

# EMILY WHITING

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## EDUCATION

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### Massachusetts Institute of Technology

- 2012 Ph.D. Computer Graphics & Building Technology, *MIT Presidential Fellow*  
*Advisors: John Ochsendorf & Frédo Durand*
- 2006 M.Sc. Design & Computation  
*Thesis Advisor: Seth Teller*

### University of Toronto

- 2004 B.A.Sc. Engineering Science (with Honors), Faculty of Applied Science and Engineering  
*Thesis Advisors: Sabry El-Hakim (NRC-Canada) & Demetri Terzopoulous*

## ACADEMIC & INDUSTRY POSITIONS

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- 2014 – present **Assistant Professor** Hanover, NH  
Department of Computer Science, Dartmouth College
- 2011 – 2014 **Postdoctoral Researcher**, *ETH Zurich/Marie Curie Cofund Fellow* Zurich, Switzerland  
Institute of Visual Computing, ETH Zurich
- 2006 – 2011 **Ph.D. Research Assistant**, *MIT Presidential Fellow* Cambridge, MA  
Computer Graphics Group, Department of Computer Science, MIT
- Summer 2010 **Research & Development Intern** San Francisco, CA  
Industrial Light & Magic, Lucasfilm
- 2004 – 2006 **M.Sc. Research Assistant** Cambridge, MA  
Robotics, Vision & Sensor Networks Group, Dept. of Computer Science, MIT
- Summer 2001 – 2004 **Research Assistant**, *Women in Engineering and Science Fellow* Ottawa, ON  
Visual Information Technology Group, National Research Council of Canada
- 2002 – 2003 **Junior Designer** Toronto, ON  
Structural Engineering Division, Yolles Partnership Inc.

## GRANTS

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- 2015 – present National Science Foundation: Computer and Information Science and Engineering (CISE)  
Research Initiation Initiative (CRII). Principal Investigator
- 2016 – 2017 Dartmouth Neukom Institute: CompX Faculty Grant. Co-Principal Investigator

## AWARDS

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- 2012 – 2014 ETH Zurich Postdoctoral Fellowship / Marie Curie COFUND Program
- 2008 – 2010 Doctoral Scholarship, Natural Sciences & Engineering Research Council of Canada (NSERC)
- 2006 – 2007 MIT Presidential Fellowship
- 2004 – 2006 Graduate Fellowship, MIT Department of Architecture
- 2006 M.Sc. Thesis Prize, MIT Department of Architecture
- 2001 – 2004 Women in Engineering and Science Scholarship, National Research Council Canada

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**REFEREED PUBLICATIONS**


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- [1] **Printone: Interactive Resonance Simulation for Free-form Print-wind Instrument Design.** N. Umetani, A. Panotopoulou, R. Schmidt and E. Whiting. ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 2016, *in press*.
- [2] **Assembling and Disassembling Planar Structures with Divisible and Atomic Components.** Y. Zhang, E. Whiting, and D. Balkcom. Algorithmic Foundations of Robotics (WAFR), 2016, *in press*.
- [3] **Spin-It: Optimizing Moment of Inertia for Spinnable Objects.** M. Bächer, E. Whiting, B. Bickel and O. Sorkine-Hornung. REPRINT: Communications of the ACM, Research Highlights, 2016, *in press*.
- [4] **Data-Driven Bending Elasticity Design by Shell Thickness.** X. Zhang, X. Le, Z. Wu, E. Whiting and C. Wang. Proc. Symposium on Geometry Processing, 2016.
- [5] **Buoyancy Optimization for Computational Fabrication.** L. Wang and E. Whiting. Computer Graphics Forum (Proc. Eurographics), 2016.
- [6] **Foldings: A Tool for Interactive Pop-Up Card Design.** N. Harquail, M. Allen and E. Whiting. Proc. 1<sup>st</sup> Eurographics Workshop on Graphics for Digital Fabrication, 2016.
- [7] **Perceptual Models of Preference in 3D Printing Orientation.** X. Zhang, X. Le, A. Panotopoulou, E. Whiting and C. Wang. ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 2015.
- [8] **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.
- [9] **Assembling Self-Supporting Structures.** M. Deuss, D. Panozzo, E. Whiting, Y. Liu, O. Sorkine-Hornung and M. Pauly. ACM Transactions on Graphics, 2014 (Proc. SIGGRAPH Asia).
- [10] **A Graph-based Approach for Discovery of Stable Deconstruction Sequences.** L. Beyeler, J.-C. Bazin and E. Whiting. Proc. Advances in Architectural Geometry, 2014.
- [11] **Spin-It: Optimizing Moment of Inertia for Spinnable Objects.** M. Baecher, E. Whiting, B. Bickel and O. Sorkine-Hornung. ACM Transactions on Graphics (Proc. SIGGRAPH), 2014.
- [12] **Make It Stand: Balancing Shapes for 3D Fabrication.** R. Prévost, E. Whiting, S. Lefebvre and O. Sorkine-Hornung. ACM Transactions on Graphics (Proc. SIGGRAPH), 2013.
- [13] **Structural Optimization of 3D Masonry Buildings.** E. Whiting, H. Shin, R. Wang, J. Ochsendorf and F. Durand. ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 2012.
- [14] **Procedural Modeling of Structurally-Sound Masonry Buildings.** E. Whiting, J. Ochsendorf and F. Durand. ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 2009.
- [15] **Digital Reconstruction and 4D Presentation through Time.** S. El-Hakim, J.F. Lapointe and E. Whiting. SIGGRAPH Sketches, 2008.
- [16] **Generating A Topological Model of Multi-Building Environments.** E. Whiting, J. Battat and S. Teller. Proc. 12<sup>th</sup> Intl. Conf. Computer-Aided Architectural Design Futures, 2007. (*Best Presentation Award*)
- [17] **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.
- [18] **Constrained Planar Remeshing for Architecture.** B. Cutler and E. Whiting. Proc. Graphics Interface, 2007.
- [19] **Constrained Planar Remeshing for Architecture.** B. Cutler and E. Whiting. Eurographics Symposium on Geometry Processing, Poster session, 2006.
- [20] **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*)

- [21] **3D Modeling with Reusable and Integrated Building Blocks.** S. El-Hakim, E. Whiting and L. Gonzo. Optical 3D Measurement Techniques, 2005.
- [22] **A Hierarchical 3D Reconstruction Approach for Documenting Complex Heritage Sites.** S. El-Hakim, J.-A. Beraldin, L. Gonzo, E. Whiting and M. Jemtrud. Proc. 20<sup>th</sup> CIPA Intl Symposium, ICOMOS & ISPRS Committee on Documentation of Cultural Heritage, 2005.
- [23] **Digital Recording of Aboriginal Rock Art.** S. El-Hakim, J. Fryer, M. Picard and E. Whiting. Proc. 10<sup>th</sup> Intl Conference on Virtual Systems and Multimedia (VSMM), 2004.
- [24] **Photo-Realistic 3D Reconstruction of Castles with Multiple Sources Image-Based Techniques.** L. Gonzo, S. El-Hakim, M. Picard, S. Girardi and E. Whiting. Proc. 20<sup>th</sup> Congress Intl Society for Photogrammetry & Remote Sensing (ISPRS), 2004.

## INVITED TALKS

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- May 2016 1<sup>st</sup> Eurographics Workshop on Graphics for Digital Fabrication. Invited Expert Panelist.
- Nov 2015 Mount Holyoke College, Computer Science Seminar. Invited Talk.
- Feb 2015 MIT Department of Architecture, Building Technology Lecture Series. Invited Talk.
- Dec 2014 SIGGRAPH Asia, Course: "3D Printing Oriented Design: Geometry & Fabrication." Invited Course Instructor, "Structural aspects of geometry design."
- Dec 2014 Hong Kong University, Computer Graphics Group Seminar. Invited Talk.
- Nov 2014 TEDxBeaconStreet, "3D Printing: the Physics of Objects." Invited Speaker.
- Sept 2014 Schloss Dagstuhl Seminar: Computational Aspects of Fabrication. Germany. Invited Talk.
- Oct 2013 UC Berkeley, Visual Computing Lab Seminar, Computer Science Division. Invited Talk.
- June 2013 3D Fabrication Summer School, UCL, Center for Virtual Environments, Imaging & Visualization. London, UK. Invited Talk.
- June 2012 Autodesk Research, Toronto, Canada. Invited Talk.
- April 2011 Science-Engineering-Technology (SET) in the City Program, Museum of Science, Boston. Invited Panelist: Young Women in STEM.
- Aug 2010 R&D Group, Industrial Light & Magic, Lucasfilm Ltd., San Francisco. Invited Talk.

## MEDIA COVERAGE

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- Oct 2015 BBC Radio: In Short (interview) "Was controversial Lee Harvey Oswald photo faked?"  
*<http://www.bbc.co.uk/programmes/p035sqvx>*
- Oct 2015 Discovery News. "Oswald Photo Isn't Fake, Finds Digital Forensics."  
*<http://www.seeker.com/oswald-photo-isnt-fake-finds-digital-forensics-1770368711.html>*
- May 2015 Dartmouth Now. "Creativity, Cathedrals, and Collaboration in Computer Science."  
*<https://news.dartmouth.edu/news/2015/05/creativity-cathedrals-and-collaboration-computer-science>*
- Aug 2014 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/>*
- Aug 2014 Engadget. "Disney has created an algorithm that can turn almost anything into a spinning top." *<https://www.engadget.com/2014/08/09/disney-tops/>*
- July 2013 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/>*
- March 2011 PBS NOVA, "The Secret Life of Scientists & Engineers". Featured Scientist, Season 2, Ep. 14.  
*<http://www.pbs.org/wgbh/nova/secretlife/scientists/emily-whiting/>*

## STUDENT ADVISING

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### Dartmouth College

Postdoc: Xiaoting Tina Zhang, Christos Mousas

PhD: Athina Panotopoulou

Master Thesis Advisor: Lingfeng Wang, Marissa Allen, Nook Harquail

Undergraduate Presidential Scholars: Liane Makatura, Lily Xu, Alex Weinberg

### ETH Zurich

Master Thesis Advisor: Lukas Beyeler

Bachelor Thesis Advisor: Clea Benz

## TEACHING

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Dartmouth College, Department of Computer Science

COSC 89/189: Computational Fabrication (Fall 2014, Spring 2016, Fall 2016)

COSC 77/177: Computer Graphics (Spring 2015, Fall 2015)

COSC 98: Senior Design & Implementation Project (Fall/Winter 2015-16)

## PROFESSIONAL ACTIVITIES

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### Program Committees:

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| 2016 | ACM SIGGRAPH Asia 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 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                                       |
|      | ACM SIGGRAPH Student Research Competition Jury                                   |
|      | Pacific Graphics International Program Committee                                 |

### Editorial Positions:

2014 – present Visual Computer Associate Editor

### Technical Papers Reviewer:

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