CURRICULUM VITAE

JIAN CHEN

591 Dreese Laboratories
Computer Science and Engineering
The Ohio State University
2015 Neil Ave, Columbus, OH 43210

Phone: 614.688.1981 (OSU)
Fax: 614.292.2911 (OSU)
Email: chen.8028@osu.edu
http://www.cse.osu.edu/~chen.8028

I study the interdisciplinary science of human-centered visual computing and 3D interaction in virtual reality.
See my Google Scholar citations: https://scholar.google.com/citations?hl=en&user=9R1aERQAAAAJ&view_op=list_works&sortby=pubdate.

I am interested in filling in the knowledge gaps to facilitate a form of visual intelligence - where intelligence is not just about pattern recognition but about knowing the fundamentals of how humans/algorithms understand the world and how to build a scene most effectively to assist human decisions.

- Solving real-world problems as humans and AI algorithms learn more about how we see and act in the world;
- Showing highly complex phenomena (e.g., quantum physics, brain connectome) that we haven't visualized yet;
- Explaining and understanding viewers' observations;
- Understanding principles of visual representations.

I am equally interested in teaching, especially using methods that integrate research and teaching.

Three fun facts about me:

- I got my BS degree at age 19 (peer pressure);
- I hand-drew engineering graphs well enough to let people believe they were drawn by computers (nurture);
- I can write with both hands simultaneously (nature).

EDUCATION

- Brown University, Computer Science and BioMed, postdoc
- Virginia Tech, Computer Science, Ph.D.
  - *Design and Evaluation of Domain-Specific Interaction Techniques in the AEC Domain for Immersive Virtual Environments, Advisor: Doug A. Bowman*
- University of Houston, Computer Science, MS
  - *A Virtual Environment System for the Comparative Study of DOME and HMD, Advisor: R. Bowen Loftin*
- Tianjin University / Tsinghua University (joint program), Mechanical Engineering / Precision Instrument, MS, 2000
  - *A Method for Synthesizing Images Captured from Multiple Viewpoints, Advisors: Da Lu and Lanfeng Sun*

EXPERIENCE

- 5/15/2023-8/14/2023, University of Stuttgart, Germany, Visiting Prof., VISUS.
- 2018-, The Ohio State University, Assoc. Prof. (with tenure), Computer Science and Engineering
- 2017-2018, The Ohio State University (OSU), Assoc. Prof. (tenure-track), Computer Science and Engineering
- 2017, Harvard University, Visiting Researcher
- 2012-2017, University of Maryland, Baltimore County (UMBC), Asst. Prof. (tenure-track), CS
- 2006-2009, Brown University, Research Associate, Computer Science and BioMed
- 2002-2006, Virginia Tech, Research Assistant, Computer Science
- 2000-2002, University of Houston, Research Assistant, Computer Science / Virtual Environment Research Institute (VERI)

HONORS RECEIVED

- UMBC Innovation Fellow, 2016
- UMBC Provost Teacher-Scholar, 2015
- Best paper award: honorable mention (on physiology data visualization), BioVis, 2013
- Best poster award (on navigation techniques for geoscience data visualization), ACM I3D, 2009
- Center for Vision Research fellowship (on visualization theory), Brown University, 2008-2009
- Best poster candidate (on multiple layer visualization), IEEE Visualization, 2007
- Fellowship, Brown University Vision Science, 2007
- Best paper award (on multiple-view information visualization), Human Factor and Ergonomics Society (HFES) Annual Meeting, 2003
- Member, Upsilon Pi Epsilon (Computer Science Honorary Society), inducted in 2002
- Graduate student fellowship, University of Houston, 2000-2002
- Best student awards, Tianjin University, 1998-1999
- Best thesis proposal award, Tianjin University, 1998
- National Challenge Cup Winner (2nd place, among all college students in China on excellence in mechanical engineering design), 1999

Grants

Thanks for the generous support from NSF, NIST, NIH, and DoD totaling $12.5 million. Of this amount, $3.5 million are under my direct supervision. I have successfully collaborated with colleagues in biology, biomedicine, neurology, physics, electronic health records studies, and engineering, after my PhD work.

HIGHLY COMPETITIVE RESEARCH AND INFRASTRUCTURE AWARDS

- **NIH R01 1-U54**CA287392-01**.** The Ohio State University Tobacco Center of Regulatory Science (OSU-TCORS), 9/1/2023 - 8/31/2028, Theodore L. Wagener, Peter G. Shields, Ce Shang, and others ~**$4,044,972** (responsible: 1.2 months + 1 RA).
- **(Co-I) NIH R01** DA053294-01A1**:** The impact of excise tax structures for retail marijuana on marijuana consumption, 5/15/2022 - 3/31/2027, with Ce Shang (PI), John Bridges, Bo Lu, Yuyan She, **$3,653,978** (responsible: 0.6 months + 1 RA).
- **(Co-PI) NSF OAC**-1945347 EAGER: Bridging the Last Mile: Towards an Assistive Cyber-infrastructure for Accelerating Computationally Driven Science, 9/13/2019-12/31/2024, with Rajiv Ramnath (CS) and Bryan Carstens (Biology), $**299,687**.
- (**PI**) **NSF CNS**-1531491 (*Major Research Infrastructure Award*)**:** *Acquisition of π²: a CAVE2-Inspired Display for Discovery Science, Creativity, and Education*, 8/1/2015-7/31/2018, Jian Chen, Penny Rheingans, Michael Summers, Craig Saper, and Karl V. Steiner, **$360,000** (from NSF) **+ $154,285** match from UMBC = **$514,285.**
- (**Participating-PI**) **DoD USAMRAA**-13318046 (through the Geneva Foundation): *An Interactive Visualization Framework to Support Exploration and Analysis of TBI/PTSD Clinical Data*, 4/1/2015-7/31/2017, Jesus Caban, Gerard Riedy, Joseph Bleiberg, and Jian Chen, **Responsible*:* $264,217 of $452,335** (1 graduate student).
- (**Sole-PI**) **NIST MSE**-70NANB13H181: *Understanding Immersive Metrology Datasets: Scientific and Information Visualization Integration and Hybrid Input*, 9/1/2013-8/31/2018, Jian Chen, **Responsible**: **$438,613 of $438,613** (1 graduate student).
- (**Site-PI**) **NSF DBI**-1260795: *ABI Development: PathBubbles for Dynamic Visualization and Integration of Biological Information*, 7/1/2012-6/30/2016, Carl J. Schmidt (PI, Biology, University of Delaware), Cecilia N. Arighi (Biology, U of Delaware), Vijay K. Shanker (Biology, U of Delaware), Fiona M. McCarthy (Basic Sciences, Arizona State University), Jian Chen, **Responsible**: **$400,007 of $1,043,110** (1 postdoc and 1 graduate student).

- (**Lead-PI**) **NSF IIS**-1018769 / 1302755: *Supporting Knowledge Discovery Through a 3D Scientific Visualization Language*, 11/1/2010-10/31/2015, Jian Chen, David H. Laidlaw (CS, Brown), and Alexander P. Auchus (Neurology, University of Mississippi Medical Center), **Responsible**: **$205,001 of $499,573** (2 graduate students).
- (**Co-PI**) **NSF DBI**-1062057: *RCN-UBE INCUBATOR: Visual Analytics in Biology Curriculum Network*, 4/11/2011-4/10/2012, Raphael D. Isokpehi (PI, Biology, JSU), Susan Bridges (CS, MSU), Hari H. Cohly (Biology, JSU), Edu B. Suarez-Martinez (Biology, U of Michigan), and Jian Chen, **Responsible**: **$0 of $50,000**.
- (**Co-PI**) **NSF DUE**-0817106: *Integrating Web-Based Visualization with Structural Systems Understanding to Improve the Technical Education of Architects*, 8/1/2009-7/31/2012, Mehdi Setareh (PI, Architecture, Virginia Tech), Michael Ermann (BC, USC), Nicholas Polys (CS, Virginia Tech), Brett Jones (Architecture, Virginia Tech), and Jian Chen, **Responsible**: **$0 of $499,833**.

Competitive Sub-award and Seed-Grants Based On Intellectual Merits

- (**Sub-award**) **DHS**: *Sport Security Training and Evacuation*, 5/2010-12/2010. PI: Lou Marciani, **$30,000** (1 graduate student).
- (**Sole-PI**) **NSF EPS**-0903234 (seed grant through Mississippi State University): *Analysis and Visualization of Time-Varying Data for Optimizing Knowledge Discovery in Biology,* 9/1/2010-8/30/2012, Jian Chen, **$69,138** (funding rate: 8%) (1 graduate student).
- (**Sole-PI**) **NSF EPS**-0903234 (seed grant through Mississippi State University): *Storytelling Bubbles: Integrating Symbolic Representation, Data Ink Manipulation, and Metaphorical Interface for Fluid Time-Varying Biological Data Analysis*, 9/1/2011-8/30/2013, Jian Chen, **$35,979 of $35,979** (funding rate: 8%) (1 graduate student).

NSF Research Experiences for Undergraduates (REU) and Workshop Grant

- (**Sole-PI**) **NSF CNS**-1712831 (**REU** supplement for CNS-1531491), *Acquisition of π^2: a CAVE2-Inspired Display for Discovery Science, Creativity, and Education*, 8/1/2015-7/31/2018, Jian Chen, **Responsible**: **$17,994** of $17,994 (2 undergraduate students).
- **(Sole-PI) NSF IIS**-1444644: *Workshop*: *Doctoral Colloquium at IEEE VIS 2014*, 7/1/2014-6/30/2015, Jian Chen, **$20,880** (doctoral student funds).
- **(Sole-PI) NSF DBI**-1341352 **(REU** Supplement for DBI-1260795), *ABI Development: PathBubbles for Dynamic Visualization and Integration of Biological Information*, 6/1/2013-8/31/2016, Jian Chen, **Responsible**: **$6,000** of $6,000 (1 undergraduate student).
- **(Sole-PI) NSF IIS**-1341254 (**REU** Supplement for IIS-1018769), *Supporting Knowledge Discovery Through a 3D Scientific Visualization Language*, 6/1/2013 – 8/31/2015, Jian Chen, **Responsible**: **$12,946 (**2 undergraduate students).
- **(Co-PI) NSF IIS**-1341912: *Workshop: Doctoral Colloquium at IEEE VIS 2013*, 7/1/2013-6/30/2014, Niklas Elmqvist, Remco Chang, and Jian Chen, **$20,000** (doctoral student funds).

University Support and Fellowships

- **(Co-PI) Amplifying Intelligence: A Convergence Approach to Human-Centered Computing,** $100K. 2/2024-2/2025, w/ PI: Arnab Nandi.
- **(PI) The Ohio State University, Translational Data Analytics Institute, "**Differentiating Robustness of Cancer Diagnosis by Expertise-Aware Intelligent Environment," $50,000. 2022-2023.
- **(Co-PI) The Ohio State University, Presidential Accelerator Seed Grant,** $50,000. 2022.
- **(Co-PI) UMBC COEIT:** *Establishing an Integrated Experimental-Computational Pipeline for Predictive Modeling in Cancer Immunotherapy,* Gregory Szeto and Jian Chen, **$40,000**. 2016-2018.
- **(PI) UMBC Hrabowski Fund for Innovation**, *"Virtual Reality Design for Science": Integrating Research, Communication, and Learning for Interdisciplinary Training*, Jian Chen, Marc Olano, and Adam Bargteil, **$24,598**.
- (**Sole-PI**) **UMBC Summer Faculty Fellowship**, *Understanding Causality Graph Visualization for Knowledge Discovery in Human Physiology Modeling*, Jian Chen, 6/1/2013 – 8/31/2013, **$6,000** of $6,000.

- (**Sole-PI**) **USM: President Lucas Endorsement Award for Faculty Research Excellence**, *Analysis and Visualization of Time-Varying Data for Optimizing Knowledge Discovery in Biology*, Jian Chen, 10/18/2010-6/17/2011, **$3,843** of $3,843.

DONATIONS

- **$50,000**, Next Century Co., 2016 (for my immersive analytics lab funded through NSF MRI).
- **$5,000,** Nielsen Co., 2015 (for my multivariate data visualization curse).

Publications

I have published in the two broad research areas of visualization (VIS) and virtual reality (VR). These two areas have their own journals and conferences. In VIS, IEEE Transactions on Visualization and Computer Graphics (TVCG) is the top journal, and IEEE VIS is the top conference. In VR, the MIT Presence Journal is the top journal, and the IEEE Virtual Reality is the top conference. Other high-quality venues include ACM Transactions on Applied Perception (TAP), Information Visualization (journal), HFES conference (with a focus on human factors), EuroVR, and EuroVis conferences. Some second-tier venues include PacificVis and VRST. Some recurring symposiums (e.g., BioVis) are competitive. Papers in domain journals (e.g., Human Brain Mapping and BMC Bioinformatics, JMIR) are highly cited.

Outside of Computer Science venues, I have been fortunate to collaborate with scientists who study brains, perform genetic network analyses, and try to do very complex quantum simulations. Those publications (e.g., Nature papers) are mostly because of my visualization side — the analyses were done by the leading authors.

After moving to Ohio State, I have done new work to advance science.

* *Evaluating human-AI differences - I am deeply interested in the differences between natural and artificial intelligence. My collaborators and I begin to establish foundational work by systematically comparing viewers.*
* *Data preparation without labor-intensive human annotations - I would like to free humans from labor-intensive error-prone data annotation processes. I created*
    * *Simulation-based documentation component part extraction algorithms - I was able to generate unlimited numbers of training data for free and use a very small dataset to achieve state-of-the-art document segmentation accuracy for document segmentation tasks.*
    * *Expert habits aided AI tools for cancer research — This is personal — two of my best friends lost their life to cancer during COVID. The lack of training data is more severe than in other domains, due in part to the novelty of digital pathology and the high-cost associated with digitization and annotation. I recently derived a method by harvesting pathologists' viewing habits without interrupting their workflow, to collect training data for free and ultimately help construct low-cost AI tools.*
* *Visual encoding and behavior guidance: I continued the work on large-scale data visualizations from Maryland, which I truly enjoyed. The highly complex quantum physics data let me think of Stu Card's "sense-to-act" cycle and new means to enable effective and efficient actions via sensory coming from effective design.*
* *Visualization typology: With a team of visualization experts, we spent three years constructing a new visualization typology. While each of us sees many different uses, my own interest lies in the things analogous to imageNet | wordNet to Computer Vision, to innovate how we index, design, and evaluate visualization techniques. I am also interested in its usefulness in education to facilitate a new type of visual literacy.*
* *Data scraping, analytics, and NLP: on analyzing scholarly articles for tobacco control policy, partially because addiction and drug overdose deaths in Ohio are the fourth highest in the United States. This is more of fulfilling societal responsibility.*
* *Work on my wish list - visual representations of brain connectome — where my true passion lies.*

REAL-WORLD DATASETS AND SOFTWARE PRODUCTS

We regularly release datasets and software to the public to contribute to open science.

1. **IEEE VIS Figures and Tables Image Dataset (VIS30K),** 2021.
    a. Dataset: https://ieee-dataport.org/open-access/ieee-vis-figures-and-tables-image-dataset.
    b. Online browser: https://visimagenavigator.github.io.

2. **DeepPaperComposer (**from our EMNLP/SDP paper**)**: Method: http://go.osu.edu/deeppapercomposer; Training Data: http://go.osu.edu/vispaper-3k, 2021.
3. **Three Benchmark Datasets for Scholarly Article Layout Analysis** https://ieee-dataport.org/open-access/three-benchmark-datasets-scholarly-article-layout-analysis, 2021. DOI: 10.21227/326q-bf39.
4. **ENIGMA Viewe**r for brain science. Source code: https://www.nitrc.org/projects/enigmaviewer_20/ (this viewer has been used for meta-analyses for the ENIGMA project). Online browser: http://www.enigma-viewer.org/About_the_projects.html, 2017 (Thanks to the ENIGMA team for sponsoring this site).

JOURNAL AND CONFERENCE PAPERS

*Student names are underlined. I put the students' names first even when the ideas were mine and the papers were written primarily by me. I also added asterisks** to undergraduates and class project papers to demonstrate the quality of the teaching and my passion for integrating research and education.*

5. **(UNDER PREPARATION) Quantifying the Sampling Regime for Robust Neural Nets' Graphical Perception**, Shuning Jiang, Meng Ling, Wei-Lun Chao, Ce Shang, Daniel Haehn, Hanspeter Pfister, Jian Chen, *Submitted to IEEE VIS (IEEE Transactions on Visualization and Computer Graphics)*, 2023.
6. (**UNDER PREPARATION**) **An Image-based Visualization Typology,** Jian Chen, Petra Isenberg, Robert S. Laramee, Tobias Isenberg, Michael Sedlmairf, Torsten Möller, *Submitted to IEEE Transactions on Visualization and Computer Graphics*), 2023.

7. **(UNDER REVIEW) Use of Machine Learning Tools in Evidence Synthesis of Tobacco Use among Sexual and Gender Diverse Populations,** Shaoying Ma, Shuning Jiang, Olivia Yang, Xuanzhi Zhang, Yu Fu, Yusen Zhang, Aadeeba Kaareen, Meng Ling, Jian Chen, Ce Shang, JMIR, 2024.
8. (**TO-APPEAR) Applying Natural Language Processing (NLP) Tools to Assess LGBTQ+ Research Gaps in Tobacco Control Literature: A Pilot Study**, Shaoying Ma, Shuning Jiang, Olivia Yang, Xuanzhi Zhang, Yu Fu, Yusen Zhang, Aadeeba Kaareen, Meng Ling, Jian Chen, and Ce Shang, *Building Healthy Academic Communities Journal*, 2023.
9. **GraphDescriptor: Augmenting Node-Link Diagrams with Textural Descriptions**, Jiacheng Pan, Zihan Yan, Zihan Zhou, Xiaodong Zhao, Shenghui Cheng, Dongming Han, Jian Chen, Mingliang Xu, Wei Chen, *IEEE PacificVis*, 177-186, 2023, DOI: 10.1109/PacificVis56936.2023.00027.
10. **Supporting Video Authoring for Communication of Research Results**, Katharina Wünsche, Laura Koesten, Torsten Möller, Jian Chen, ACM International Conference on Interactive Media Experiences, 2023. DOI: 10.1145/3573381.3596157.
11. **Visualization Resources: A Survey,** Xiaoxiao Liu, Mohammad S Alharbi, Jian Chen, Alexandra Diehl, Dylan Rees, Elif E Firat, Qiru Wang, Robert S Laramee, *Information Visualization*, 22(1): 3-30, 2023. DOI: 10.1177/14738716221126992
12. **The Association Between e-Liquid Characteristics adn Its Pricing: Evidence from online Vape Shops**. Shaoying Ma, Shuning Jiang, Theodore Wagener, Darren Mays, Jian Chen, Ce Shang, PLOS one. DOI: 10.1371/journal.pone.0286258.
13. **Synthetic nicotine e-liquids sold in US online vape shops**, Shaoying Ma, Zefeng Qiu, Jian Chen, Ce Shang, *Preventive medicine*, 2023, DOI: 10.1016/j.pmedr.2023.102222.
14. **What types of E-liquid Products were more Likely to Offer Price Promotions?** Qian Yang, Shaoying Ma, Yanyun He, Zefeng Qiu, Jian Chen, and Ce Shang, Tobacco Control, 2023, DOI: 10.1136/tc-2022-057781.
15. **Are Machines More Effective than Humans for Graphical Perception Tasks?** Shuning Jiang, Wei-Lun Chao, Jian Chen, Daniel Haehn, Meng Ling, Ce Shang, Hanspeter Pfister, *Journal of Vision (VSS annual conference abstract)*, 22(14): 3784, 2022. DOI:10.1167/jov.22.14.3784
16. **Evaluating Glyph Design for Showing Large-Magnitude-Range Quantum Spins**, Henan Zhao, Garnett W. Bryant, Wesley Griffin, Judith E. Terrill, and Jian Chen, *IEEE Transactions on Visualization and Computer Graphics,* 1-20, 2022. DOI: 10.1109/TVCG.2022.3232591

17. (arXiv or not peer-reviewed) **Not As Easy As You Think — Experiences and Lessons Learnt from Trying to Create a Bottom-up Visualization Image Typology**, Jian Chen, Petra Isenberg, Robert S. Laramee, Tobias Isenberg, Michael Sedlmair, Torsten Möller, and Han-Wei Shen, *Arxiv*, 2022. https://arxiv.org/pdf/2209.07533.pdf
18. **Excise Taxes and Pricing Activities of E-liquid Products Sold in Online Vape Shops,** Shaoying Ma, Shuning Jiang, Meng Ling, Jian Chen, and Ce Shang, *Tobacco Control*, 2022. DOI:10.1136/tobaccocontrol-2021-057033.
19. **Price Promotions of E-liquid Products Sold in Online Stores**, Shaoying Ma, Shuning Jiang, Meng Ling, Jian Chen, Ce Shang, *International Journal of Environmental Research and Public Health*, May 2022, 19(14), 8870. DOI: 10.3390/ijerph19148870.
20. **Visualization Resources: A Starting Point**, Xiaoxiao Liu, Mohammad Alharbi, Jian Chen, Alexandra Diehl, Elif Firat, Dylan Rees, Qiru Wang, Robert S Laramee, *25th International Conference Information Visualisation* (*IV*), 160-169, 2021. DOI: 10.1109/IV53921.2021.00034.
21. **Document Domain Randomization for Deep Learning Document Layout Extraction**, Meng Ling, Jian Chen, Torsten Möller, Petra Isenberg, Tobias Isenberg, Michael Sedlmair, Robert S Laramee, Han-Wei Shen, Jian Wu, C Lee Giles, *Internal Conference on Document Analysis and Recognition* (*ICDAR*), also in *Lecture Notes in Computer Science*, Lausanne, Switzerland, September 5-10, 2021. DOI:10.1007/978-3-030-86549-8_32 (Oral. Acceptance Rate: 11%).
22. **A simple solution for training data preparation for parsing research papers**, Meng Ling, Jian Chen, DeepPaperComposer: *Proceedings of the First Workshop on EMNLP/Scholarly Document Processing (SDP)*, 91-96, 2021, DOI: 10.18653/v1/P17.
23. **VIS30K: A Collection of Figures from IEEE Visualization Conference Publications**, Jian Chen, Meng Ling, Rui Li, Petra Isenberg, Tobias Isenberg, Michael Sedlmair, Torsten Möller, Robert S. Laramee, Han-Wei Shen, Katharina Wünsche, and Qiru Wang, *IEEE Transactions on Visualization and Computer Graphics*, 27(9):3826 - 3833, 2021. DOI: 10.1109/TVCG.2021.3054916.
24. **A systems-level analysis highlights microglial activation as a modifying factor in common epilepsies,** Andre Altmann, Mina Ryten, Martina Di Nunzio, Teresa Ravizza, Daniele Tolomeo, Regina H Reynolds, Alyma Somani, Marco Bacigaluppi, Valentina Iori, Edoardo Micotti, Rossella Di Sapia, Milica Cerovic, Eleonora Palma, Gabriele Ruffolo, Juan A Botía, Julie Absil, Saud Alhusaini, Marina KM Alvim, Pia Auvinen, Nuria Bargallo, Emanuele Bartolini, Benjamin Bender, Felipe PG Bergo, Tauana Bernardes, Andrea Bernasconi, Neda Bernasconi, Boris C Bernhardt, Karen Blackmon, Barbara Braga, Maria Eugenia Caligiuri, Anna Calvo, Chad Carlson, Sarah J A Carr, Gianpiero L Cavalleri, Fernando Cendes, Jian Chen, Shuai Chen, Andrea Cherubini, Luis Concha, Philippe David, Norman Delanty, Chantal Depondt, Orrin Devinsky, Colin P Doherty, Martin Domin, Niels K Focke, Sonya Foley, Wendy Franca, Antonio Gambardella, Renzo Guerrini, *Neuropathology and Applied Neurobiology,* August 2021, 10.1111/nan.12758.
25. **Exemplar-based Layout Fine-tuning for Node-link Diagrams**, Jiacheng Pan, Wei Chen, Xiaodong Zhao, Shuyue Zhou, Wei Zheng, Mingling Zhu, Jian Chen, Siwei Fu, and Yingcai Wu, *IEEE Transactions on Visualization and Computer Graphics* (*IEEE VIS/InfoVis*), 2020. DOI: 10.1109/TVCG.2020.3030393.
26. **Measuring the Effects of Scalar and Spherical Colormaps on Ensembles of DMRI Tubes**, Jian Chen, Guohao Zhang, Wesley Chiou, David H. Laidlaw, Alexander P Auchus, *IEEE Transactions on Visualization and Computer Graphics*, 2019. DOI: 10.1109/TVCG.2019.2898438.
27. **ENIGMA and Global Neuroscience: A Decade of Large-Scale Studies of the Brain in Health and Disease across more than 40 Countries**, Paul M Thompson, Neda Jahanshad, Christopher RK Ching, Lauren E Salminen, Sophia I Thomopoulos, Joanna Bright, Bernhard T Baune, Sara Bertolín, Janita Bralten, Willem B Bruin, Robin Bülow, Jian Chen, Yann Chye, Udo Dannlowski, Carolien GF De Kovel, Gary Donohoe, Lisa T Eyler, Stephen V Faraone, Pauline Favre, Courtney A Filippi, Thomas Frodl, Daniel Garijo, Yolanda Gil, Hans J Grabe, Katrina L Grasby, Tomas Hajek, Laura KM Han, Sean N Hatton, Kevin Hilbert, Tiffany C Ho, Laurena Holleran, Georg Homuth, Norbert Hosten, Josselin Houenou, Iliyan Ivanov, Tianye Jia, Sinead Kelly, Marieke Klein, Jun Soo Kwon, Max A Laansma, Jeanne Leerssen, Ulrike Lueken, Abraham Nunes, Joseph O'Neill, Nils Opel, Fabrizio Piras, Federica Piras, Merel C Postema, Elena Pozzi, Natalia Shatokhina, Carles Soriano-Mas, Gianfranco Spalletta, Daqiang Sun, Alexander Teumer, Amanda K Tilot, Leonardo Tozzi, Celia Van der Merwe, Eus JW Van Someren, Guido A Van Wingen, Henry Völzke, Esther Walton, Lei Wang, Anderson M Winkler, Katharina Wittfeld, Margaret J Wright, Je-Yeon Yun, Guohao Zhang, Yanli Zhang-James, Bhim M

Adhikari, Ingrid Agartz, Moji Aghajani, André Aleman, Robert R Althoff, Andre Altmann, Ole A Andreassen, David A Baron, Brenda L Bartnik-Olson, Janna Marie Bas-Hoogendam, Arielle R Baskin-Sommers, Carrie E Bearden, Laura A Berner, Premika SW Boedhoe, Rachel M Brouwer, Jan K Buitelaar, Karen Caeyenberghs, Charlotte AM Cecil, Ronald A Cohen, James H Cole, Patricia J Conrod, Stephane A De Brito, Sonja MC de Zwarte, Emily L Dennis, Sylvane Desrivieres, Danai Dima, Stefan Ehrlich, Carrie Esopenko, Graeme Fairchild, Simon E Fisher, Jean-Paul Fouche, Clyde Francks, Sophia Frangou, Barbara Franke, Hugh P Garavan, David C Glahn, Nynke A Groenewold, Tiril P Gurholt, Boris A Gutman, Tim Hahn, Ian H Harding, Dennis Hernaus, Derrek P Hibar, Frank G Hillary, Martine Hoogman, Hilleke E Hulshoff Pol, Maria Jalbrzikowski, George A Karkashadze, Eduard T Klapwijk, Rebecca C Knickmeyer, Peter Kochunov, Inga K Koerte, Xiang-Zhen Kong, Sook-Lei Liew, Alexander P Lin, Mark W Logue, Eileen Luders, Fabio Macciardi, Scott Mackey, Andrew R Mayer, Carrie R McDonald, Agnes B McMahon, Sarah E Medland, Gemma Modinos, Rajendra A Morey, Sven C Mueller, Pratik Mukherjee, Leyla Namazova-Baranova, Talia M Nir, Alexander Olsen, Peristera Paschou, Daniel S Pine, Fabrizio Pizzagalli, Miguel E Rentería, Jonathan D Rohrer, Philipp G Sämann, Lianne Schmaal, Gunter Schumann, Mark S Shiroishi, Sanjay M Sisodiya, Dirk JA Smit, Ida E Sønderby, 2019, DOI: 10.1038/s41398-020-0705-1.

28. **Band-Specified Virtual Dimensionality for Band Selection: An Orthogonal Subspace Projection Approach**, Chunyan Yu, Li-Chien Lee, Chein-I Chang, Bai Xue, Meiping Song, and Jian Chen, *IEEE Transactions on Geoscience and Remote Sensing*. 56(5): 2822-2832, 2018. DOI: 10.1109/TGRS.2017.2784372. DOI: 10.1109/TGRS.2017.2784372.

29. **Structural Brain Abnormalities in the Common Epilepsies Assessed in a Worldwide ENIGMA Study,** Christopher Whelan, Neda Jahanshad, Derrek P Hibar, Julie Absil, Saud Alhusaini; Marina K Alvim; Pia Auvinen; Emanuele Bartolini; Bergo Bergo; Tauana Bernardes; Karen Blackmon, Barbara Braga; Maria E Caligiuri, Anna Calvo, Sarah J Carr, Jian Chen; Shuai Chen; Andrea Cherubini, Philippe David; Martin Domin; Sonya Foley, Wendy França; Gerrit Haaker, Dmitry Isaev; Simon S Keller, Raviteja Kotikalapudi; Magdalena A Kowalczyk, Ruben Kuzniecky, Soenke Langner, Matteo Lenge, Kelly M Leyden; Min Liu, Richard Q Loi; Pascal Martin, Mario Mascalchi, Marcia Morita; Jose C Pariente, Raul Rodríguez-Cruces, Christian Rummel, Taavi Saavalainen; Mira K Semmelroch; Maria Savina Severino, Rhys H Thomas, Manuela Tondelli; Domenico Tortora, Anna Elisabetta Vaudano, Lucy Vivash, Felix von Podewils, Jan Wagner, Bernd Weber, Yi Yao, Clarissa L Yasuda, Guohao Zhang, Nuria Bargalló, Benjamin Bender, Andrea Bernasconi, Neda Bernasconi, Boris C Bernhardt, Ingmar Blümcke, Chad Carlson; Gianpiero L Cavalleri, Fernando Cendes, Luis Concha, Norman Delanty, Chantal Depondt, Orrin Devinsky, Colin P Doherty, Niels K Focke, Antonio Gambardella, Renzo Guerrini, Khalid Hamandi, Graeme D Jackson, Reetta Kälviäinen, Peter Kochunov, Patrick Kwan, Angelo Labate, Carrie R. McDonald, Stefano Meletti, Terence J O'Brien, Mark P Richardson, Pasquale Striano, Thomas Thesen, Roland Wiest, Junsong Zhang, Paul M Thompson, and Sanjay M Sisodiya. *Brain*, 141(2): 391-408, 2018. [IF: 10.292]. DOI: 10.1093/brain/awx341.

30. **Channel Capacity Approach to Hyperspectral Band Subset Selection**, Chein-I Chang, Li-Chien Lee, Bai Xue, Meiping Song, Jian Chen, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 10(10):4630-4644, 2017. [IF: 2.913] DOI: 10.1109/JSTARS.2017.2724604.

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PEER-REVIEWED CONFERENCE POSTERS, ABSTRACTS, AND SIGGRAPH SKETCHES

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3. Doug A. Bowman, Dennis Gracanin, Chad Wingrave, Jian Chen, Nicholas Polys, Tao Ni, Regis Kopper, and Ji-sun Kim. 3D Interaction Group Research. Lab exhibit at IEEE Virtual Reality 2006.

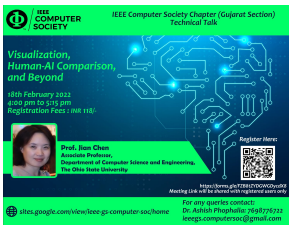
Training Certificates:

1. Diffusion-weighted magnetic resonance imaging (DTI): principles and applications, Summer School in Biomedical Engineering, Schoenburg, Germany, August 2007.
2. Parallel and grid computing: principles and applications, Argonne National Lab and University of Chicago, Chicago, IL, January 2002.

Patent

- Jian Chen, Pipeline quick joints. No. ZL98250034.3, Patent Office, P.R. China, 1998.

Invited Talks and Other Than Conference Presentations



1. Abstraction and the Gist of the Scene, Shonen Meeting, Shonan Seminar #173 on "TAT: Toughening the Foundation of Abstraction in Visualization Techniques", September 11-14, 2023 (By invitation only).
2. Visualization, Human-AI Comparison, and Beyond, IEEE Computer Society Chapter (Gujarat Section) Technical Talk, February 18, 2022 (By invitation only).
3. Humanizing Visualization Through Vision Science, International Visualization Symposium in China, January 6, 2022 (Invitation only).
4. Peking University Summer School — Visualization, June 2021 (By invitation only).
5. Dagstuhl: BioVis Seminar, March 2021 (By invitation only).
6. Monthly Movie Night (The Matrix) panel, AI and Virtual Reality/Simulations, June 30, 2021 (host: Mary Rickel, Department of Physics and Astronomy, with other panelists: Dhabaleswar, Panda, Jaclyn, Caccese, Xiang, Yu): https://astronomy.osu.edu/outreach/monthly-movie-nights-science-fiction-vs-science-fact.
7. Dagstuhl: Visualization Seminar, January 2018 (By invitation only).
8. Towards Understanding the Temporal Aspects of Interactive Visualization for Automated Design and Analysis, MIT AI Lab Fall Seminar Series, Cambridge, MA. November 28, 2017.
9. Towards Understanding the Temporal Aspects of Interactive Visualization for Automated Design and Analysis, Xi'dian University 111 Project, Xi'an, China. October 14, 2017.
10. Towards Understanding the Temporal Aspects of Interactive Visualization for Automated Design and Analysis, Shanghai Jiaotong University (host: Dr. Baoliang Lv), Shanghai, China. October 12, 2017.

11. Accurate Visualization of Knowledge Discovery in Big-Data Science, NOAA (host: Dr. Keqin Wu), June 6, 2017.
12. Can A Machine Be Better Than Humans in Detection Tasks? Maryland Cancer Retreat (host: Dr. Rao Gullapalli), May 12, 2017.
13. Using Vision to Think and My Perspectives on Using VR for Pain Treatment, University of Maryland, Baltimore (hosts: Drs. Hants Williams and Susan Dorsey), December 19, 2016.
14. Visual Ecological Approach to Knowledge Discovery in Immersive Analysis, IBM Research Cognitive colloquium, Augmenting Human Intelligence (organizer: Dr. Guruduth S. Banavar, Invitation only), September 20, 2016.
15. **(Keynote)** Objective visualization: understanding perceptual accuracy of spatial data representation, Maryland Neuroimaging Retreat, April 12, 2016.
16. NII Shonan Meeting on "Immersive Analytics: New Multidisciplinary Initiative to Explore Future Interaction Technologies for Data Analytics," Shonan Village, Japan, February 2016 (http://shonan.nii.ac.jp/seminar/seminardetails074/).
17. Immersive Analytics for Streaming Data Visualization, IBM lightning talk, March 25, 2016.
18. SciVis+InfoVis in VR: An ultimate approach to improve measurement accuracy? SIGGRAPH 2014 Birds of Feathers: Immersive Visualization for Science and Research, (organizers: Terrill, Judith E., and Bednarz, Tomasz P.), August 2014.
19. Dagstuhl 14231: Scientific Visualization Seminar (Invitation only), July 2014.
20. US Food and Drug Administration (FA): A visualization language (hosts: Dr. Badano, Aldo, and Fahad Zafar), December 13, 2013.
21. A visualization language, The Bradley Department of Electrical and Computer Engineering, Virginia Tech Research Center – Arlington (host: Prof. Yue Wang), October 4, 2013.
22. A visualization language for diffusion tensor MRI studies, (host: Dr. Alexander P. Auchus), University of Mississippi Medical Center, June 26, 2013.
23. A visualization language, Information Technology Laboratory, Applied & Computational Mathematical Division, National Institute of Standards and Technology (host: Wesley Griffin), May 14, 2013.
24. A visualization language, Computer Science, Boston University, Boston, MA (host: Prof. Margrit Betke), April 22, 2013.
25. Interactive visual computing for knowledge discovery in the bat flight motion databases, Virginia Tech, Blacksburg, VA (host: Prof. Rolf Mueller), February 27, 2013.
26. Interactive visual computing for knowledge discovery in biology and biomedicine, Johns Hopkins University (host: Jerry Prince), October 26, 2012.
27. Interactive visualization in medical research, Cornell Medical School, New York (host: Prof. Yi Wang), September 28, 2012.
28. Interactive visual computing for knowledge discovery in science, engineering, and training, Air force Research Laboratory, Dayton, OH, (hosts: Drs. Simon Su and Paul Havig), September 27, 2012.
29. Understanding the science of scientific visualization, Seven Universities in China, Dec 3 – Dec 30, 2011 (Zhejiang University, Hangzhou Normal University, Shandong University, Jinan University, Nankai University, Tianjin University, Huadong Science and Technology University)
30. VisBubbles: a workflow-driven framework for scientific computing, NSF MS EPSCoR meeting, University of Mississippi, Oxford, MS, September 2011.
31. The six blind men's approach to interactive visual computing for sciences and engineering, Joint DoD/DHS Workshop on Image Analysis. Alcorn State University, January 21, 2011.
32. Visual and interactive data modeling for science, engineering, and training, Rutgers University, DIMACS, October 20, 2010.
33. Beyond DaVinci: interactive visualization for sciences, NSF ESPCoR meeting, University of Mississippi, September 20, 2010.
34. Interactive visualization for science, engineering, and training, Six Universities in China, May 21-June 8, 2010 (Peking University, Zhejiang University, Nankai University, Tianjin University, etc.).

35. Understanding bat wing morphology through modeling and visual data mining, University of Southern Mississippi, March 8, 2010.
36. VisBubbles: rethinking the visual interface design, Mississippi State University, February 17, 2010.
37. Quantifying the complexity of bat wing kinematics using proper orthogonal decomposition, Mitsubishi Electric Research Laboratories (MERL), Boston, February 2009.
38. Domain-specific design of interaction techniques in Architecture, Engineering, and Construction, Brown University, October 2006.
39. Domain-specific design of interaction techniques in Architecture, Engineering, and Construction, General Motors R&D, September 2006.
40. Designing 3D interaction techniques: research challenges in 3D user interface design, Dynamic Graphics Lab (DGP) and Ergonomics in Teleportation and Control Laboratory (ETC), University of Toronto, February 2005.
41. Designing domain-specific cloning techniques, ACM SIGGRAPH 2004, 3DUI, Birds of a Feather, 2004.

INTERVIEWS, MEDIA COVERAGE, AND PROCEEDING COVERS

- *New virtual reality space at UMBC reduces the distance between computers, data, and people*. UMBC News, http://news.umbc.edu/new-virtual-reality-space-at-umbc-reduces-distance-between-computers-data-and-people/ by Meghan Hanks, October 21, 2016.
- *Virtual reality opening entertainment and research possibilities*. WMAR, http://www.abc2news.com/business/technology/virtual-reality-opening-entertainment-research-possibilities by Brendan McNamara, October 5, 2016.
- *Immersive "Hybrid Reality" system coming to UMBC*, The Daily Record, http://thedailyrecord.com/2015/09/01/immersive-hybrid-reality-system-coming-to-umbc/ by Daniel Leaderman, September 1, 2015.
- *UMBC Building Large Virtual Reality Environment*, BaltimoreGamer, http://www.baltimoregamer.com/news/umbc-building-large-virtual-reality-enviorment/ by Aurianna Mansell, September 2015.
- *UMBC professors think virtual reality can change research*. Technical.ly Baltimore, http://technical.ly/baltimore/2015/10/12/umbc-immersive-virtual-reality-environment/ by Stephen Babcock, October 12, 2015.
- Front cover image (on DT-MRI tractography), PacificVis, 2012
- Front cover image (on bat flight modeling), EuroVR, 2009
- Front cover image (on domain-specific design), Presence: Teleoperators and Virtual Environments, MIT Press. Oct. 2009.
- Back cover image (on domain-specific interaction), Proceedings of IEEE Virtual Reality, 2006

Teaching

STUDENTS

This section presents the graduate and undergraduate student mentoring activities: I graduated 3 Ph.Ds. and 10 MS students. Three former students/postdocs are faculty. Four undergraduates have co-authored papers with me. Three papers were published from students' class projects.

Student Achievements (Undergraduate students **)

- Chenzhuo (Alan) Tong, funded through OSU internal grant. 2023.
- Yusen Zhang**, funded through NIH R01, to join graduate school, UCLA, 2023.
- Yu Fu**, funded through NIH R01, to join graduate school, UC Riverside, 2023.
- J. Liu, Colleague of Arts and Science Honors Committee, Undergraduate Presidential Research Scholarship, $3,500, Dec 2021. (CMU graduate school, 2022 Fall).
- Henan Zhao, Ph.D. student, IEEE VIS doctoral colloquium fund, 2015.
- Henan Zhao, Ph.D. student, CRA-W Graduate Cohort Workshop fund, 2015.

- Keqin Wu, postdoc, IEEE BioVis best paper award, 2013.
- Joseph Kitchen**, best undergrad research award (in the theory methods category), USM, 2011-2012.
- Joseph Kitchen**, NASA fellowship, for best undergraduate research, USM, 2012-2013.
- Timothy Bonnette**, undergraduate fellowship on his overall research credential, USM, 2010-2011.
- Haipeng Cai, best graduate student research award, CoSE, and School of Computing, USM, 2011-2012.
- Haipeng Cai, best graduate student research award, CoSE, and School of Computing, USM, 2010-2011.
- Hanyu Liu, best graduate student research award, CoSE, and School of Computing, USM, 2009-2010.

Ph.D. Students

Chair (current)

- Mengdi Chu, 2023
- Bharathi Asokarajan, 2023
- Veronica Thai, 2022
- Zefeng Qiu, 2022
- Maonan Wang, 2021 (visa denied)
- Shuning Jiang, 2019

Chair (Ph.D., graduated)

- Henan Zhao, Sept 2013-Sept 2021 (defense date: 9/9/2021), co-chair with Marc Olano, now at Siemens
  Dissertation: Integrating Information Visualization and Scientific Visualization for Accurate Perception and Pattern Search (*Because I left UMBC for OSU in 2017, a UMBC co-chair was added as of May 2017. Thanks, Marc! She finished her work as of 2018 and delayed defense for personal reasons.*)
- Li-Chien Lee, 2014F-2018, co-chair with Chien-I Chang, now at Meta Research
  Dissertation: An Information Theoretical Approach to Band Subset Selection for Hyperspectral Data Exploitation
- Guohao Zhang, 2012F-2017F, now at Meta Research
  Dissertation: A Semiotic Approach to Evaluating Brain Network Visualizations

Postdocs and Other

- Mai Elshehaly, 2015-2016, funded through my NSF grant. Now faculty at Suez Canal University, Egypt.
- Keqin Wu, 2012-2014, funded through my NSF grant. Now a research scientist at NOAA.

- Rui Li, 2017-2022, on Ph.D. track and left with a MS degree.
- Paul Heiss, 2013S-, incomplete partially due to my move to OSU, now running his startup
- Alexander Garbarino, 2013F-, incomplete partially due to my move to OSU and running his startup
  Dissertation: A Visual Ecological Approach to Large Network Visualization: Metaphor and Interaction
- Hanyu Liu, 2009-2012, transferred to SUNY, now at Amazon.
- Haipeng Cai, 2010-2012, transferred to the University of Notre Dame, now a tenure-track Assistant Professor at Washington State University.

Internal Committee member

- Xiyao Wang, 2020F, advisor: Tobias Isenberg, University of Paris-Saclay, Dissertation title: Augmented Reality Environments for the Interactive Exploration of 3D Data
- Mershack Okoe, 2016F, advisor: Radu Jianu (CS), University of South Florida
- Liang Sun, 2015Su, advisor: Carl Schmidt (Biology), University of Delaware

Committee member | External examiner

- Cheng Li, 2017F, advisor: Han-Wei Shen (CSE)
- Yu Wang, 2015Su, advisor: Marc Olano, UMBC
- Shih-Yu Chen, 2014S, advisor: Chein-I Chang, UMBC

- Robert Schultz, 2014S, advisor: Chein-I Chang, UMBC
- Drew Paylor, 2014S, advisor: Chein-I Chang, UMBC
- Adrian Rosebrock, 2014S, advisor: Tim Oates, UMBC
- Chris Morris, 2014S, advisor: Penny Rheingans, UMBC
- Timothy Leschke, 2013F, advisor: Charles Nicholas, UMBC
- Shawn O'Keeffe, 2013S, advisor: Dia Ali (CS), USM

Master's Students

Chair (current)

-

Chair (graduated)

- Jimmy Yuan (Roger Crawfis's student — transferred to me due to their CoI. The thesis work was from Roger.)
  Thesis:
- Abhishek, 2017Su
  Thesis: Calibrated and Overlapping Columns: Visualizing A Single Large-Range or Multivariate Non-Spatial Quantities in Spatial Domain
- Aparna Kaliappan (woman), 2017S
  Thesis: Quantitative Data Visualization in Compartmented Force-Directed Graphs using Calibrated Columns
- Andrew Li, 2015F
  Project: Effects of Secondary Views on Visualizing Diffusion Tensor MRI Tracts for Average FA Value Comparison Tasks
- Guohao Zhang, 2014F
  Thesis: Effects of Visual Markers and Position for Graph Visualization of Brain Functional Magnetic Resonance Imaging: A Ranking Study
- Shayna Weinstein (woman), 2013Summer, Co-chair: Tim Oates
  Thesis: Gleaning Bat Wing Morphology using a Bag-of-Patterns Representation
- Haipeng Cai, 2012, USM
  Thesis: Zifazah: A Scientific Visualization Language for Tensor Field Visualizations
- Yongnan Zhu, 2015S, visiting faculty assistant, Hangzhou Dianzi University (now at Alibaba)
  Thesis: PathRings: A Web-based Tool for Exploration of Orthology and Expression Data in Biological Pathways
- Liming Xu, 2013S, visiting faculty assistant, Zhejiang University
  Thesis: Artistic Rendering for Visualizing Diffusion Tensor Magnetic Resonance Imaging
- Guangxia Li (woman), 2012S, visiting faculty assistant, Zhejiang University
  Thesis: VisBubbles: A Coordinated Multi-view Exploration Environment for Motion Analysis

Committee member

- Winston Tong, 2016F, advisor: Charles Nicholas
  Project: ReXonciler - A Software Solution to Aid Medication Reconciliation
- Kiante Brantley, 2016S, advisor: Tim Oates
  Thesis: BCAP: an Artificial Neural Network Pruning Technique to Reduce Overfitting
- Elizabeth Baumel, 2015F, advisor: Marc Olano
  Thesis: Distance Adaptation of Diffusion Reflectance and Subsurface Scattering
- Pan Teng, 2015S, advisor: Carl Schmidt (Biology), University of Delaware
  Thesis: Text-mining and Visualization Approach Help Interpret Experimental Data and Make Hypotheses
- Yuping Zhang, 2015S, advisor: Marc Olano
  Thesis: Real-time Realistic Rendering of Sunrise and Sunset on the Ocean

- Jadrian Miles, 2007F, advisor: David H. Laidlaw, Brown University
- Mykhaylo Kostandov, 2007S, advisor: David H. Laidlaw, Brown University
- Devon Penney, 2008S, advisor: David H. Laidlaw, Brown University

Undergraduate Students (as advisor)

- Levan Sulimanov, 2017S
  Project: Virtual Phantom Body for Treating People with Mobile Disabilities in Augmented Reality
- Aparna Kaliappan (woman), Semiotics approach to data visualization, 2016Su
- Chen Kuo, Colormaker and gene pathway visualization, 2016Su
- Wesley Chiou, Colormaker and gene pathway visualization, 2016Su-2017Su, Now at ARL.
- Maxell Poole, 2015F
- Zachary Garbarino, NSF REU: Gene pathway visualization, 2014Su
- Blossom Metevier (woman, Meyhoff Scholar), NSF/REU: brain network visualization, 2013Su
- Alexander Stachowiak, NSF REU: brain network visualization, 2013Su
- Sharyn Kurland (woman), NSF REU: brain network visualization, 2013Su
- Julia Ford (woman), NSF REU: gene pathway visualization, 2013Su and 2014Su
- Joseph A. Kitchin, USM Honors College: Kinect-based interaction, Computer Science, 2011
- Timothy Bonnette, USM Honors College: brain imaging visualization, Computer Science, 2011
- Jeffrey Vamado, Color studies, 2010F, USM
- Corey Berry, DHS-funded, Sport security visualization, 2010, USM

Visiting Professors

- Yanning Xu, 2013-2014, Shandong University, China
- Wei Song, 2013-2014, Zhengzhou University, China

Visiting Students

- Xiaohui Bian, 2016 – 2017, Huazhong Science and Technology University, China
- Lu Liu, 2015 – 2016, Peking University, China
- Yubao Wu, 2011– 2012, USM

Courses

I taught a mix of graduate and undergraduate courses. Courses in my areas are Visualization and Virtual Reality.

COURSES

Spring 2024: CSE 5544 Intro. Data Vis.
CSE 5542 Real-time Rendering
Fall 2023: CSE 5544 Intro. Data Vis.

Spring 2023: CSE 5544 Intro. Data Vis. (2 sessions)
Fall 2022: CSE 5542 Real-time rendering

Spring 2022: CSE 5544 Intro. Data Vis. (newly minted with newer content)
Spring 2022: Virtual Reality
Spring 2022: March 9, Guest lecture, explore CSR/GWCS, Host: Chris Stewart
Fall 2021: CSE 5544 Intro. Data Visualization
Fall 2021: CSE 5544 Virtual Reality (new course)

Spring 2021: CSE 5544 Intro. Data Visualization
Fall 2020: CSE Virtual Reality (new course trial version)

Spring 2020: CSE 5544 Intro. Data Visualization
Fall 2019: CSE 5544 Intro. Data Visualization

Spring 2019: CSE 5544 Intro. Data Visualization
Spring 2019: CSE 5542 Real-time Rendering
Fall 2018: no classroom teaching

Spring 2018: Special topic: Design for Visualization
Fall 2017: no classroom teaching (1st semester at OSU)

Spring 2017: CMSC 491/691: Virtual Reality Design for Science
Fall 2016: CMSC 436/636: Data Visualization

Spring 2016: *Took the initiative and enabled a $5,000 sponsorship made by Nielsen Co. (Thanks, Nielsen!)*
Fall 2015: Maternity leave: no classroom teaching. Took the initiative and enabled $50,000 sponsorship from *Next Century* (*Thanks, Next Century*!)

Spring 2015: CMSC 435/634 (Intro. Computer Graphics)
CMSC 341 (Data Structures)
Fall 2014: CMSC 491/691: Special topic: Human-centered Computing in Visualization

Spring 2014: Maternity leave: no classroom teaching (tenure clock stopped by a year)
Fall 2013:
CMSC 435 / 634: Intro. Computer Graphics
CMSC 341: Data Structures

Spring 2013: CMSC 635: Advanced Computer Graphics (cross-listed)
Fall 2012 (joined UMBC): CMSC 341: Data Structures

Fall 2011:
COS 701: Visualization Toolkit (Core course mandatory to all Ph.D. students)
CSS 333: Programming in C
Spring 2011:
CSS 211: Introduction to Statistics
CSS 333: Programming in C
Fall 2010:
CSC 414: Software Engineering
CSC 414L: Software Engineering lab
(One-course buyout using a grant.)
Spring 2010:
CSC 695: Game Design (a new joint course with the Art department)
CSC 425/ 625: Computer Graphics
Fall 2009 (at USM): CSC 698: Interactive Visualization

- Guest Lecturer:
  Virtual Reality Design for Science, Brown University/RISD, Fall 2008
  COS 701: visualization toolkit, USM, Fall 2009
- TA: Computer Graphics, Virginia Tech, Fall 2002 - Spring 2003

- Computer Graphics, Advanced Rendering with OpenGL, Virginia Tech, Fall 2002

Services

Award

- IEEE Virtual Reality 2023 Service Award

Leadership

- UMBC campus-wide: Immersive Hybrid Reality Lab Research, Spring 2017 Pilot Grant Call for Applications (*With the Office of Vice President for Research on the campus-wide initiatives in virtual reality research*)
- IEEE International Conference on Virtual Reality and Visualization (ICVRV), Program Chair, 2016
- IEEE Virtual Reality 1st Immersive Analytics 2016 Workshop, Jian Chen, G. Elisabeta Marai, Kim Marriott, Falk Schreiber, and Bruce H. Thomas, https://sites.google.com/site/immersiveanalytics/, March 2016.

Editorial Board

- Special Issue Associate Editor: *Virtual Humans*, Frontier in Robotics and AI, 2021.
- Special Issue Associate Editor: *Immersive Analytics*, Frontier in Robotics and AI, 2017.
- Frontiers in Robotics and AI, 2014-2021 (I resigned due to high service load)

I was introduced because of my expertise in virtual reality and because the journal wants to publish articles in virtual reality. The impact factors for the Frontiers series have been high ***http://www.frontiersin.org/news/Frontiers_Impact_Factors_2013/875****, and this specific journal in the Frontier series is too new. To have an impact factor.)*

- International Journal of Computational & Neural Engineering (IJCNE), 2013-2016.

Professional Service

I did not list all reviewing efforts since that has become a regular activity.

2024:
IEEE VGTC, Vice chair for conferences
IEEE VIS best poster award committee
IEEE VIS, program committee

IEEE VR steering committee
IEEE VR poster co-chair
IEEE VR conference / program committee
IEEE PacificVis, program committee (Journal track and conference track)
IEEE EuroVis, program committee (full paper)

2023:
IEEE VGTC, Vice chair for conferences
IEEE VGTC Visualization Service Award committee

IEEE VIS best paper award committee (Short paper category)
IEEE VIS, long paper program committee; short paper program committee
IEEE VIS, program committee

IEEE Virtual Reality, steering committee

OSU College of Engineering Faculty Professional Leave Committee (led by Rachel Kleit.1)
Department DEI (Diversity, Equity, and Inclusion) committee

2022:
IEEE Visualization and Graphics Technical Committee, Vice Chair for Conferences, focusing on
- Cross-pollination among conferences: ACM SIGGRAPH | VIS | VR
- Introduced two conferences to VGTC (AIVR and HTT)
- (1) review process, (2) open documentation, (3) meetings with IEEE, and (4) day-to-day issues.
- Chaired SIGGRAPH session
- Questionnaires (expansions, diversity)

IEEE VIS paper co-chair (Area 1: Theory)
(I declined almost all other review invitations.)

NSF panels (twice)

Program committee: IEEE VR journal paper track
IEEE Visualization Academy committee member (1 of the 5 voting members)
IEEE Virtual Reality steering committee

IEEE VR steering committee

2021:
NSF panels (twice)
IEEE Visualization and Graphics Technical Committee, Vice Chair for Conferences; focusing on
- Cross-pollination among conferences: ACM SIGGRAPH | VIS | VR
- Introduced two conferences to VGTC (AIVR and HTT)
- (1) review process, (2) open documentation, (3) meetings with IEEE, and (4) day-to-day issues.
- Chaired SIGGRAPH session
- Questionnaires (expansions, diversity)

IEEE VIS paper co-chair: reviews and decisions on paper acceptance
IEEE Visualization Academy committee member (1 of the 5 voting members)
IEEE VR best doctoral dissertation award committee

Program committee: IEEE VR TVCG journal track, VRST, VIS, EuroVIS
Journal reviews: TVCG (2), SoftwareX (1).
Tenure promotion external letter writer: Three letters

2020:
NSF panels (three times)
IEEE Visualization and Graphics Technical Committee, Vice Chair for Conferences;
- Cross-pollination among conferences: ACM SIGGRAPH | VIS | VR
- Introduced two conferences to VGTC (AIVR and HTT)
- (1) review process, (2) open documentation, (3) meetings with IEEE, and (4) day-to-day issues.

IEEE Visualization Academy (1 of the 4 voting members)
This is the 2nd year of this committee. Contributed to
- Review criteria and policy; documentation of the process (on-going)
- Diversity (gender, research areas, country, etc.)

Tenure promotion external letter writer: Two letters

IEEE VR doctoral dissertation award committee
Program committee: IEEE VR TVCG journal track, VRST, VIS, EuroVIS

2019:
NSF panels
IEEE VR workshop chair
IEEE VR program committee
IEEE VIS conference paper chair

IEEE VR doctoral dissertation award committee
Program committee: IEEE VR TVCG journal track, VRST, VIS, EuroVIS

2018: ***I removed myself from most service work to focus on my research and new colleagues at OSU.***
IEEE VR workshop chair
IEEE VR program committee
IEEE VIS conference poster chair

2017: ***I removed myself from most service work to focus on my research and new colleagues at OSU.***
IEEE VR workshop chair
IEEE VR program committee
IEEE VIS Workshop on Immersive Analytics, program committee
ACM Spatial User Interface, program committee
IEEE EuroVis Short paper committee
IEEE VIS conference poster chair

2016:
Two NSF panels and an ad-hoc reviewer
IEEE VR workshop chair
IEEE Pacific Vis program committee
IEEE VIS conference committee
ICVRV program chair (see the leadership above)
VINCI program committee

2015:
Two NSF panels
IEEE VIS publicity chair
IEEE VR poster chair
IEEE VR program committee
IEEE EuroVis program committee
IEEE BioVis program committee
VINCI program committee

2014:
Two NSF panels
EuroVis program committee
IEEE VR conference committee
IEEE VIS conference committee
VINCI program committee
Journal reviews EuroVis (3), VIS (3), BMC Bioinformatics (1), Information visualization (1), Springer Interdisciplinary Sciences: Computational Life Sciences (1), International Journal of Software Informatics (1).
Conference reviews: BioVis (2), ACM CHI (1), VINCI (4).

Ph.D. dissertation external review (1)

2013:
Two NSF panels
IEEE Virtual Reality program committee
IEEE VIS conference committee
VINCI program committee
Reviews: EuroVis (5); VR (3); TVCG (2); IJHCS (2); VINCI (4)

Before 2013:
- NSF Proposal & Panel reviewer (2008, 2010-2012)
- Program committee: IEEE Virtual Reality (2009-2013), EuroVis (2012), International Symposium on Visual Computing (2007-2010), SIGGRAPH Web3D (2007-2010), ACM Multimedia (2008)
- Conference committee: ACM SIGGRAPH VRCAI workshop chair (2012), IEEE Virtual Reality (2008-2012), workshop chair (2008, 2010-2011), tutorial chair (2007), student volunteer chair (2006)
- Section chair: ISVC 2012 (visualization), IEEE Virtual Reality 2012 (User Interface), SIGGRAPH Asia 2011: (Sketch and posters: User interface and interaction)
- Reviewing assignments: *IEEE Transactions on Visualization and Computer Graphics* (2009-2012), *International Journal of Human-Computer Studies* (2008-2011), *International Journal of Virtual Reality* (2008-2009), *SIGGRAPH* 2009, *Visualization* (2004, 2009-2012), CHI (2007-2012), UIST (2004), VR (2004-2012), VRST (2004), GI (2007), ISVC (2007-2010), SIGGRAPH Web3D (2007-2008), 3DUI (2006-2009), Multimedia (2008), PacificVis (2011-2012).
  Details: 2012: IEEE Visualization (TVCG, 6); VAST (1); Web3D (4); Advances in Human-Computer Interaction (1); Visual Computing (1);
- Member: IEEE, ACM, SIGGRAPH, CHI, SID, CRA Women in Computing
- Co-founder: HCC-SciVis and SciVis mailing lists

UNIVERSITY SERVICE

- (Demo) Military & government visitors, May 3, 2017.
- (Demo) President Hrabowski and President McPherson visited on May 2, 2017.
- (Demo) State Senator Ed Kasemeyer (w/ President Hrabowski and Dr. Anupam Joshi), December 6, 2016.
- (Demo) Ribbon Cutting Event for π^2, October 14, 2016
- (Demo) State (Maryland) legislature's appropriations committee visit, September 30, 2016
- (Demo) π^2: Immersive Hybrid Virtual Environment, UMBC 50, September 16, 2016
- Undergraduate award committee, 2012F- 2017S
- USM recruitment photoshoot, April 9, 2010
- Undergraduate award committee, 2012F- 2015F

DEPARTMENT / COLLEGE SERVICE

- Sabbatical review, College of Engineering, OSU, 2023
- Diversity & Inclusion Committee, CSE, OSU, 2023
- Graduate Study Committee, CSE, OSU, 2023

- Faculty Search Committee, CSE, OSU (HCC and VIS subs), 2022
- Diversity & Inclusion Committee, CSE, OSU, 2021-2022

- Council of Graduate Women in Computer Science, 2021-2022
- Graduate Admissions Committee, CSE, OSU, member, 2017 Fall, 2019, 2020
- Seminar coordinator, CSE, OSU, 2017 Fall

- Admissions committee, CSEE, UMBC, member, 2016 Fall – 2017 Spring
- Admissions committee, CSEE, UMBC, member, 2015 Fall

- NAE grand challenge scholars program, Advisory board member, COEIT, 2015 Fall
- Faculty search committee, CSEE, UMBC, member, 2014 Fall- 2015 Spring
- Undergraduate Committee, CSEE, UMBC, member, 2014 Fall
- Admission committee, CSEE, UMBC, member, 2013 Fall – 2014 Summer
- Graduate committee, CSEE, UMBC, member, 2012 Fall- 2014 Summer
- Graduate student research award, Chair, CS, USM, Spring 2012
- Faculty search committee, member, member, CS, USM, 2012
- Outreach Committee, CS, USM, member, 2011
- Recruitment committee, CS, USM, member, 2011-2012
- Curriculum committee, CS, USM, chair, 2009-2011
- Research committee, CS, USM, chair, 2009-2011
- CS Program review, CS, USM, member, July 8, 2010
- Faculty advisor: demo to more than 20 high school students, CS, USM, October 29, 2009
- Advisement week to 15 students for CS, USM, 2009
- Women in Computer Science, coordinator, Brown University, 2007-2009
- Social chair: Upsilon Pi Epsilon, Virginia Tech, 2004-2006
- WebZar, 3D Interaction Research Group, Virginia Tech, 2004-2005
- Member, Virginia Tech Center for Human-Computer Interaction, 3DI Research group, 2002-2006

OTHER SERVICE

- USM recruitment photoshoot (April 9, 2010)
- School of Computing Program review (July 8, 2010)
- Gave six research talks in China (Peking U, Zhejiang U, Nankai U, Tianjin U, etc.) (May 21 – June 8, 2010)
- School of Computing, demo to more than 20 high school students (October 29, 2009)
- Advisement week to 15 students for the School of Computing

Member: IEEE, ACM, SIGGRAPH, CHI, SID, CRA Women in Computing
Co-founder: HCC-SciVis and SciVis mailing lists