013**
- National Scholarship for Graduate Students, Ministry of Education, China **2012**
- Founder Group Scholarship, Peking University **2012**
- Top 10 Student Paper Award, School of EECS, Peking University **2012**
- Excellent Paper Award, Academician Shi Qingyun Fund, Peking University **2012**
- Excellent Undergraduate Thesis Award, Beijing Univ. of Posts and Telecoms. **2009**
- Excellent Student Leader Award, Beijing Univ. of Posts and Telecoms. **2008**