James Tompkin

jamestompkin.com • December 18, 2023

I am a visual computing researcher—computer vision, computer graphics, and human-computer interaction. My lab develops techniques for camera-captured media to remove barriers from image and video creation, editing, and interaction. This requires image and scene reconstruction techniques, especially from multi-camera systems and for multi-view and VR/AR displays.

Education

2012 EngD Virtual Environments, Imaging, and Visualisation, University College London.
Supervisor: Prof. Jan Kautz.
Thesis: Exploring Sparse Unstructured Video Collections of Places.
Sponsor: BBC Research & Development.

2006 MSci Computer Science, First Class with Honours, King's College London.
Supervisor: Prof. Ian Mackie.
Dissertation: Venues—A Networked Visual Instrument.
Awarded prize for best MSci dissertation.

Academic Employment

2022–now John E. Savage Assistant Professor of Computer Science, Brown University.

2016–2022 Assistant Professor of Computer Science, Brown University.

2014–2016 Post-doctoral Researcher, Harvard John A. Paulson School of Engineering and Applied Sciences.

2012–2014 Post-doctoral Researcher, Max-Planck-Institute for Informatics / Intel Visual Computing Institute.

2011–2013 Research Intern / Consultant, Disney Research Boston.

2006 Research Intern, BBC Research & Development.

Preprints (Available Upon Request)

- Yiqing Liang, Numair Khan, Zhengqin Li, Thu Nguyen-Phuoc, Douglas Lanman, James Tompkin, Lei Xiao. GauFRe 🧇: Gaussian Deformation Fields for Real-time Dynamic Novel View Synthesis.
- Hakyeong Kim, Andreas Meuleman, Hyeonjoong Jang, James Tompkin, Min H. Kim. OmniSDF: Scene Reconstruction using Omnidirectional Signed Distance Functions and Adaptive Binoctrees.

Publications—Peer-reviewed Journals

2024 Numair Khan, Min H. Kim, James Tompkin. Are Multi-view Edges Incomplete for Depth Reconstruction? *International Journal of Computer Vision (to appear)*. https://visual.cs.brown.edu/incompletedepth

2023 Yuanhao Wang, Qian Zhang, Celine Aubuchon, Jovan Kemp, Fulvio Domini, James Tompkin. On Human-like Biases in Convolutional Neural Networks for the Perception of Slant from Texture. *ACM Transactions on Applied Perception (TAP); specially selected from ACM Symposium on Applied Perception (SAP 2023)*. https://github.com/brownvc/Slant-CNN-Biases

- Xiuchao Wu, Jiamin Xu, Xin Zhang, Hujun Bao, Qixing Huang, Yujun Shen, James Tompkin, Weiwei Xu. ScaNeRF: Scalable Bundle-adjusting Neural Radiance Fields for Large-scale Scene Rendering. *ACM Transactions on Graphics (SIGGRAPH Asia)*

Publications—Peer-reviewed Journals (continued)

- Qian Zhang, Vikas Thamizharasan, James Tompkin. Learning Physically-based Material and Lighting Decompositions for Face Editing. *Journal of Computational Visual Media; specially selected from conference (CVM 2022).* https://github.com/brownvc/phaced

2022 Xiuchao Wu, Jiamin Xu, Zihan Zhu, Hujun Bao, Qixing Huang, James Tompkin, Weiwei Xu. Scalable Neural Indoor Scene Rendering. *ACM Transactions on Graphics (SIGGRAPH).*

- Yiheng Xie, Towaki Takikawa, Shunsuke Saito, Or Litany, Shiqin Yan, Numair Khan, Federico Tombari, James Tompkin, Vincent Sitzmann, Srinath Sridhar. Neural Fields in Visual Computing and Beyond. *Computer Graphics Forum (Eurographics State-of-the-art Report) (EG STAR).* https://neuralfields.cs.brown.edu/
- Fumeng Yang, James Tompkin, Lane Harrison, and David H. Laidlaw. Visual Cue Effects on a Classification Accuracy Estimation Task in Immersive Scatterplots. *IEEE Transactions on Visualization and Computer Graphics.*
- Beatrix-Emőke Fülöp-Balogh, Eleanor Tursman, James Tompkin, Nicholas Bonneel, Julie Digne. Dynamic Scene Novel View Synthesis via Deferred Spatio-temporal Consistency. *Computers & Graphics.*

2021 Michail Schwab, David Saffo, Nicholas Bond, Shash Sinha, Cody Dunne, Jeff Huang, James Tompkin, and Michelle A. Borkin. Scalable Scalable Vector Graphics: Automatic Translation of Interactive SVGs to a Multithread VDOM for Fast Rendering. *IEEE Transactions on Visualization and Computer Graphics.*

2020 Michail Schwab, David Saffo, Yixuan Zhang, Shash Sinha, Cristina Nita-Rotaru, James Tompkin, Cody Dunne, and Michelle A. Borkin. VisConnect: Distributed Event Synchronization for Collaborative Visualization. *IEEE Transactions on Visualization and Computer Graphics (InfoVis).*

2019 David Whitney, Eric Rosen, Elizabeth Phillips, Gary Chien, James Tompkin, George Konidaris, Stefanie Tellex. Communicating And Controlling Robot Arm Motion Intent Through Mixed Reality Head-mounted Displays. *International Journal of Robotics Research.*

2018 Daniel Haehn, James Tompkin, Hanspeter Pfister. Evaluating 'Graphical Perception' with CNNs. *IEEE Transactions on Visualization and Computer Graphics (InfoVis).*

2017 Nicholas Bonneel, James Tompkin, Deqing Sun, Oliver Wang, Kalyan Sunkavalli, Sylvain Paris, Hanspeter Pfister. Consistent Video Filtering for Camera Arrays. *Computer Graphics Forum (Eurographics).*

- Daniel Haehn, John Hoffer, Brian Matejek, Adi Suissa-Peleg, Ali K. Al-Awami, Lee Kamentsky, Felix Gonda, Eagon Meng, William Zhang, Richard Schalek, Alyssa Wilson, Toufiq Parag, Johanna Beyer, Verena Kaynig, Thouis R. Jones, James Tompkin, Markus Hadwiger, Jeff W. Lichtman and Hanspeter Pfister. Scalable Interactive Visualization for Connectomics. *MDPI Informatics—Special Issue on Scalable Interactive Visualization.*

2016 Michail Schwab, Hendrik Strobelt, James Tompkin, Colin Fredericks, Connor Huff, Dana Higgins, Anton Strezhnev, Maya Komisarchik, Gary King, Hanspeter Pfister. booc.io: An Education System with Hierarchical Concept Maps and Dynamic Non-linear Learning Plans. *IEEE Transactions on Visualization and Computer Graphics (InfoVis).*

2015 Helge Rhodin, James Tompkin, Kwang In Kim, Edilson de Aguiar, Hans-Peter Seidel, Christian Theobalt. Generalizing Wave Gestures from Sparse Examples for Real-time Character Control. *ACM Transactions on Graphics (SIGGRAPH Asia).*

- Nicolas Bonneel, James Tompkin, Kalyan Sunkavalli, Deqing Sun, Sylvain Paris, Hanspeter Pfister. Blind Video Temporal Consistency. *ACM Transactions on Graphics (SIGGRAPH Asia).*
- Gaurav Bharaj, David I. W. Levin, James Tompkin, Yun Fei, Hanspeter Pfister, Wojciech Matusik, Changxi Zheng. Computational Design of Metallophone Contact Sounds. *ACM Transactions on Graphics (SIGGRAPH Asia).*

2014 Nicolas Bonneel, Kalyan Sunkavalli, James Tompkin, Deqing Sun, Sylvain Paris, Hanspeter Pfister. Interactive Intrinsic Video Editing. *ACM Transactions on Graphics (SIGGRAPH Asia).*

- Younghee Kwon, Kwang In Kim, James Tompkin, Jin Hyung Kim, and Christian Theobalt. Efficient Learning of Image Super-resolution and Compression Artifact Removal with Semi-local Gaussian Processes. *IEEE Transactions on Pattern Analysis and Machine Intelligence.*

Publications—Peer-reviewed Journals (continued)

- Helge Rhodin, James Tompkin, Kwang In Kim, Kiran Varanasi, Hans-Peter Seidel, Christian Theobalt. Interactive Motion Mapping for Real-time Character Control. *Computer Graphics Forum (Eurographics)*.

2013 James Tompkin, Simon Heinzle, Jan Kautz, Wojciech Matusik. Content-adaptive Lenticular Prints. *ACM Transactions on Graphics (SIGGRAPH)*.

- James Tompkin, Min H. Kim, Kwang In Kim, Jan Kautz, Christian Theobalt. Preference and Artifact Analysis for Video Transitions of Places. *ACM Transactions on Applied Perception*. *Special selection for journal publication from ACM Symposium on Applied Perception.*
- Miguel Granados, Kwang In Kim, James Tompkin, Christian Theobalt. Automatic Noise Modelling for Ghost-free HDR Reconstruction. *ACM Transactions on Graphics (SIGGRAPH Asia)*.

2012 James Tompkin, Kwang In Kim, Jan Kautz, Christian Theobalt. Videoscapes: Exploring Sparse, Unstructured Video Collections. *ACM Transactions on Graphics (SIGGRAPH)*.

- Miguel Granados, James Tompkin, Kwang In Kim, Oliver Grau, Jan Kautz, Christian Theobalt. How Not to Be Seen—Object Removal from Videos of Crowded Scenes. *Computer Graphics Forum (Eurographics)*.
- Henrik Lieng, James Tompkin, Jan Kautz. Interactive Multi-perspective Imagery from Photos and Videos. *Computer Graphics Forum (Eurographics)*.

2011 Feng Xu, Yebin Liu, Carsten Stoll, James Tompkin, Gaurav Bharaj, Qionghai Dai, Hans-Peter Seidel, Jan Kautz, and Christian Theobalt. 2011. Video-based Characters: Creating New Human Performances from a Multi-view Video Database. *ACM Transactions on Graphics (SIGGRAPH)*.

Publications—Peer-reviewed Conferences

2024 Yiwen Huang, Zhiqiu Yu, Xinjie Yi, Yue Wang, James Tompkin. Removing the Quality Tax from Controllale Face Generation. *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*; presented at *Computer Vision and Pattern Recognition (CVPR) Workshop on AI for Content Creation* as 'Tax-free 3DMM Conditional Face Generation' (June 2023). https://arxiv.org/abs/2305.13460 https://visual.cs.brown.edu/taxfreegan

2023 Yiqing Liang, Eliot Laidlaw, Alexander Meyerowitz, Srinath Sridhar, James Tompkin. Semantic Attention Flow Fields for Dynamic Scene Decomposition. *International Conference on Computer Vision (ICCV)*. https://visual.cs.brown.edu/saff

- Aarrushi Shandilya, Benjamin Attal, Christian Richardt, James Tompkin, Matthew O'Toole. Neural Fields for Structured Light. *International Conference on Computer Vision (ICCV)*. https://imaging.cs.cmu.edu/nfsl
- Fumeng Yang, Yuxin Ma, Lane Harrison, James Tompkin, David H. Laidlaw. How Can Deep Neural Networks Aid Visualization Perception Research? Three Studies on Correlation Judgments in Scatterplots. *ACM Conference on Human Factors in Computing Systems (CHI)*. https://osf.io/u3n5f/
- Won-Dong Jang, Donglai Wei, Xingxuan Zhang, Brian Leahy, Helen Yang, James Tompkin, Dalit Ben-Yosef, Daniel Needleman, Hanspeter Pfister. Learning Vector Quantized Shape Code for Amodal Blastomere Instance Segmentation. *IEEE International Symposium on Biomedical Imaging*. arXiv 2012.00985

2022 Andréas Meuleman, Hakyeong Kim, James Tompkin, Min H. Kim. FloatingFusion: Depth from ToF and Image-stabilized Stereo Cameras. *European Conference on Computer Vision (ECCV)*.

- Hyun Jin Ku, Hyunho Ha, Joo-Ho Lee, Dahyun Kang, James Tompkin, Min H. Kim. Differentiable Appearance Acquisition from a Flash/No-flash RGB-D Pair. *International Conference on Computational Photography (ICCP).*
- Jing Qian, Qi Sun, Curtis Wigington, Han L. Han, Tong Sun, Jennifer Healey, James Tompkin, Jeff Huang. Dually Noted: Layout-Aware Cross-Device Annotations with Smartphone Augmented Reality. *ACM Conference on Human Factors in Computing Systems (CHI).*

Publications—Peer-reviewed Conferences (continued)

- Donglai Wei, Siddhant Kharbanda, Sarthak Arora, Roshan Roy, Nishant Jain, Akash Palrecha, Tanav Shah, Shray Mathur, Abhijay Kemkar, Ritik Mathur, Anirudh Chakravarthy, Zudi Lin, Won-Dong Jang, Yansong Tang, Song Bai, James Tompkin, Philip Torr, Hanspeter Pfister. YouMVOS: An Actor-centric Multi-shot Video Object Segmentation Dataset. *Computer Vision and Pattern Recognition (CVPR)*

2021 Benjamin Attal, Eliot Laidlaw, Aaron Gokaslan, Changil Kim, Christian Richardt, James Tompkin, Matthew O'Toole. TöRF: Neural Time-of-Flight Fields for Dynamic Scene View Synthesis. *Neural Information Processing Systems (NeurIPS)*. https://imaging.cs.cmu.edu/torf

- Numair Khan, Min H. Kim, James Tompkin. Differentiable Diffusion for Dense Depth Estimation from Multi-view Images. *Computer Vision and Pattern Recognition (CVPR)*. https://visual.cs.brown.edu/diffdiffdepth
- Kwang In Kim, James Tompkin. Testing using Privileged Information by Adapting Features with Statistical Dependence. *International Conference on Computer Vision (ICCV)*. https://jamestompkin.com/assets/projects/tupi/
- Numair Khan, Min H. Kim, James Tompkin. Edge-aware Bi-directional Diffusion for Dense Depth Estimation from Light Fields. *British Machine Vision Conference (BMVC)*. https://visual.cs.brown.edu/lightfielddepth
- Youssef A. Mejjati, Isa Milefchik, Aaron Gokaslan, Oliver Wang, Kwang In Kim, James Tompkin. GaussiGAN: Controllable Image Synthesis with 3D Gaussians from Unposed Silhouettes. *British Machine Vision Conference (BMVC)*. https://visual.cs.brown.edu/gaussigan

2020 Benjamin Attal, Selena Ling, Aaron Gokaslan, Christian Richardt, James Tompkin. MatryODShka: Real-time 6DoF Video View Synthesis using Multi-Sphere Images. *European Conference on Computer Vision (ECCV)*. https://visual.cs.brown.edu/matryodshka

- Atsunobu Kotani, Stefanie Tellex, James Tompkin. Generating Handwriting via Decoupled Style Descriptors. *European Conference on Computer Vision (ECCV)*. https://dsd.cs.brown.edu/
- Numair Khan, Min H. Kim, James Tompkin. View-consistent 4D Light Field Depth Estimation. *British Machine Vision Conference (BMVC)*. https://visual.cs.brown.edu/lightfielddepth
- Purvi Goel, Loudon Cohen, James Guesman, Vikas Thamizharasan, James Tompkin, Daniel Ritchie. Shape from Tracing: Towards Reconstructing 3D Object Geometry and SVBRDF Material from Images via Differentiable Path Tracing. *International Conference on 3D Vision (3DV)*. https://visual.cs.brown.edu/shapefromtracing
- Salma Abdel Magid, Won-Dong Jang, Denis Schapiro, Donglai Wei, James Tompkin, Peter K. Sorger, Hanspeter Pfister. Channel Embedding for Informative Protein Identification from Highly Multiplexed Images. *MICCAI*.

2019 Numair Khan, Qian Zhang, Lucas Kasser, Henry Stone, Min H. Kim, James Tompkin. View-consistent 4D Light Field Superpixel Segmentation. *International Conference on Computer Vision (ICCV)*.

- Michail Schwab, Sicheng Hao, Olga Vitek, James Tompkin, Jeff Huang, Michelle A. Borkin. Evaluating Pan and Zoom Timelines and Sliders. *ACM Conference on Human Factors in Computing Systems (CHI)*.
- Michail Schwab, James Tompkin, Jeff Huang, Michelle A. Borkin. EasyPZ.js: Interaction Binding For Pan and Zoom Visualizations. *IEEE Information Visualization (VIS)*.
- Jing Qian, Jiaju Ma, Xiangyu Li, Benjamin Attal, Haoming Lai, James Tompkin, John F. Hughes, Jeff Huang. Portal-ble: Intuitive Free-hand Manipulation in Unbounded Smartphone-based Augmented Reality. *ACM User Interface Software and Technology (UIST)*.
- Joanna Tarko, James Tompkin, Christian Richardt. Real-time Virtual Object Insertion for Moving 360° Videos. *ACM SIGGRAPH Int. Conf. Virtual-Reality Continuum and its Applications in Industry (VRCAI)*.

2018 Aaron Gokaslan, Vivek Ramanujan, Daniel Ritchie, Kwang In Kim, James Tompkin. Improving Shape Deformation in Unsupervised Image-to-Image Translation. *European Conference on Computer Vision (ECCV)*. https://github.com/brownvc/ganimorph

Publications—Peer-reviewed Conferences (continued)

- Youssef A. Mejjati, Christian Richardt, James Tompkin, Darren Cosker, Kwang In Kim. Unsupervised Attention-guided Image to Image Translation. *Neural Information Processing Systems (NeurIPS)*. https://github.com/AlamiMejjati/Unsupervised-Attention-guided-Image-to-Image-Translation
- Daniel Haehn, Verena Kaynig-Fittkau, James Tompkin, Hanspeter Pfister. Guided Proofreading of Automatic Segmentations for Connectomics. *IEEE Computer Vision and Pattern Recognition (CVPR)*.
- Kwang In Kim, Juhyun Park, James Tompkin. High-order Tensor Regularization with Application to Attribute Ranking. *IEEE Computer Vision and Pattern Recognition (CVPR)*.
- Alexandra Papoutsaki, Aaron Gokaslan, James Tompkin, Yuze Hu, Jeff Huang. The Eye of the Typer: A Benchmark and Analysis of Gaze Behavior during Typing. *ACM Symp. Eye Tracking Research and Applications (ETRA)*.

2017 James Tompkin, Kwang In Kim, Hanspeter Pfister, Christian Theobalt. Criteria Sliders: Learning Continuous Database Criteria via Interactive Ranking. *British Machine Vision Conference (BMVC)*. https://jamestompkin.com/assets/projects/criteriasliders/

- Kwang In Kim, Christian Richardt, James Tompkin. Test-time Predictor Combination. *IEEE International Conference on Computer Vision (ICCV)*.
- Serena Booth, James Tompkin, Krzysztof Gajos, Jim Waldo, Hanspeter Pfister, Radhika Nagpal. Piggybacking Robots: Human-Robot Overtrust in University Dormitory Security. *Human-Robot Interaction (HRI)*.
- Eric Rosen, David Whitney, Elizabeth Philips, Gary Chien, James Tompkin, George Konidaris, Stefanie Tellex. Communicating Robot Arm Motion Intent Through Mixed Reality Head-mounted Displays. *International Symposium on Robotics Research (ISRR)*.

2016 Evgeny Levinkov, James Tompkin, Nicolas Bonneel, Steffen Kirchhoff, Bjoern Andres, Hanspeter Pfister. Interactive Multicut Video Segmentation. *Pacific Graphics (Short Paper)*.

2015 James Tompkin, Samuel Muff, James McCann, Hanspeter Pfister, Jan Kautz, Marc Alexa, Wojciech Matusik. Joint 5D Pen Input for Light Field Displays. *ACM User Interface Software and Technology (UIST)*.

- Gaurav Bharaj, Stelian Coros, Bernhard Thomaszewski, James Tompkin, Bernd Bickel, Hanspeter Pfister. Computational Design of Walking Automata. *ACM Symposium on Computer Animation (SCA)*.
- Kwang In Kim, James Tompkin, Hanspeter Pfister, Christian Theobalt. Context-guided Diffusion for Label Propagation on Graphs. *IEEE International Conference on Computer Vision (ICCV)*.
- Kwang In Kim, James Tompkin, Hanspeter Pfister, Christian Theobalt. Local High-order Regularization on Data Manifolds. *IEEE Computer Vision and Pattern Recognition (CVPR)*.
- Kwang In Kim, James Tompkin, Hanspeter Pfister, Christian Theobalt. Semi-supervised Learning with Explicit Relationship Regularization. *IEEE Computer Vision and Pattern Recognition (CVPR)*.

2014 Fabrizio Pece, James Tompkin, Hanspeter Pfister, Jan Kautz, Christian Theobalt. Device Effect on Panoramic Video+Context Tasks. *11th European Conference on Visual Media Production (CVMP)*.

2013 James Tompkin, Fabrizio Pece, Rajvi Shah, Shahram Izadi, Jan Kautz, Christian Theobalt. Video Collections in Panoramic Contexts. *ACM User Interface Software and Technology (UIST)*.

- Kwang In Kim, Martin Theobald, James Tompkin, Christian Theobalt. Curvature-aware Regularization on Riemannian Submanifolds. *IEEE International Conference on Computer Vision (ICCV)*.

2012 Philippe Levieux, James Tompkin, Jan Kautz. Interactive Viewpoint Video Textures. *9th European Conference on Visual Media Production (CVMP)*.

- Kwang In Kim, James Tompkin, Martin Theobald, Jan Kautz, Christian Theobalt. Match Graph Construction for Large Image Databases. *European Conference on Computer Vision (ECCV)*.
- Miguel Granados, Kwang In Kim, James Tompkin, Jan Kautz, Christian Theobalt. Background Inpainting for Videos with Dynamic Objects and a Free-moving Camera. *European Conference on Computer Vision (ECCV)*.

Publications—Peer-reviewed Conferences (continued)

2011 James Tompkin, Fabrizio Pece, Kartic Subr, Jan Kautz. Towards Moment Imagery: Automatic Cinemagraphs. *8th European Conference on Visual Media Production (CVMP).*

- Beste F. Yuksel, Michael Donnerer, James Tompkin, Anthony Steed. Novel P300 BCI Interfaces to Directly Select Physical and Virtual Objects. *5th International Brain-computer Interface Conference (BCI).*

2010 Beste F. Yuksel, Michael Donnerer, James Tompkin, Anthony Steed. A Novel Brain-computer Interface using a Multi-touch Surface. *ACM Conference on Human Factors in Computing Systems (CHI).*

2009 Jennifer G. Sheridan, James Tompkin, Abel Maciel, George Roussos. DIY Design Process for Interactive Surfaces. *23rd Conference on Human Computer Interaction (HCI).*

Publications—Peer-reviewed Workshops

2021 Austin Sumigray, Eliot Laidlaw, James Tompkin, Stefanie Tellex. Improving Remote Environment Visualization through 360 6DoF Multi-sensor Fusion for VR Telerobotics. *Human Robot Interaction (HRI) Late Breaking Work (Best Paper Nominee).*

2020 Eleanor Tursman, Marilyn George, Seny Kamara, James Tompkin. Towards Untrusted Social Video Verification to Combat Deepfakes via Face Geometry Consistency. *Computer Vision and Pattern Recognition (CVPR) Workshop on Media Forensics*.

- Youssef A. Mejjati, Michael Snower, Aaron Gokaslan, Oliver Wang, James Tompkin, Kwang In Kim. Generating Object Stamps. *Computer Vision and Pattern Recognition (CVPR) Workshop on AI for Content Creation*.

2017 Lezhi Li, James Tompkin, Panagiotis Michalatos, Hanspeter Pfister. Hierarchical Visual Feature Analysis for City Street View Datasets. *IEEE Visualization Visual Analytics for Deep Learning*.

Publications—Book Chapters

2020 Christian Richardt, James Tompkin, Gordon Wetzstein. Capture, Reconstruction, and Representation of the Visual Real World for Virtual Reality. In *RealVR: Immersive Digital Reality*, Springer, ISBN 978-3-030-41815-1.

Grants & Awards

National Funding Agencies

2023 NASA EPSCoR—Space Robotic Teleoperation through Neural Scene and Object Reconstruction, *PI*, $750k + $375k cost share; $375k PI total share.

2022 NSF CAREER—Cameras and Algorithms to turn Rays Efficiently into Everyday Reconstructions, *PI*, $500k.

- NASA EPSCoR Seed Award, $50k + $25k cost share.

2021 NSF Medium—Situated Visual Information Spaces, *Co-PI, with Profs. Pfister (Harvard), Kaufman (Stony Brook)*, $1.2M total, $400k share.

- NSF Medium—Closing the Teleoperation Gap, *Co-PI, with Profs. Tellex, Sridhar, Winstein (Stanford)*, $1.2M total, $267k share.
- NSF-India Supplement (2022)—Closing the Teleoperation Gap, *Co-PI*, $100k total, $33k share.

2019 DARPA Learning with Less Labels program: Tasks Algorithmically Given Labels Established via Transferred Symbols, *Co-PI with Profs. Littman, Upfal, and Bach*, $2.8M total, $100k share.

Industry

2023–2024 Amazon—Haptic Behavior Cloning at Scale, *Co-PI, with Profs. Whitney (Northeastern), Tedrake (MIT), Tellex*, $705k total, $250k Brown share.

2021 Amazon Research Award, $80k.

2020 Google Faculty Award, $70k.

- Google exploreCSR Award, *Co-Instructor with Profs. Ritchie, Huang, and Greenwald*, $40k.

2019 Amazon Research Award, $85k.

Gifts Meta (2023; $50k), Cognex (2021–2022; $50k), Google (2021–2023; $28k), Snap (2021; $25k), AI Foundation (2020; $25k); Adobe (2019; $15k).

Brown University

2022 Office of the Vice President for Research—Seed Award (Social Video Verification), *PI*, $50k.

2019 Office of the Vice President for Research—Seed Award (VR Teleoperation), *Co-PI with Prof. Tellex*, $25k, $12.5k share.

2018–2019 Brown Arts Initiative Public Presentation Award, $8k.

2018 Center for Vision Research, *Co-PI with Prof. Huang*, $15k.

2018 Zern Award for Course Development, $5k.

2017 Office of the Vice President for Research—Richard B. Salomon Faculty Award, $14k.

Pre-Brown Postdoc/PhD Funding

2012 Intel Visual Computing Institute-–User-centric Video Processing, *Four year post-doc funding*, ≈$200k.

2011 UCL EngD VEIV Advance Scholarship, *Doctoral funding.*, ≈$6k.

Teaching Experience

Brown University

2017–now Computer Vision, upper-level undergraduate 'full service' class, 250 students, 25 teaching assistants.

2016–now Computer Vision for Computer Graphics and Interaction, graduate seminar, 30 students.

2018–now Computational Photography, upper-level undergraduate interactive project-based class, 40 students.

2021 Research Methods *or How to be a PhD Student*, graduate seminar, 30 students.

2018–now 2D Game Engines, student-led upper-level undergraduate class, 15 students.

Other Universities

2015–2016 Senior Teaching Fellow, Visualization. 240 undergraduate and online students. Harvard Paulson School.

2013 Co-lecturer, Computer Vision for Computer Graphics. Graduate seminar course. MPI für Informatik.

2008–2011 Lecturer, Multimedia Computing, on Video Systems. University College London.

2007–2011 Teaching Fellow, Advanced Modeling, Rendering, and Animation. University College London.

Everything Else

2019 Sheridan Center Junior Faculty Teaching Fellow, Brown University.

2014–2016 Education research and development, booc.io. Harvard Paulson School.
New non-linear online learning platform for HarvardX, in collaboration with Prof. Gary King.

Mentorship & Supervision

External PhD Thesis Committees

2022 Inria Sophia-Antipoles, Siddhant Prakash (student of Prof. Georges Drettakis).

2021 CNRS, Beatrix-Emőke Fülöp-Balogh (student of Prof. Julie Digne).

- Harvard University, Felix Gonda (student of Prof. Hanspeter Pfister).

2020 Northeastern University, Michail Schwab (student of Prof. Michelle A. Borkin).

2019 Inria Sophia-Antipoles, Theo Thonat (student of Prof. Georges Drettakis).

Brown University

2016–now PhD students: Hojung Ashley Kwon (2022–now), Mikhail Okunev (2021–now), Yiqing Liang (2021–now), Qian Zhang (2018–now), Numair Khan (2016–2021; Meta Research Scientist), Eleanor Tursman (2016–2020; MSc; US Congressional Innovation Scholar).

2016–now Lab members with doctoral study or research destinations *(degree, lab member dates, and destination)*, Yiheng Xie (BSc 2021–2022; CalTech PhD), Adam Pikielny (BSc 2020–2022; Adobe Research), Vikas Thamizharasan (MSc 2020–2022; UMass Amherst PhD), Yue Wang (MSc 2020–2022; Stony Brook PhD), Selena Ling (MSc 2019–2021; UToronto PhD), Purvi Goel (BSc, MSc 2018–2020; Stanford PhD), Atsunobu Kotani (BSc 2017–2020; UC Berkeley PhD), Zejiang Shen (Data Science MSc 2018-2020; Allen Institute for AI residency; MIT PhD), Benjamin Attal (BSc, MSc 2017–2019; CMU PhD), Aaron Gokaslan (BSc, MSc 2017–2019, Facebook AI Research residency; Cornell PhD), Prasetya (Ajie) Utama (MSc 2017–2019, TU Darmstadt PhD), Zhenhao (Andrew) Hou (BSc, RA 2017–2019, Michigan State PhD), Anna Sabel (BSc 2018–2019, NASA JPL), Vivek Ramanujan (BSc 2017–2018, Allen Institute for AI residency; University of Washington PhD), Sarah Pratt (BSc 2017–2018, Allen Institute for AI residency; University of Washington PhD).

2016–now MSc theses, Yiwen (Nick) Huang, Milla Shin, Michael Snower, Shash Sinha, Ziyin (Martin) Ma, Benjamin Bao.

2016–now ScB honours theses, Troy Conklin, Marc Mapeke, Xinjie (Jayden) Yi, Yuanhao (Harry) Hou, Eliot Laidlaw (*Randy Pausch Undergraduate Research Award*), Adam Pikielny (*Brown CS undergraduate research symposium 1st place*), Zhiqiu Jacob Yu, Maggie Wu, Isa Milefchik, Henry Stone, Lucas Kasser, Megan Gessner, Atsunobu Kotani, Frances Chen.

2016–now Lab visitors, Automne Petitjean (Inria Sophia-Antipoles/École normale supérieure Lyon, 2023), Beatrix-Emőke Fülöp-Balogh (Centre national de la recherche scientifique, 2019), Thomas Saulou (École normale supérieure Paris-Saclay, 2019), Yuxiao Zhou (Tsinghua University, 2018).

Group Independent Study Projects.
Semester-long student-led investigations in seminar style with faculty mentorship and guidance.

2022 NFTs, Blockchain, and Art.

2019 Dvorak: Composing a Better Keyboard.

2018 Video Games: The Multidisciplinary Phenomenon.

exploreCSR @ Brown University

Semester-long computer science research experience for diverse undergraduate students.
2021: 660 applicants (Worldwide). 2022: 195 applicants (North East US). 2023: 145 applicants (North East US).

2023 MinhPhuong Cao (Bucknell University), Claire Schlesinger (Northeastern University).

2022 Marwa Bouabid (Mount Holyoke College), Joey Steigelman (Hunter College—City University of New York), Lucas Weissman (Williams College), Logan Stevens (University of Maryland College Park).

2021 Hana Memon (College of New Jersey), James Washington (Morehouse College), Elyece Patterson (Spelman College).

Community Mentoring and Judging

ACM Student Research Competition Finals 2023, MIT AI for Film Making Hackathon 2023, SIGGRAPH Student Research Competition 2021–2022, SIGGRAPH Junior Scientist Mentor (Xi Wang (ETH Zurich)) 2021–, SIGGRAPH Thesis Fast Forward Mentor and Juror, CVPR 2021–2023 Faculty Mentor Networking, National Collegiate Research Conference, ENVISION By WiSTEM (high school students; 2021–2022).

University Service

Brown Department of Computer Science

2016–2023 PhD Admissions Subcommittee, *(2023) Associate chair*.

2020, 2023 Faculty Search Subcommittee.

2021 Lecturer Search Subcommittee.

2022–2023 Curriculum Committee.

2017–2019 Teaching Efficiency Committee.

2020–2021 Remote Graduation Ceremony Faculty Songs.
Herded cats to create well-received parody songs that celebrated our graduates.
On YouTube: https://www.youtube.com/watch?v=-HoxIT4GQFo and https://www.youtube.com/watch?v=SnByjnzKUGw

Pre-Brown

2005–2006 Staff-student Committee, King's College London.
Awarded prize for outstanding contribution as a student representative.

Academic Service

Workshops, Courses, and Tutorials

2022–2023 Tutorial/Course Organizer and Co-instructor, Neural Fields for Visual Computing.
At SIGGRAPH 2023: 500+ attendees. At CVPR 2022: 400+ attendees.

2020–2023 Workshop Organizer, AI for Content Creation @ CVPR.
2023: 400 attendees; 45 submissions. 2022: 250 attendees; 56 submissions. 2021: 100 attendees; 30 submissions.

2020 Conference Organizer, Brown Unconference; 200+ attendees.

2019 Workshop Organizer, New England Computer Vision Workshop; 100 attendees.

2017 Course Organizer and Co-instructor, Video for Virtual Reality, SIGGRAPH.

2015 Course Organizer and Co-instructor, User-centric Computational Videography, SIGGRAPH.

Programmes and Peer Review

Associate Editor, Computer Graphics Forum (2023–2027).

Programme Chair, SIGGRAPH 2023 Posters.
140 submissions with 440 reviews adjudicated over a two-day eight-person Jury meeting. 36% acceptance rate.

Programme Committee/Area Chair,
Computer Graphics: SIGGRAPH Technical Papers: North America 2024, 2020; Asia 2022. Posters Jury: North America 2021–2023. Technical Communications (Short Papers): Asia 2020. Eurographics Technical Papers: 2022–2023. State of the Art Reports: 2017–2018, 2023. Pacific Graphics Technical Papers: 2015–2019.
Computer Vision: ECCV 2024, 2022, 3DV 2021, BMVC 2021, 2023, Workshops: CVPR AI4Animals 2021, CVPR Computational Cameras & Displays 2018.
Visual Computing: Computational Visual Media 2018–2022, CAD/Graphics 2015–2017, CVMP 2012–2017.

Programmes and Peer Review (continued)

At-will Reviewer,
Computer Graphics: SIGGRAPH/ToG, Eurographics/CGF, TVCG, Pacific Graphics, EGSR, ISMAR, C&G.
Computer Vision: TPAMI, CVPR, ICCV, NeurIPS (top 10% of reviewers, 2019), 3DV, SENSORS.
Human-Computer Interaction: SIGCHI, UIST, VIS, SUI, HRI.
Multimedia: TIP, TCSVT, CVMP, MUM, CACH.

Grant Proposal Reviewer, US National Science Foundation 2019,2020,2022, Israeli Science Foundation 2018.

Invited Talks

2023 Nov. More Cameras and Better Cameras for Scene Reconstruction, University of Massachusetts Amherst.
- Oct. Reconstructing the Real World with Neural Fields, Pomona College and Harvey Mudd College (CS Colloquium).
- Jun. From Video to Unsupervised Semantic 4D Reconstruction, University of British Columbia.
- Jun. Are Multi-view Edges Incomplete?, CVPR Workshop on Light Fields (Keynote).
- May More Cameras and Better Cameras for Scene Reconstruction with Neural Fields, MIT.
- Feb. Semantic Attention Flow Fields, Northeastern University.

2022 Dec. Neural Fields for Scene Reconstruction, Boston College.
- Oct. Neural Fields for Scene Reconstruction, Queen Mary University of London.
- Oct. Neural Fields for Scene Reconstruction, DC I/O Conference, Algorithms Session (Keynote).
- Oct. Differentiable Rendering, Neural Fields, and Scene Reconstruction, George Mason University.
- Oct. More Cameras and Better Cameras: Time-of-Flight Radiance Fields and Scalable Hybrid Structures for Scene Reconstruction, Columbia University.
- Oct. More Cameras and Better Cameras: Time-of-Flight Radiance Fields and Scalable Hybrid Structures for Scene Reconstruction, Google.
- Jun. Neural Fields for Scene Reconstruction, Cognex Internal Engineering Conference.
- Mar. Differentiable Rendering for Scene Reconstruction and VR Teleoperation, Conference on Human-Robot Interaction, Workshop on Virtual, Augmented, and Mixed Reality (Keynote).
- Mar. Inferring Geometry and Structure to Improve Interactive AR and VR, Harvard University.

2021 Dec. Scene Reconstruction via the Differentiable Rendering Spectrum, INRIA/Université Côte D'Azur, France.
- Dec. Scene Reconstruction via the Differentiable Rendering Spectrum, Max-Planck-Institute for Informatics, Germany.
- Dec. Scene Reconstruction via the Differentiable Rendering Spectrum, CNRS/Université Lyon and Eurographics French Chapter Online, France.
- Nov. Computer Vision for Creative Media, Boston College.
- Oct. Scene Reconstruction via the Differentiable Rendering Spectrum, University of Washington.
- Oct. Scene Reconstruction via the Differentiable Rendering Spectrum, MIT.
- May Multi-view Reconstruction via the Differentiable Rendering Spectrum, Cornell University.
- May Why Differentiable Rendering Might Help Remote Sensing, Cloud to Street.
- May Differentiable Rendering for VR Teleoperation, INRIA/Université Côte D'Azur (Sophia-Antipoles).
- Apr. Learning Controls through Structure for Generating Handwriting and Images, 2D+3D+AI Group.
- Apr. Creative Editing for Future Smartphones, VSCO.
- Feb. Multi-view Reconstruction via the Differentiable Rendering Spectrum, New York University.

2019 Jul. Scene Reconstruction from Light Field and 360 Images, Dagstuhl Seminar on RealVR.
- Jul. Unsupervised Learning of Image Editing and Segmentation, INRIA/Université Côte D'Azur (Sophia-Antipoles).

Invited Talks (continued)

- Jun. Unsupervised Learning of Image Editing and Segmentation, CVPR Deep Learning for Content Creation Tutorial.
- Apr. Creative Spaces, *Discover Conference*, Rhode Island School of Design.
- Mar. Machine Learning and Visual Computing, *Guest lecture in Industrial Design*, Rhode Island School of Design.

2017 Jul. Consistent Filtering for Imagery, University of Bath.

- Apr. Consistent Filtering for Imagery, New England Symposium on Graphics.

2012 May Exploring Future Video Applications, CSAIL, MIT.

Exhibitions & Installations

2017–2021 RISD Museum, Discover Art/Science, *with Brown/RISD STEAM club*.

2018 Brown University Carriage House Gallery, Bad Art, Demonstrating ML generative failures.

2015–2016 Museum of the Moving Image, *New York, USA*, Rear Window Augmented, with Jeff Desom.
Spatio-temporally exploring Hitchcock's Rear Window through synchronized augmented and virtual realities.

2015 Assembly, *Harvard University*, Rear Window Augmented.

- UIST Demonstrations, Interactive Light Field Painting.

2014 ISCP, *New York, USA*, Rear Window Augmented.

- Festival Imaginales, *Epinal, France*, Rear Window Augmented.
- Luxembourg Film Festival, Rear Window Augmented.

2013 Vidicontexts, *UIST 2013 Demonstrations*.

2012 SIGGRAPH Emerging Technologies, Interactive Light Field Painting.

2008 Digital Cities: London's Future, *The Building Centre, London*, Multi-touch Adaptive Architecture.

2007 Capture & Context, *Bartlett School of Architecture, London*, Omnidirectional Video Environments.