

EMILY WHITING

Boston University
Center for Computing & Data Sciences
Computer Science Department
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<https://shape.bu.edu/>

EDUCATION HISTORY

- Ph.D. 2012 **Massachusetts Institute of Technology**
Computer Graphics & Building Technology
Thesis Advisors: Prof. John Ochsendorf, Prof. Frédo Durand
MIT Presidential Fellow
- S.M. 2006 **Massachusetts Institute of Technology**
Design & Computation, Department of Architecture
Thesis Advisors: Prof. Seth Teller, Prof. Takehiko Nagakura
Awarded Thesis Prize
- B.A.Sc. 2004 **University of Toronto**
Engineering Science (with Honors), Faculty of Applied Science and Engineering
Thesis Advisors: Dr. Sabry El-Hakim, Prof. Demetri Terzopoulos

ACADEMIC POSITIONS

- 2021 – present **Boston University**, Associate Professor
Department of Computer Science, College of Arts & Sciences
- 2022 – 2023 **University of Washington**, Visiting Scholar
Department of Human Centered Design & Engineering, College of Engineering
Paul G. Allen School of Computer Science & Engineering
- 2017 – 2021 **Boston University**, Assistant Professor, *Innovation Career Development Professorship*
Department of Computer Science, College of Arts & Sciences
- 2017 – 2021 **Dartmouth College**, Adjunct Assistant Professor
Department of Computer Science, Faculty of Arts & Sciences
- 2014 – 2017 **Dartmouth College**, Assistant Professor
Department of Computer Science, Faculty of Arts & Sciences
- 2011 – 2014 **ETH Zurich**, Postdoctoral Fellow, *ETH Zurich/Marie Curie Cofund Fellow*
Interactive Geometry Lab, Institute of Visual Computing

HONORS & AWARDS

- 2021 NSF CAREER Award
- 2019 – 2021 Sloan Research Fellow, Alfred P. Sloan Foundation
- 2020 Best Paper Honorable Mention, ACM CHI 2020
- 2020 Best Paper, 8th Intl. Conference on Culture & Computing
- 2017 – 2020 Innovation Career Development Professor, Boston University
- 2012 – 2014 ETH Zurich Postdoctoral Fellowship / Marie Curie COFUND Program
- 2008 – 2010 Doctoral Scholarship, Natural Sciences & Engineering Research Council of Canada (NSERC)
- 2007 Best Paper Presentation, Computer Aided Architectural Design (CAAD) Futures
- 2006 MIT Ph.D. Presidential Fellowship
- 2006 Master's Thesis Prize, MIT Department of Architecture
- 2004 – 2006 Graduate Fellowship, MIT Department of Architecture
- 2001 – 2004 Women in Engineering and Science Scholarship, National Research Council of Canada

GRANTS & OTHER FUNDING

- 2024 BU Hariri Institute, Focused Research Program.
From Self-Driving Labs to Community-Driven Labs
- 2024 Teach Access Grant. \$2,000
- 2021 – 2026 National Science Foundation (NSF). \$516,782
CAREER: Geometry and Mechanics of Textile-Based Structural Design
Sole PI. Award #2047342.
- 2020 – 2023 Department of Defense, U.S. Army CCDC Soldier Center. \$360,000
Design of Helmet Pad Structures using Autonomous Experimental Research
Co-PI with Keith Brown.
- 2023 Adobe Systems Gift. \$10,000
- 2022 Adobe Systems Gift. \$17,500
- 2019 – 2021 Sloan Research Fellowship. \$70,000
- 2018 – 2021 National Science Foundation (NSF). \$498,431 (\$166,600 awarded to BU)
Robust Intelligence (RI): Small: Collaborative Research: Computational Joinery
Co-PI with Devin Balkcom, Weifu Wang. Award #1813319.
- 2018 – 2020 BU Hariri Institute, Research Incubation Award. \$50,494
Data-Driven Design of Tough 3D Printed Structures
Lead PI with Co-PIs Keith Brown, Elise Morgan.
- 2017 – 2020 BU Innovation Career Development Professorship. \$107,511
- 2015 – 2018 National Science Foundation (NSF): Research Initiation Initiative (CRII). \$174,999
Cyber-Human Systems (CHS): Structurally-Aware Computation for Geometry Acquisition and Design
Sole PI. Award #1755767
- 2016 – 2017 Adobe Systems Gift. \$58,900
- 2016 – 2017 Dartmouth Neukom Institute: CompX Faculty Grant. \$15,000
Computational Design of Deployable Structures
Co-PI with Devin Balkcom.

OTHER PROFESSIONAL PREPARATION

- 2010 Summer R&D Intern Lucasfilm Industrial Light & Magic, San Francisco, USA
- 2008 – 2011 Research Assistant MIT, Department of Computer Science, Cambridge, USA
Computer Graphics Group
- 2007 – 2008 Teaching Assistant MIT, Cambridge, USA
Courses: Basic Structural Design, Introduction to Computer Graphics
- 2006 – 2007 Research Assistant MIT, Department of Architecture, Cambridge, USA
MIT Presidential Fellowship
- 2004 – 2006 Research Assistant MIT, Department of Computer Science, Cambridge, USA
Robotics, Vision & Sensor Networks Group
- 2002 – 2003 Junior Designer Yolles Partnership Inc., Toronto, Canada
Structural Engineering Division
- 2001 – 2004 Research Intern National Research Council of Canada, Ottawa, Canada
Summers Visual Information Technology Group
Women in Engineering and Science Fellow

PUBLICATIONS

Shape Lab: <https://shape.bu.edu/publications>

Google Scholar: <https://scholar.google.com/citations?user=TU9kGYAAAAJ&hl=en>

Papers

- [1] KnitScope: Computational Design and Yarn-Level Simulation of Slip and Tuck Colorwork Knitting Patterns
H. Twigg-Smith, E. Whiting, and N. Peek
ACM CHI Conference on Human Factors in Computing Systems (CHI), 2024
- [2] GroundLink: A Dataset Unifying Human Body Movement and Ground Reaction Dynamics
X. Han, B. Senderling, S. To, D. Kumar, E. Whiting, and J. Saito
ACM SIGGRAPH Asia 2023
- [3] Helix-Free Stripes for Knit Graph Design
R. Mitra, L. Makatura, E. Whiting, and E. Chien
ACM SIGGRAPH 2023
- [4] Designing Lattices for Impact Protection using Transfer Learning
A. Gongora, K. Snapp, R. Pang, T. Tiano, K. Reyes, E. Whiting, T. Lawton, E. Morgan, and K. Brown
Matter, 2022
- [5] Designing Composites with Target Effective Young's Modulus using Reinforcement Learning
A. Gongora, S. Mysore, B. Li, W. Shou, W. Matusik, E. Morgan, K. Brown, and E. Whiting
ACM Symposium on Computational Fabrication (SCF), 2021
- [6] Knitting 4D Garments with Elasticity Controlled for Body Motion
Z. Liu, X. Han, Y. Zhang, X. Chen, Y. Lai, E.L. Doubrovski, E. Whiting, and C.C.L. Wang
ACM Transactions on Graphics, 2021 (ACM SIGGRAPH 2021 Issue)
- [7] Using Simulation to Accelerate Autonomous Experimentation: A Case Study using Mechanics
A. Gongora, K. Snapp, E. Whiting, P. Riley, K. Reyes, E. Morgan, and K. Brown
iScience, Vol. 24, Issue 4, April 2021
- [8] Falling Into Place: Drop Assembly of Interlocking Puzzles
A. Sniffen, Z. Sun, S. Lensgraf, E. Whiting, A.Q. Li, and D. Balkcom
Robotics: Science and Systems, 2021
- [9] Augmented Reality for Sculpture Stability Analysis and Conservation
D. Henneman, Y. Li, J. Ochsendorf, M. Betke, and E. Whiting
Eurographics Workshop on Graphics and Cultural Heritage, 2020
- [10] Tactile Line Drawings for Improved Shape Understanding in Blind and Visually Impaired Users
A. Panotopoulou, X. Zhang, T. Qiu, X.-D. Yang, and E. Whiting.
ACM Transactions on Graphics, 2020 (ACM SIGGRAPH 2020 Issue)
- [11] PuzzleFlex: Kinematic Motion of Chains with Loose Joints
S. Lensgraf, K. Itani, Y. Zhang, Z. Sun, Y. Wu, A.Q. Li, B. Zhu, E. Whiting, W. Wang and D. Balkcom.
Intl Conference on Robotics and Automation (ICRA), 2020
- [12] TangibleCircuits: An Interactive 3D Printed Circuit Education Tool for People with Visual Impairments
J.U. Davis, T.-Y. Wu, B. Shi, H. Lui, A. Panotopoulou, E. Whiting, and X.-D. Yang.
ACM CHI Conference on Human Factors in Computing Systems (CHI), 2020
Awarded Best Paper Honorable Mention at CHI 2020 (top 5% of submissions)
- [13] Computational Design of Fabric Formwork
X. Zhang, G. Fang, M. Skouras, G. Gieseler, C.C.L. Wang and E. Whiting.
ACM Transactions on Graphics, 2019 (ACM SIGGRAPH 2019 Issue)
- [14] Watercolor Woodblock Printing with Image Analysis
A. Panotopoulou, S. Paris and E. Whiting.
Computer Graphics Forum, 2018 (Eurographics 2018 Issue)

- [15] Assembling and Disassembling Planar Structures with Divisible and Atomic Components
Y. Zhang, E. Whiting and D. Balkcom.
IEEE Transactions on Automation Science and Engineering, 2018
- [16] Thermal-Comfort Design of Personalized Casts
X. Zhang, G. Fang, C. Dai, J. Verlinden, J. Wu, E. Whiting and C.C.L. Wang.
ACM Symposium on User Interface Software and Technology (UIST), 2017
- [17] Environment-Scale Fabrication: Replicating Outdoor Climbing Experiences
E. Whiting, N. Ouf, L. Makatura, C. Mousas, Z. Shu and L. Kavan.
ACM CHI Conference on Human Factors in Computing Systems (CHI), 2017
- [18] Spin-It: Optimizing Moment of Inertia for Spinnable Objects
M. Bächer, B. Bickel, E. Whiting, and O. Sorkine-Hornung.
Communications of the ACM: Research Highlights, August 2017 (*Reprint of SIGGRAPH 2014 article, with foreword: "Technical perspective: Linking form, function, and fabrication" by H. Pottmann*)
- [19] Assembling and Disassembling Planar Structures with Divisible and Atomic Components
Y. Zhang, E. Whiting and D. Balkcom.
Algorithmic Foundations of Robotics (WAFR), 2016
- [20] Printone: Interactive Resonance Simulation for Free-form Print-wind Instrument Design
N. Umetani, A. Panotopoulou, R. Schmidt and E. Whiting.
ACM Transactions on Graphics, 2016 (ACM SIGGRAPH Asia 2016 Issue)
- [21] Data-Driven Bending Elasticity Design by Shell Thickness
X. Zhang, X. Le, Z. Wu, E. Whiting and C.C.L. Wang.
Computer Graphics Forum, 2016 (Eurographics Symposium on Geometry Processing 2016 Issue)
- [22] Buoyancy Optimization for Computational Fabrication
L. Wang and E. Whiting.
Computer Graphics Forum, 2016 (Eurographics 2016 Issue)
- [23] Foldings: A Tool for Interactive Pop-Up Card Design
N. Harquail, M. Allen and E. Whiting.
Eurographics Workshop on Graphics for Digital Fabrication, 2016
- [24] Perceptual Models of Preference in 3D Printing Orientation
X. Zhang, X. Le, A. Panotopoulou, E. Whiting and C.C.L. Wang.
ACM Transactions on Graphics, 2015 (ACM SIGGRAPH Asia 2015 Issue)
- [25] A 3-D Stability Analysis of Lee Harvey Oswald in the Backyard Photo
S. Pittala, E. Whiting and H. Farid.
Journal of Digital Forensics, Security and Law, 2015
- [26] Assembling Self-Supporting Structures
M. Deuss, D. Panozzo, E. Whiting, Y. Liu, O. Sorkine-Hornung and M. Pauly.
ACM Transactions on Graphics, 2014 (ACM SIGGRAPH Asia 2014 Issue)
- [27] Spin-It: Optimizing Moment of Inertia for Spinnable Objects
M. Baecher, E. Whiting, B. Bickel and O. Sorkine-Hornung.
ACM Transactions on Graphics, 2014 (ACM SIGGRAPH 2014 Issue)
- [28] A Graph-based Approach for Discovery of Stable Deconstruction Sequences
L. Beyeler, J.-C. Bazin and E. Whiting.
Advances in Architectural Geometry, 2014
- [29] Make It Stand: Balancing Shapes for 3D Fabrication
R. Prévost, E. Whiting, S. Lefebvre and O. Sorkine-Hornung.
ACM Transactions on Graphics, 2013 (ACM SIGGRAPH 2013 Issue)

- [30] Structural Optimization of 3D Masonry Buildings
E. Whiting, H. Shin, R. Wang, J. Ochsendorf and F. Durand.
ACM Transactions on Graphics, 2012 (ACM SIGGRAPH Asia 2012 Issue)
- [31] Procedural Modeling of Structurally-Sound Masonry Buildings
E. Whiting, J. Ochsendorf and F. Durand.
ACM Transactions on Graphics, 2009 (ACM SIGGRAPH Asia 2009 Issue)
- [32] Detailed 3D Modeling of Castles
S. El-Hakim, L. Gonzo, F. Voltolini, S. Girardi, A. Rizzi, F. Remondino and E. Whiting.
Intl. Journal of Architectural Computing (IJAC), 2007
- [33] Topology of Urban Environments
E. Whiting, J. Battat and S. Teller.
Computer-Aided Architectural Design (CAAD) Futures, 2007
Awarded Best Paper Presentation at CAAD Futures 2007
- [34] Constrained Planar Remeshing for Architecture
B. Cutler and E. Whiting.
Graphics Interface, 2007
- [35] 3D Modeling with Reusable and Integrated Building Blocks
S. El-Hakim, E. Whiting and L. Gonzo.
Optical 3D Measurement Techniques, 2005
- [36] A Hierarchical 3D Reconstruction Approach for Documenting Complex Heritage Sites
S. El-Hakim, J.-A. Beraldin, L. Gonzo, E. Whiting and M. Jemtrud.
CIPA Intl Symposium, ICOMOS & ISPRS Committee on Documentation of Cultural Heritage, 2005
- [37] Digital Recording of Aboriginal Rock Art
S. El-Hakim, J. Fryer, M. Picard and E. Whiting.
Virtual Systems and Multimedia (VSMM), 2004
- [38] Photo-Realistic 3D Reconstruction of Castles with Multiple Sources Image-Based Techniques
L. Gonzo, S. El-Hakim, M. Picard, S. Girardi and E. Whiting.
Congress Intl Society for Photogrammetry & Remote Sensing (ISPRS), 2004

Courses

- [39] 3D Printing Oriented Design: Geometry and Optimization
L. Liu, C.C.L. Wang, A. Shamir and E. Whiting.
ACM SIGGRAPH Asia, Invited Course, 2014

Refereed Abstracts, Posters & Videos

- [40] Laser Polishing: A Postprocessing Protocol for Fused Deposition Modeling 3D Printed Parts Using Existing Tooling. E. Latorre and E. Whiting
ACM Symposium on Computational Fabrication (SCF), Demo & Poster session, 2023
- [41] Knitting 4D Garments with Elasticity Controlled for Body Motion
Z. Liu, X. Han, Y. Zhang, X. Chen, Y. Lai, E.L. Doubrovski, E. Whiting, and C.C.L. Wang
ACM Symposium on Computational Fabrication (SCF), Demo & Poster session, 2022
- [42] 3D Virtual Reconstruction and Sound Simulation of an Ancient Roman Brass Musical Instrument
Z. Sun, A. Rodà, E. Whiting, E. Faresin, and G. Salemi
HCI International: 8th Intl. Conference on Culture & Computing, 15 pages, July 2020 (*Abstract refereed*)
Awarded Best Paper of 8th Intl. Conference on Culture & Computing
- [43] Computational Design of Fabric Formwork
X. Zhang, G. Fang, M. Skouras, G. Gieseler, C.C.L. Wang and E. Whiting
ACM SIGGRAPH, Poster program, 2019 (*Invited from Technical Papers track*)

- [44] Computational Design of Fabric Formwork
X. Zhang, G. Fang, M. Skouras, G. Gieseler, C.C.L. Wang and E. Whiting
ACM Symposium on Computational Fabrication, Poster session, 2019
- [45] Watercolor Woodblock Printing with Image Analysis
A. Panotopoulou, S. Paris and E. Whiting
ACM Symposium on Computational Fabrication, Poster session, 2018
- [46] Perceptual Models of Preference in 3D Printing Orientation
X. Zhang, X. Le, A. Panotopoulou, E. Whiting and C. Wang.
Symposium on Computational Fabrication, Poster session, 2016
- [47] Digital Reconstruction and 4D Presentation through Time
S. El-Hakim, J.F. Lapointe and E. Whiting.
ACM SIGGRAPH Technical Sketches, 2008
- [48] Constrained Planar Remeshing for Architecture
B. Cutler and E. Whiting.
Eurographics Symposium on Geometry Processing (SGP), Poster session, 2006
- [49] PORTALS
Directors: S. El-Hakim and M. Picard. Contributed 3D scene modeling.
ACM SIGGRAPH Video Review Issue 143, Animation Theater Program, 2002

Other Media

- [50] The Metopes of Selinunte
Directors: V. Valzano, A. Bandiera and J.A. Beraldin. Contributed 3D animation.
CD-ROM. Coordinamento SIBA, University of Lecce, 2006 (*e-Science Award Italy*)

Theses

- [51] Design of Structurally Sound Masonry Buildings Using 3D Static Analysis
Advisors: John Ochsendorf, Frédo Durand. Ph.D. Thesis, Massachusetts Institute of Technology, 2011
- [52] Geometric, Topological & Semantic Analysis of Multi-Building Floor Plan Data
Advisors: Seth Teller, Takehiko Nagakura. S.M. Thesis, Massachusetts Institute of Technology, 2006
- [53] Realism in 3D Virtual Spaces: Improving Texture Quality in Image-Based Modeling Systems through Application of High Dynamic Range Imagery
Advisors: Sabry El-Hakim, Demetri Terzopoulos. B.A.Sc. Thesis, University of Toronto, 2002

INVITED SPEAKING EVENTS

Keynotes & Invited Talks at Conferences & Symposia

- 2022 Oct ACM Symposium on Computational Fabrication (SCF). Hosted at University of Washington, Seattle, WA, USA. Keynote Speaker. <https://scf.acm.org/2022/>
- 2021 June Journée IHM IG RV 2021 (Human-Computer Interaction, Computer Graphics and Virtual Reality Day). Hosts: INRIA, CNRS. Keynote Speaker. <https://ihmigrv.afihm.org/>
- 2019 Aug 3D Printing Symposium. Hosted at Dartmouth College, Hanover, NH, USA. Invited Speaker.
- 2019 June International Conference on Geometric Modeling and Processing (GMP). Hosted at Simon Fraser University, Vancouver, Canada. Keynote Speaker.
- 2019 April New England Symposium on Graphics. Hosted at MIT, Cambridge, MA, USA. Invited Speaker.
- 2019 March American Physical Society (APS) March Meeting. Boston, MA, USA. Session: Discrete Structures: Geometry, Mechanics, Graphics, and Computation I. Invited Speaker.
- 2018 May Graphics Interface International Conference. Hosted at York University, Toronto, Canada. Invited Speaker.
- 2014 Nov TEDxBeaconStreet, “3D Printing: the Physics of Objects.” Invited Speaker.
<https://tedxbeaconstreet.com/speakers/emily-whiting/>

Workshops, Colloquia, Seminars & Other Events

- 2023 June Simon Fraser University, VINCI Seminar. Burnaby, BC, Canada. Invited Speaker
- 2023 Feb University of Washington, DUB (Design, Use, Build) Seminar. Seattle, WA. Invited Speaker.
<https://dub.washington.edu/seminars/2023-02-08.html>
- 2022 Oct University of Washington, Human Centered Design & Engineering Department, Research Seminar. Seattle, WA. Invited speaker.
- 2022 Sept University of Washington, GRAIL: Graphics and Imaging Laboratory, Annual Retreat. Seattle, WA. Invited attendee and speaker.
- 2021 Aug Summer Geometry Institute (SGI), MIT. Cambridge, MA. Invited Lecture.
- 2021 July Women in Graphics Research (WiGRAPH) Event, hosted by 2021 Symposium on Geometry Processing. Panelist. <https://www.wigraph.org/events/2021-sgp-wigraph-event/>
- 2020 Feb Autodesk Technology Center Spotlight Series, Boston, MA. Invited Speaker.
<https://vimeo.com/394452785>
- 2019 Dec MIT Media Lab, Cambridge, MA. Women's Lunch Series: Invited Speaker.
- 2019 Dec University of Massachusetts Amherst, College of Information and Computer Sciences.
- 2019 July AI4ALL Summer Program, Boston University. Boston, MA. Invited Speaker.
- 2019 July New Balance Innovation Studio. Lawrence, MA. Invited Presentation.
- 2019 April Association for Women in Mathematics (AWM) Research Symposium. Hosted at Rice University, Houston, Texas. Invited Workshop Speaker: Women in Shape Modeling Session.
- 2018 Dec Tertulia: Junior Faculty Colloquium, BU College of Arts & Science. Invited Speaker.
- 2018 Dec Computational Fabrication course, EECS Department, MIT. Guest Lecturer.
- 2018 May Fields Institute, Workshop on Robust Geometric Algorithms for Computational Fabrication. Toronto, Canada. Invited attendee and speaker.
- 2017 Dec WPI Computer Science Colloquium. Worcester, MA, USA. Invited Speaker.
- 2017 Oct McGill University, Computer Science Colloquium. Montreal, Canada. Invited Speaker.
- 2017 Oct Tufts University, Electrical and Computer Engineering Seminar Series, co-sponsored by IEEE Education Society. Invited Speaker.
- 2017 Oct MIT, Computer Graphics Group Annual Retreat. Invited attendee and speaker.
- 2017 Sept Boston University, CS Day: Research Highlights Session. Invited Speaker.
- 2017 April Tufts University, Computer Science Colloquium. Invited Speaker.
- 2016 Sept MIT, Computer Graphics Group Seminar. Invited Speaker.
- 2016 May 1st Eurographics Workshop on Graphics for Digital Fabrication. Lisbon, Portugal. Invited Expert Panelist.
- 2015 Nov Mount Holyoke College, Computer Science Seminar. Invited Speaker.
- 2015 Feb MIT Department of Architecture, Building Technology Lecture Series. Invited Speaker.
- 2014 Dec Hong Kong University, Computer Graphics Group Seminar Series. Invited Speaker.
- 2014 Dec SIGGRAPH Asia, Course: “3D Printing Oriented Design: Geometry & Fabrication.” Invited Course Instructor, “Structural aspects of geometry design.” Shenzhen, China.
- 2014 Dec Chinese University of Hong Kong, Department of Mechanical and Automation Engineering, Seminar Series. Invited Speaker.
- 2014 Nov Wellesley College, Computer Science Department, Seminar Series. Invited Speaker.
- 2014 Oct MIT, Computer Graphics Group Annual Retreat. Invited attendee and speaker.
- 2014 Sept Schloss Dagstuhl Seminar: Computational Aspects of Fabrication. Wadern, Germany. Invited attendee and speaker.
- 2013 June 3D Fabrication Summer School, UCL, Center for Virtual Environments, Imaging & Visualization. London, UK. Invited Speaker.

- 2012 June Autodesk Research. Toronto, Canada. Invited Talk.
2011 March PBS NOVA. "The Secret Life of Scientists & Engineers". Featured Scientist, Season 2011, Episode 39. <http://www.pbs.org/video/secret-life-of-scientists-emily-whiting-architectural-engineer/>
2010 Aug R&D Group, Industrial Light & Magic, Lucasfilm Ltd. San Francisco, USA. Invited Talk.
2009 Nov INRIA Grenoble – Rhône-Alpes Research Center. Montbonnot, France. Invited Talk.
2008 April American Academy in Rome. New York, USA. Invited Speaker & Panelist.

COURSES TAUGHT

Boston University, Department of Computer Science

- 2024 Spring CAS CS 581: Computational Fabrication
2023 Fall CAS CS 480/680: Introduction to Computer Graphics
2022 Spring CAS CS 581: Computational Fabrication
2022 Spring GRS CS 697: Graduate Initiation Seminar
2021 Fall CAS CS 480: Introduction to Computer Graphics
2020 Spring CAS CS 581: Computational Fabrication
2019 Fall CAS CS 480/680: Introduction to Computer Graphics
2019 Spring CAS CS 581: Computational Fabrication
2018 Fall CAS CS 480/680: Introduction to Computer Graphics
2018 Spring CAS CS 591: Computational Fabrication

University of Washington, Department of Human Centered Design & Engineering

- 2023 Spring Directed Research Group (DRG): Developing Accessible Workflows for Making Tactile Graphics

Dartmouth College, Department of Computer Science

- 2017 Spring Maternity Leave
2017 Winter Maternity Leave
2016 Fall COSC 89/189: Computational Fabrication
2016 Spring COSC 89/189: Computational Fabrication
2016 Winter COSC 98: Senior Design & Implementation Project
2015 Fall COSC 77/177: Computer Graphics
COSC 98: Senior Design & Implementation Project
2015 Spring COSC 77/177: Computer Graphics
2014 Fall COSC 89/189: Computational Fabrication

ETH Zurich, Department of Computer Science

- 2012 Fall Seminar, Advanced Topics in Computer Graphics and Vision (Teaching Assistant)
2012 Spring Shape Modeling and Geometry Processing (Guest Lecturer)

MIT, Department of Architecture

- 2008 Spring 4.440/4.462 Basic Structural Design (Teaching Assistant)

MIT, Department of Computer Science

- 2007 Fall 6.837 Introduction to Computer Graphics (Teaching Assistant)

PROFESSIONAL SERVICE

Conference Chair

- 2024 Pacific Graphics 2024, Program Co-Chair
2021 ACM Symposium on Computational Fabrication 2021, General Chair
2020 ACM Symposium on Computational Fabrication 2020, General Chair
2018 ACM Symposium on Computational Fabrication 2018, Technical Program Co-Chair

Program Committees

- 2024 ACM UIST'24 Program Committee

- 2023 ACM SIGGRAPH'23 Conflict of Interest Coordinator
- 2022 ACM UIST'22 Program Committee
ACM UIST'22 Best Paper Committee
Graphics Interface (GI) 2022 International Program Committee
- 2021 ACM UIST'21 Program Committee
- 2020 ACM SIGGRAPH'20 Conflict of Interest Coordinator
Symposium on Solid and Physical Modeling (SPM) 2020 Technical Program Committee
Graphics Interface (GI) 2020 International Program Committee
- 2019 ACM SIGGRAPH'19 Technical Papers Committee
ACM UIST'19 Program Committee
- 2018 ACM SIGGRAPH'18 Technical Papers Committee
Advances in Architectural Geometry Papers Committee
- 2017 Eurographics International Program Committee
- 2016 ACM SIGGRAPH Asia'16 Technical Papers Committee
Symposium on Solid and Physical Modeling Program Committee
Eurographics Workshop on Graphics for Digital Fabrication Intl Program Committee
Advances in Architectural Geometry Papers Committee
- 2015 ACM SIGGRAPH'15 Technical Papers Committee
Pacific Graphics International Program Committee
- 2014 ACM SIGGRAPH Asia Courses Committee
Graphics Interface Program Committee
Advances in Architectural Geometry Papers Committee
Pacific Graphics International Program Committee
- 2013 ACM SIGGRAPH General Submissions Committee
Pacific Graphics International Program Committee

Editorial Positions

- 2018 – 2022 ACM Transactions on Graphics (ToG), Associate Editor
- 2021 Computers & Graphics: Special Issue on Computational Fabrication, Guest Editor
- 2014 – 2016 The Visual Computer: International Journal of Computer Graphics, Associate Editor

Technical Papers Reviewer

ACM SIGGRAPH, ACM SIGGRAPH Asia, ACM Transactions on Graphics, ACM UIST, ACM CHI, Computer Graphics Forum, Eurographics, Transactions on Visualization and Computer Graphics, Graphics Interface

Other Service

- 2023 – present ACM Symposium on Computational Fabrication, Steering Committee
- 2022 – present AccessComputing Institutional Partner, Representative of Boston University Computer Science
<https://www.washington.edu/accesscomputing/about/partners>
- 2022 Selection Committee for Women in Graphics (WiGRAPH) Rising Stars Program
- 2021 Search Committee for Editor in Chief, ACM Transactions on Graphics (ToG)
- 2016 Oct Dartmouth Thayer School: Visionaries in Technology, Student Poster Competition, Faculty Judge
- 2015 Oct ACM Student Research Competition, Grace Hopper Conference, Jury. Houston, TX, USA
- 2015 Oct HackDartmouth, Judging Panel. Hanover, NH, USA
- 2013 July ACM Student Research Competition, SIGGRAPH, Jury. Anaheim, CA, USA

UNIVERSITY SERVICE

Boston University

- 2023 – 2024 Director of PhD Admissions, Department of Computer Science
- 2020 – present BU Arts Council, Office of the Provost

- 2021 – present Junior Faculty Mentor, Department of Computer Science
- 2021 – 2022 Search Committee for Professor of the Practice in AI, Department of Computer Science
- 2021 Fall Search Committee for Innovate@BU Executive Director, Office of the Provost
- 2019 – 2020 Faculty Search Committee, Department of Computer Science
- 2018 – 2019 Faculty Search Committee, Department of Computer Science
- 2017 – 2018 PhD Admissions Committee, Department of Computer Science

Dartmouth College

- 2016 – 2017 Organizing Committee: Grace Hopper Celebration, Dartmouth CS Dept student group
Schematic Design Committee & CS Committee: Thayer/Computer Science Building Project
- 2015 – 2016 Organizing Committee: Grace Hopper Celebration, Dartmouth CS Dept student group
Schematic Design Committee & CS Committee: Thayer/Computer Science Building Project
MS Digital Arts Admissions Committee
- 2014 – 2015 PhD Admissions Committee, Department of Computer Science
MS Digital Arts Admissions Committee, Department of Computer Science
Curriculum Committee, Department of Computer Science
Co-Founded 2-year MS program: Computer Science with a Concentration in Digital Arts

SELECT PRESS

- 2021 June The Brink. "5 Projects That Push the Limits of Physics, Fabrication Techniques, Algorithm Design" <http://www.bu.edu/articles/2021/5-projects-that-push-the-limits-of-physics-fabrication-techniques-algorithm-design/>
- 2019 Aug The Brink. "Fabric Gives Form to a New DIY Manufacturing Method" <https://www.bu.edu/articles/2019/fabric-formwork-technology/>
- 2019 July Tech Xplore. "PuzzleFlex: Computing the kinematic motion of systems with loose joints" <https://techxplore.com/news/2019-07-puzzleflex-kinematic-motion-loose-joints.html>
- 2019 Feb The Brink. "Q&A with Emily Whiting" <http://www.bu.edu/articles/2019/emily-whiting-awarded-sloan-research-fellowship/>
- 2018 May BU Today. "Taking the Pain out of Painting." <https://www.bu.edu/research/articles/shape-lab-watercolor/>
- 2018 April Outside. "How Two Scientists Will Build Mountains." <https://www.outsideonline.com/2269356/how-two-scientists-will-build-mountains>
- 2017 Nov 3DPrint.com. "Researchers Take Patient Heat Sensitivity Into Account When Developing 3D Printable Orthopedic Cast." <https://3dprint.com/192877/3d-printed-cast-tbermal-comfort/>
- 2017 June U.S. News & World Report. "System aims to recreate challenging mountain climbs in gym." <https://www.usnews.com/news/best-states/utah/articles/2017-06-04/system-aims-to-recreate-challenging-mountain-climbs-in-gym>
- 2017 May TechCrunch. "New system can recreate natural rock-climbing walls indoors." <https://techcrunch.com/2017/05/09/new-system-can-recreate-natural-rock-climbing-walls-indoors/>
- 2017 May CNN. "3D modeling lets rock climbers replicate real mountains -- in the gym." <http://money.cnn.com/2017/05/09/technology/3d-modeling-rock-climbing>
- 2016 Dec New Atlas. "3D-printing software reshapes musical instrument design." <http://newatlas.com/printone-free-form-wind-instruments/>
- 2016 Dec 3Ders. "New 'Printone' design tool lets you 3D print wind instruments in crazy shapes." <http://www.3ders.org/articles/20161206-new-printone-design-tool-lets-you-3d-print-wind-instruments-in-crazy-shapes.html>
- 2015 Oct BBC Radio: In Short (interview). "Was controversial Lee Harvey Oswald photo faked?" <http://www.bbc.co.uk/programmes/p035sqvx>

2015 Oct	Discovery News. "Oswald Photo Isn't Fake, Finds Digital Forensics." http://www.seeker.com/oswald-photo-isnt-fake-finds-digital-forensics-1770368711.html
2015 May	Dartmouth Now. "Creativity, Cathedrals, and Collaboration in Computer Science." https://news.dartmouth.edu/news/2015/05/creativity-cathedrals-and-collaboration-computer-science
2014 Aug	TechCrunch. "Disney Conquers Physics, Uses 3D Printing To Create Impossible Spinning Tops." https://techcrunch.com/2014/08/08/disney-conquers-physics-uses-3d-printing-to-create-impossible-spinning-tops/
2014 Aug	Engadget. "Disney has created an algorithm that can turn almost anything into a spinning top." https://www.engadget.com/2014/08/09/disney-tops/
2013 July	MIT Technology Review: Computing News. In Article: "The Future of Graphics and Gaming." https://www.technologyreview.com/s/517461/the-future-of-graphics-and-gaming/

RESEARCH ADVISING

Founder and director of the **BU Shape Lab**, 2017 – present: <https://shape.bu.edu/>

Co-director of the **BU Computer Graphics Lab**, 2020 – present: <https://sites.bu.edu/graphics/>

Postdoc

2016 – 2019	Xiaoting Zhang	Now Senior Modeling Engineer at Roblox
2015 – 2016	Christos Mousas	Now Associate Professor at Purdue University

Ph.D.

2023 – present	Audrey Ballarin	NSF Graduate Research Fellowship Program (GRFP)
2021 – present	Abhinit Sati	
2021 – present	Sam Silverman	
2019 – present	Xingjian Han	
2018 – present	Zezhou Sun	
2015 – 2020	Athina Panotopoulou	Thesis title: "Stylized 2D Fabrication of Non-Photorealistic Images" (Now Postdoc at University of Copenhagen)

M.S. Theses

2015	Lingfeng Wang	Thesis title: "Buoyancy Optimization for Computational Fabrication" (Now Software Engineer at Uber)
2015	Nook Harquail	Thesis title (joint with M. Allen): "Foldings: Visualization Tools for Interactive Pop-up Card Design"
2015	Marissa Allen	Thesis title (joint with N. Harquail): "Foldings: Visualization Tools for Interactive Pop-up Card Design"
2013 – 2014	Lukas Beyeler	Thesis title: "Mikado: Which Objects to Pick Up in A Safe Way?"

Ph.D. & M.S. Projects

2018 – 2021	Benjamin Verdier	Ph.D. Directed Study (Now at PTC Onshape)
2019	Jamie Nelson	M.S. Directed Study, Project topic: "Pose estimation of Rock Climbers in Monocular Video" (Now at Akamai Technologies)
2017 – 2018	Qiwei Zheng	M.S. Directed Study, Project title: "Object Stability Analysis and Retrofit Design: Sculpture Conservation" (Now at Microsoft)
2014 – 2015	Srivamshi Pittala	Ph.D. Independent study

Undergraduate

2023 – 2024	Tiffany Bao	BU UR2PhD, Directed Study
2023	Selena Ramos	BU UR2PhD
2022	Stanley To	BU UROP, Kilachand Keystone project
2022	Emilio Latorre	BU Directed Study
2022	Hayden Jennings	Undergraduate research assistant

2019 – 2020	Dennis Henneman	BU UROP (Now at MathWorks)
2019 Spring	Tammy Qiu	BU College Prize: College of Arts & Sciences (Now PhD student at Columbia University)
2017 – 2019	Anthea Yichen Li	BU UROP Arts Initiative Summer Research Award, BU College Prize: College of Arts & Sciences (Now PhD student at MIT)
2015 – 2017	Liane Makatura	Thesis title: “Tools for Physical Graphic Design.” Dartmouth Presidential Scholar, Fulbright Scholar (Now PhD student at MIT)
2016	Lily Xu	Dartmouth Presidential Scholar (Now PhD student at Harvard)
2016	Alex Weinberg	Dartmouth Presidential Scholar
2012 – 2013	Clea Benz	Thesis title: “3D Scene Flow Estimation of Deforming Architectural Models with Feature Tracking”

Thesis Committees, Reader

2024 April	Amy Sniffen	Ph.D. Thesis Defense: “Design, Analysis, and Drop Assembly of Interlocking Rigid Bodies,” Dartmouth College
2022 July	Siddharth Mysore	Ph.D. Thesis Defense: “Conditioning Behavior Styles of Reinforcement Learning Policies,” Boston University
2022 June	Robert Kovacs	Ph.D. Thesis Defense: “Human-Scale Personal Fabrication”, Hasso Plattner Institute
2021 Aug	Aldair Gongora	Ph.D. Thesis Defense: “Accelerating Mechanical Design using Autonomous Experimentation,” Boston University
2016 Apr	Weifu Wang	Ph.D. Thesis Defense: “Constraint-Based Robot Knot Tying,” Dartmouth College
2015 Aug	Lukas Zirngibl	M.S. Thesis Defense: “DIMENSION4: Computational Magnetic Drawing Machines,” Dartmouth College

OUTREACH ACTIVITIES

2022 – present	Access Computing Institutional Partner, Representative of Boston University Computer Science. https://www.washington.edu/accesscomputing/about/partners
2022 – present	Women in Graphics (WiGRAPH) Rising Stars Program, Faculty Mentor.
2024 Jan	Science Solstice Day, Driscoll School, Brookline. Hosted at BU Computer Science Department. Presenter: introduced middle school students to research in digital fabrication.
2023 Nov	CRA Level Up Regional Workshop, Boston, MA. Participant: building consensus around united vision for inclusive undergraduate computing.
July 2022	Panelist: Women in Computer Science, Boston University Artemis Project.
2022	Selection Committee for Women in Graphics (WiGRAPH) Rising Stars Program.
2021 Aug	Summer Geometry Institute (SGI), MIT. Invited Lecture.
2021 July	Panelist: Women in Graphics Research (WiGRAPH) Event, hosted by 2021 Symposium on Geometry Processing.
2021 July	Interview: Women in Graphics Research (WiGRAPH) Path Tracing Series. https://www.wigraph.org/post-emily-whiting-virtual-conferences.html
2019 Dec	MIT Media Lab, Women’s Lunch Series. Invited Speaker.
2019 Dec	Science Solstice Day, Driscoll School, Brookline. Hosted at BU Computer Science Department. Presenter: Led hands-on activity with 6 th grade students on mechanics and digital fabrication.
2019 July	AI4ALL Summer Program, Boston University. Invited Speaker: introduced female high school students to research in digital fabrication.
2019 June	Faculty review committee: Grace Hopper Celebration student sponsorship, Boston University Computer Science Department.

- 2018 Dec Science Solstice Day, Driscoll School, Brookline. Hosted at BU Computer Science Department. Presenter: introduced middle school students to research in digital fabrication.
- 2018 Summer Greater Boston Research Opportunities for Young Women (GROW), Boston University. Faculty advisor for high school research internship.
- 2018 July Summer Pathways: high school outreach program, Boston University. Invited Career Panelist.
- 2015 Oct Grace Hopper ACM Student Research Competition Jury, Houston, USA.
- 2011 Apr Science-Engineering-Technology (SET) in the City Program, Museum of Science, Boston. Invited Panelist: Young Women in STEM.
- 2011 Mar PBS NOVA. "The Secret Life of Scientists & Engineers." Featured Scientist, Season 2011, Episode 39. <http://www.pbs.org/video/secret-life-of-scientists-emily-whiting-architectural-engineer/>
- 2008 Feb Google Workshop for Women Engineers, PhD Discussion Panel, San Jose, USA.