Craig S. Kaplan

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Education

PhD, Computer Science & Engineering, University of Washington, 2002.
Dissertation: Computer graphics and geometric ornamental design.

MS, Computer Science & Engineering, University of Washington, 1998.
Thesis: The analysis and generation of Escher-style drawings.

BMath, Double Honours Computer Science & Pure Mathematics CO-OP, University of Waterloo, 1996.

Employment history

Visiting Professor (2013–2014). Department of Computer Science, **University College Longon**, London, UK.

Associate Professor (2008–present). School of Computer Science, **University of Waterloo**, Waterloo, Ontario.

Assistant Professor (2003–2008). School of Computer Science, **University of Waterloo**, Waterloo, Ontario.

Researcher (1999). Programmer Productivity Research Center, **Microsoft Research**, Redmond, Washington.
(Graduate student internship)

Graphics Software Engineer (1994–1997). **Alias|Wavefront**, Toronto, Ontario and Seattle, Washington.
(Five undergraduate internships)

Software Researcher and Developer (1992–1993). **WATCOM International Limited**, Waterloo, Ontario.
(Two undergraduate internships)

Research and scholarship

Areas of interest

Non-photorealistic rendering, particularly the geometry of art and ornament with applications to design and architecture; computer graphics; human-computer interaction; computational geometry

Books

[1] Kelly Delp, Craig S. Kaplan, Douglas McKenna, and Reza Sarhangi, editors. *Proceedings of Bridges 2015: Mathematics, Music, Art, Architecture, Culture*, Phoenix, Arizona, 2015. Tessellations Publishing.

[2] Craig S. Kaplan and Reza Sarhangi, editors. *Proceedings of Bridges 2009: Mathematics, Music, Art, Architecture, Culture*, Hertfordshire, UK, 2009. Tarquin Books.

[3] Craig S. Kaplan. *Introductory Tiling Theory for Computer Graphics*. Morgan & Claypool, July 2009.

[4] Tobias Isenberg, Craig S. Kaplan, and Stephen N. Spencer, editors. *NPAR '09: Proceedings of the 7th international symposium on Non-photorealistic animation and rendering*, New York, 2009. ACM.

[5] Aaron Hertzmann, Craig S. Kaplan, and Stephen N. Spencer, editors. *NPAR '04: Proceedings of the 3rd international symposium on Non-photorealistic animation and rendering*, New York, 2004. ACM.

Book chapters

[6] Craig S. Kaplan. *Computer Algorithms for Star Pattern Construction*, pages 46 pages, to appear. Springer, 2016. Chapter contributed to forthcoming book *Islamic Geometric Patterns* by Jay Bonner

[7] Craig S. Kaplan. Depiction using geometric constraints. In Paul Rosin and John Collomosse, editors, *Image and Video-Based Artistic Stylization*, volume 42, pages 167–187. Springer London, 2012

[8] Craig S. Kaplan and Robert Bosch. Operations research in the visual arts. In *Wiley Encyclopedia of Operations Research and Management Science*. John Wiley & Sons, Inc., 2010. 15 pages

Articles in refereed journals

[9] Quirin Stöckl, Davide Bandera, Craig S. Kaplan, Karl-Heinz Ernst, and Jay S. Siegel. Gear-meshed tiling of surfaces with molecular pentagonal stars. *Journal of the Americal Chemical Society*, 136(2):606–609, 2014.

[10] Lesley Northam, Paul Asente, and Craig S. Kaplan. Stereoscopic 3D image stylization. *Computers & Graphics*, 37(5):389–402, August 2013.

[11] Tiffany C. Inglis, Stephen Inglis, and Craig S. Kaplan. Op Art rendering with lines and curves. *Computers & Graphics*, 36(6):607–621, October 2012. An earlier version of this article appeared as a conference paper in the proceedings of Computational Aesthetics 2011. A poster on the work was presented at SIGGRAPH and the Grace Hopper Celebration in 2011, and was subsequently a finalist in the ACM Student Research Competition.

[12] Yanxi Liu, Hagit Hel-Or, Craig S. Kaplan, and Luc Van Gool. Computational symmetry in computer vision and computer graphics. *Foundations and Trends in Computer Graphics and Vision*, 5(1–2):1–195, June 2010.

[13] Jie Xu and Craig S. Kaplan. Image-guided maze construction. *ACM Trans. Graph.*, 26(3):29, July 2007. Proceedings of SIGGRAPH 2007.

[14] Jie Xu and Craig S. Kaplan. Vortex maze construction. *Journal of Mathematics and the Arts*, 1(1):7–20, March 2007. A shorter version appeared in the proceedings of Bridges 2006.

[15] Craig S. Kaplan, Sanjeev Bedi, Stephen Mann, Gilad Israeli, and Gilbert Poon. A new paradigm for woodworking with NC machines. *The Journal of Computer-Aided Design and Applications*, 1(1–4):217–222, 2004. Also appeared in Proceedings of the CAD'04 conference.

[16] Craig S. Kaplan and David H. Salesin. Islamic star patterns in absolute geometry. *ACM Trans. Graph.*, 23(2):97–119, 2004.

[17] Erik D. Demaine, Martin L. Demaine, and Craig S. Kaplan. Polygons cuttable by a circular saw. *Comput. Geom. Theory Appl.*, 20(1–2):69–84, 2001. Special issue of selected papers from the 12th annual Canadian conference on computational geometry (CCCG 2000).

Articles in conference proceedings

[18] Karl Kattchee and Craig S. Kaplan. Combinatorial poppies. In Eve Torrence, Bruce Torrence, Carlo Séquin, Douglas McKenna, Kristóf Fenyvesi, and Reza Sarhangi, editors, *Proceedings of Bridges 2016: Mathematics, Music, Art, Architecture, Education, Culture*, pages 111–118, Phoenix, Arizona, 2016. Tessellations Publishing.

[19] Craig S. Kaplan. Hypocycloid juggling patterns. In Eve Torrence, Bruce Torrence, Carlo Séquin, Douglas McKenna, Kristóf Fenyvesi, and Reza Sarhangi, editors, *Proceedings of Bridges 2016: Mathematics, Music, Art, Architecture, Education, Culture*, pages 71–78, Phoenix, Arizona, 2016. Tessellations Publishing.

[20] Craig S. Kaplan Zhifu Xiao, Robert Bosch and Robert J. Lang. Modular origami halftoning: Theme and variations. In Douglas McKenna Kelly Delp, Craig S. Kaplan and Reza Sarhangi, editors, *Proceedings of Bridges 2015: Mathematics, Music, Art, Architecture, Culture*, pages 61–68, Phoenix, Arizona, 2015. Tessellations Publishing.

[21] Craig S. Kaplan. The design of a reconfigurable maze. In George Hart Gary Greenfield and Reza Sarhangi, editors, *Proceedings of Bridges 2014: Mathematics, Music, Art, Architecture, Culture*, pages 167–174, Phoenix, Arizona, 2014. Tessellations Publishing.

[22] Craig S. Kaplan and Chris Jordan. The monumental geometry of e pluribus unum. In *Proceedings of the Workshop on Computational Aesthetics*, CAe '14, pages 97–102, New York, NY, USA, 2014. ACM.

[23] Zainab AlMeraj, Craig S. Kaplan, and Paul Asente. Patch-based geometric texture synthesis. In *Proceedings of the Workshop on Computational Aesthetics*, CAe '13, pages 15–19. ACM Press, 2013.

[24] Zainab AlMeraj, Craig S. Kaplan, and Paul Asente. Towards effective evaluation of geometric texture synthesis algorithms. In *Proceedings of the Symposium on Non-Photorealistic Animation and Rendering*, NPAR '13, pages 5–14. ACM Press, 2013.

[25] Inglis, Tiffany C., Daniel Vogel, and Craig S. Kaplan. Rasterizing and antialiasing vector line art in the pixel art style. In *Proceedings of the Symposium on Non-Photorealistic Animation and Rendering*, NPAR '13, pages 25–32. ACM Press, 2013.

[26] Craig S. Kaplan. Grid-based decorative corners. In George Hart and Reza Sarhangi, editors, *Proceedings of Bridges 2013: Mathematics, Music, Art, Architecture, Culture*, pages 317–324, Phoenix, Arizona, 2013. Tessellations Publishing.

[27] Tiffany C. Inglis and Craig S. Kaplan. Animating line-based Op Art. In George Hart and Reza Sarhangi, editors, *Proceedings of Bridges 2013: Mathematics, Music, Art, Architecture, Culture*, pages 159–166, Phoenix, Arizona, 2013. Tessellations Publishing.

[28] Tiffany C. Inglis and Craig S. Kaplan. Circle patterns in Gothic architecture. In Robert Bosch, Douglas McKenna, and Reza Sarhangi, editors, *Proceedings of Bridges 2012: Mathematics, Music, Art, Architecture, Culture*, pages 133–140, Phoenix, Arizona, 2012. Tessellations Publishing.

[29] Inglis, Tiffany C. and Craig S. Kaplan. Pixelating vector line art. In *Proceedings of the Symposium on Non-Photorealistic Animation and Rendering*, NPAR '12, pages 21–28, Aire-la-Ville, Switzerland, Switzerland, 2012. Eurographics Association.

[30] Northam, Lesley, Paul Asente, and Craig S. Kaplan. Consistent stylization and painterly rendering of stereoscopic 3D images. In *Proceedings of the Symposium on Non-Photorealistic Animation and Rendering*, NPAR '12, pages 47–56, Aire-la-Ville, Switzerland, Switzerland, 2012. Eurographics Association.

[31] Craig S. Kaplan. Smooth self-similar curves. In Reza Sarhangi and Carlo H. Séquin, editors, *Proceedings of Bridges 2011: Mathematics, Music, Art, Architecture, Culture*, pages 209–216, Phoenix, Arizona, 2011. Tessellations Publishing.

[32] Tiffany C. Inglis and Craig S. Kaplan. Sudoku art. In Reza Sarhangi and Carlo H. Séquin, editors, *Proceedings of Bridges 2011: Mathematics, Music, Art, Architecture, Culture*, pages 187–194, Phoenix, Arizona, 2011. Tessellations Publishing.

[33] Tiffany C. Inglis and Craig S. Kaplan. Generating Op Art lines. In *International Symposium on Computational Aesthetics in Graphics, Visualization, and Imaging*, pages 25–32, 2011.

[34] Zainab AlMeraj, Craig S. Kaplan, Paul Asente, and Edward Lank. Towards ground truth in geometric textures. In *Proceedings of the ACM SIGGRAPH/Eurographics Symposium on Non-Photorealistic Animation and Rendering*, NPAR '11, pages 17–26, New York, 2011. ACM Press.

[35] Lesley Northam, Joe Istead, and Craig S. Kaplan. RTFX: On-set previs with UnrealEngine3. In *Proceedings of the 10th International Conference on Entertainment Computing (ICEC 2011)*, 2011. 4 pages.

[36] Daniel Berry and Craig S. Kaplan. Planned programming problem gotchas as lessons in requirements engineering. In *Proceedings of the 5th International Workshop on Requirements Engineering Education and Training (REET 2010)*, pages 20–25. IEEE, 2010.

[37] Craig S. Kaplan. Curve evolution schemes for parquet deformations. In *Bridges 2010: Mathematical Connections in Art, Music and Science*, pages 95–102, 2010.

[38] Kate Kinnear and Craig S. Kaplan. Procedural generation of surface detail for science fiction spaceships. In Pauline Jepp and Oliver Deussen, editors, *Workshop on Computational Aesthetics*, London, UK, 2010. Eurographics Association. 83–90.

[39] Lesley Northam, Joe Istead, and Craig S. Kaplan. Brush stroke ordering techniques for painterly rendering. In Pauline Jepp and Oliver Deussen, editors, *Workshop on Computational Aesthetics*, London, UK, 2010. Eurographics Association. 59–66.

[40] Craig S. Kaplan. Semiregular patterns on surfaces. In *NPAR '09: Proceedings of the 7th international symposium on Non-photorealistic animation and rendering*, pages 35–39, New York, 2009. ACM Press.

[41] Alex Kalaidjian, Craig S. Kaplan, and Stephen Mann. Automated landscape painting in the style of Bob Ross. In Oliver Deussen and Peter Hall, editors, *Computational Aesthetics in Graphics, Visualization, and Imaging*, pages 115–122, Victoria, British Columbia, Canada, 2009. Eurographics Association.

[42] Craig S. Kaplan. Metamorphosis in Escher's art. In *Bridges 2008: Mathematical Connections in Art, Music and Science*, pages 39–46, 2008.

[43] Jeff Orchard and Craig S. Kaplan. Cut-out image mosaics. In *NPAR '08: Proceedings of the 6th international symposium on Non-photorealistic animation and rendering*, pages 79–87, New York, 2008. ACM Press.

[44] Jie Xu and Craig S. Kaplan. Artistic thresholding. In *NPAR '08: Proceedings of the 6th International Symposium on Non-Photorealistic Animation and Rendering*, pages 39–47, New York, 2008. ACM Press.

[45] Zheng Qin, Michael D. McCool, and Craig S. Kaplan. Precise vector textures for real-time 3D rendering. In *SI3D '08: Proceedings of the 2008 symposium on Interactive 3D graphics and games*, pages 199–206. ACM Press, 2008.

[46] Jie Xu, Craig S. Kaplan, and Xiaofeng Mi. Computer-generated papercutting. In *PG '07: 15th Pacific Conference on Computer Graphics and Applications*, pages 343–350, 2007.

[47] Jie Xu and Craig S. Kaplan. Calligraphic packing. In *GI '07: Proceedings of the 2007 conference on Graphics interface*, pages 43–50. Canadian Human-Computer Communications Society, 2007.

[48] Craig S. Kaplan. A meditation on Kepler's Aa. In *Bridges 2006: Mathematical Connections in Art, Music and Science*, pages 465–472, 2006.

[49] Celine Latulipe, Ian Bell, Charles L. A. Clarke, and Craig S. Kaplan. symTone: two-handed manipulation of tone reproduction curves. In *GI '06: Proceedings of the 2006 conference on Graphics interface*, pages 9–16. Canadian Information Processing Society, 2006.

[50] Celine Latulipe, Stephen Mann, Craig S. Kaplan, and Charlie L. A. Clarke. symSpline: symmetric two-handed spline manipulation. In *CHI '06: Proceedings of the SIGCHI conference on Human Factors in computing systems*, pages 349–358. ACM Press, 2006.

[51] Zheng Qin, Michael D. McCool, and Craig S. Kaplan. Real-time texture-mapped vector glyphs. In *I3D '06: Proceedings of the 2006 symposium on Interactive 3D graphics and games*, pages 125–132. ACM Press, 2006.

[52] Celine Latulipe, Craig S. Kaplan, and Charles L. A. Clarke. Bimanual and unimanual image alignment: an evaluation of mouse-based techniques. In *UIST '05: Proceedings of the 18th annual ACM symposium on User interface software and technology*, pages 123–131. ACM Press, 2005.

[53] Craig S. Kaplan. Aliasing artifacts and accidental algorithmic art. In *Bridges 2005: Mathematical Connections in Art, Music and Science*, pages 349–356, 2005.

[54] Craig S. Kaplan and Robert Bosch. TSP art. In *Bridges 2005: Mathematical Connections in Art, Music and Science*, pages 301–308, 2005.

[55] Celine Latulipe, Craig S. Kaplan, and Charles L. A. Clarke. Simultaneous rotation and translation. In *HCI 2005 Proceedings, Volume 2*, pages 63–67. The British Computer Society, 2005.

[56] Craig S. Kaplan. Islamic star patterns from polygons in contact. In *GI '05: Proceedings of the 2005 conference on Graphics interface*, pages 177–185. Canadian Human-Computer Communications Society, 2005.

[57] Craig S. Kaplan and David H. Salesin. Dihedral Escherization. In *GI '04: Proceedings of the 2004 conference on Graphics interface*, pages 255–262. Canadian Human-Computer Communications Society, 2004.

[58] Craig S. Kaplan and George W. Hart. Symmetrohedra: polyhedra from symmetric placement of regular polygons. In *Bridges 2001: Mathematical Connections in Art, Music and Science*, pages 21–28, 2001.

[59] Craig S. Kaplan. Computer generated Islamic star patterns. In *Bridges 2000: Mathematical Connections in Art, Music and Science*, pages 105–112, 2000.

[60] Craig S. Kaplan and David H. Salesin. Escherization. In *SIGGRAPH '00: Proceedings of the 27th annual conference on Computer graphics and interactive techniques*, pages 499–510. ACM Press/Addison-Wesley Publishing Co., 2000.

[61] Craig S. Kaplan. Voronoi diagrams and ornamental design. In *ISAMA'99: The first annual symposium of the International Society for the Arts, Mathematics, and Architecture*, pages 277–283, 1999.

[62] Michael Ernst, Craig Kaplan, and Craig Chambers. Predicate dispatching: A unified theory of dispatch. In *ECCOP '98: Proceedings of the 12th European Conference on Object-Oriented Programming*, pages 186–211. Springer-Verlag, 1998.

Artworks in juried exhibitions

[63] "Tending towards the convex". Digital print, Bridges 2015 exhibition of visual art, Baltimore, USA, 2015.

[64] "Glitch" and "Flattened Sphere". Laser-cut wooden marquetry, Bridges 2014 exhibition of visual art, Seoul, South Korea, 2014.

[65] "Laves parquet deformation". Digital print, FAX + Pattern exhibition, Simons Center for Geometry and Physics, Stony Brook, New York, 2013.

[66] "Two woven Islamic star patterns". Two paper sculptures in the 2013 Bridges conference art exhibition, Enschede, The Netherlands, 2013.

[67] "Islamic patterns". Four Islamic geometric patterns in the *Design & Computation* exhibit, a curated art exhibit at the SIGGRAPH 2008 conference, Los Angeles, California, 2008.

[68] "Leo" and "Islamic metamorphosis #2". Two artworks in the Second Joint AMS/MAA Exhibit on Mathematical Art, San Antonio, Texas, 2006. The same works appeared in the Exhibit of Mathematical Art at the 2006 Bridges conference in London, England.

[69] Four artworks in the First International Exhibition of Voronoi Art, Seoul, Korea, 2005.

Other publications

[70] Craig S. Kaplan. Book review: Processing: A programming handbook for visual designers and artists. *Journal of Mathematics and the Arts*, 2(4):211–214, December 2008.

[71] Craig S. Kaplan. The trouble with five. *Plus Magazine*, December 2007. 15 pages. Invited article on five-fold tilings.

[72] Craig S. Kaplan. The design space of Islamic star patterns. In Amir Esfahani, editor, *Enlightenment through creativity: collaboration of the arts and sciences*, pages 3–7. 2006. Invited essay to accompany an exhibition of Esfahani's art.

[73] Craig S. Kaplan. *Computer Graphics and Geometric Ornamental Design*. PhD thesis, Department of Computer Science & Engineering, University of Washington, 2002.

[74] Craig S. Kaplan. A computer analysis of Boggle™. In *POCSI433, Problems of Computer Science in Room 433*, 2001. 3 pages.

Invited addresses

Pack, cover, surround: computer-generated tilings in art and design. Keynote talk at the FUN With Algorithms 2016 conference, June 2016.

On surrounding a polygon. Invited talk for the Lloyd Auckland Invitational Mathematics Workshop, University of Waterloo, June 2016.

1123581321. Invited talk for the Canadian Computing Olympiad Stage 2, May 2016.

On surrounding a polygon. Invited talk for Computer Science Club, University of Waterloo, April 2016.

A close encounter with near misses. Invited talk at Inria Rhône-Alpes, Grenoble, France, December 2015.

A close encounter with near misses. Keynote talk at the 2015 WatITis conference, University of Waterloo, December 2015.

On surrounding a polygon. Invited talk for EMACS 2015 (Exploring Mathematics and Computer Science at Waterloo), University of Waterloo, October 2015.

Surrounding a shape and other unsolved mysteries. Keynote talk for the Canadian Computing Olympiad, May 2015.

Surrounding a shape and other unsolved mysteries. Keynote talk for the Canadian Team Mathematics Contest, April 2015.

Computer-based design of Islamic geometric patterns. Invited talk for the Studies in Islam Speaker Series, University of Waterloo, November 2014.

The forest and the trees. Invited talk for the Bridges Lecture Series, delivered jointly with Linda Carson, University of Waterloo, November 2014.

Two shades of grey: the art and science of halftoning. Invited talk for MoSAIC, New York City, October 2014.

Metamorphoses and deformations of tilings. Invited talk at the Berlin Mathematical Society, Berlin, June 2014.

Generation and transformation of Islamic star patterns. Invited talk at the University of Granada, Spain, May 2014.

Pixelating vector art. Invited talk the University of Bath, UK, April 2014.

Computer-generated Op Art from lines and curves. Invited talk at the Computer Arts Society, London, November 2013.

Prosthetics and 3D Printing. Invited talk at the Technical Symposium of the Canadian Association of Prosthetics and Orthotics, June 2013.

Filling the universe with Tetris pieces and other mysteries of tiling theory. Invited talk at Excellence in Mathematics Awards Night, Waterloo, Ontario, May 2013.

Revolution and evolution in math and design. Invited talk and hands-on workshop at Math Encounters, a lecture series organized by the Museum of Mathematics, New York City, 2012.

Revolutions in mathematics and the evolution of design. Invited talk at Transcending Differences: Tiling in Islamic and Western Culture, University of Michigan-Dearborn, 2011.

Disorderly tiles, orderly non-tiles, and the path to aperiodicity. Invited talk University of Michigan-Dearborn, 2011.

Mathematical art and artistic mathematicians. Invited presentation at the Quantum to Cosmos festival, Waterloo, Ontario, October 2009.

Islamic star patterns in absolute geometry. Invited presentation at P-AGE 2008, Pécs, Hungary, June 2008.

Semiregular patterns on surfaces. SIGGRAPH 2007 Sketch.

Escherization. Invited presentation at the 2007 Spring southeastern section meeting of the AMS, special session on computational and combinatorial aspects of tilings and substitutions, 2007.

Complexity and aesthetics in computer-generated mazes. Invited presentation at Williams College, November 2006. Also presented at Moravian College, November 2006.

Ornamental design freed of every blemish. Invited presentation at the annual meeting of the Grand Valley Math Association, October 2005.

Current research. Invited presentation at CORE Feature Animation, April 2005.

The geometry of Snakes. Invited presentation at School of Computer Science invitational lecture series, October 2003.

Teaching activities

Curriculum development

Developed CS 106, an undergraduate course on media computation using Processing.

Developed CS 791, a graduate courses on Non-photorealistic computer graphics, geometry, and ornamental design.

Member of development committee for CS 115 (Introduction to Computer Science 1)

Current postdoctoral supervision

Veronika Irvine, 2016–.

Current graduate supervision

Lesley Northam, PhD, 2011–.

Reza Adhitya Saputra, PhD, 2014–.

Matthew Thorne, PhD, 2009–.

Past graduate supervision

Tiffany Inglis, PhD, 2009–2013.
Thesis: Pixelating Vector Art

Zainab AlMeraj, PhD, 2008–2013.
Thesis: Synthesis and evaluation of geometric textures

Kate Kinnear, MMath, 2007–2010.
Thesis: The aesthetics of science fiction spaceship design

Zheng Qin, PhD, 2005–2009. Co-supervised with Michael McCool.
Thesis: Vector Graphics for Real-time 3D Rendering

Jie Xu, PhD, 2003–2009.
Thesis: Wholetoning: Synthesizing Abstract Black-and-White Illustrations

Paul Church, MMath, 2005–2008.
Thesis: Snakes in the Plane.

Alex Kalaidjian, MMath, 2006–2007. Co-supervised with Stephen Mann.
Thesis: Automatic landscape painting in the style of Bob Ross.

Celine Latulipe, PhD, 2004–2006. Co-supervised with Charlie Clarke.
Thesis: A Symmetric Interaction Model of Bimanual Input.

Other student supervision

Michael Wasilewski, MMath essay, 2003–2004.
Thesis: Tools for Graftal Placement and Rendering.

PhD external examiner for Hugo Loi (Inria, 2016), Peter O'Donovan (UToronto, 2016), Sven Olsen (UVic, 2010).

PhD committee member for John Harris (2016), Burkay Genc (2008), Masud Hasan (2005).

MMath thesis reader for Yuexing (Corona) Luo (2015), Terry Anderson (2011), Xinling Chen (2011), Shahab Mohsen (2010), Adam Bains (2009), Richard Fung (2009), Andrew Lauritzen (2008), Christine Szentgyorgyi (2008), Alan Leung (2008), Ben Lefreniere (2008), Marc Belcarz (2006), Brendan Lucier (2006), Guillaume Poirier (2005), Wei-Min Lee (2004), Selina Siu (2003), Zheng Qin (2003).

MArch thesis reader for Glenn Edwards (2003).

Undergraduate research supervisor for Edgar Bering, Dmitry Chechik, Xinyuan Fan, Nancy Iskander, Roman Karatchinsky, Nanji (Leon) Jiang, Patrick Lee, Mulong Li, Chenhang (Frank) Liu, Volodymyr Lyubinets, Tara Munikar, Yomna Nasser, Sumair Ur Rahman, Kenneth Rose,

Service

Committees

Chair of Computer Science 50th anniversary committee, 2016–2017.

Computer Science Council meeting chair, 2015–2016.

Peer Teaching Evaluation Committee, 2015–2016.

Computer Science Commons Committee, 2015–2016.

Undergraduate Academic Plans Committee (UAPC), 2014–2015.

Director of Undergraduate Studies, 2011–2013.

Faculty performance review committee, 2011.

Computer Science Tenure & Promotion committee, 2010–2011.

Chair of undergraduate recruiting committee, 2008–2011.

Outreach committee, 2008–.

UAPC student enrichment subcommittee, 2005–2006.

Graduate Advocate, 2005–2006.

SACA, the school advisory committee on appointments, 2003–2005.

Chair of external relations logo subcommittee, 2003–2004.

Chair of Web committee, 2004–2006.

OGS reviews and ranking, 2004, 2007.

High school liaison and outreach activities

Introduction to Computer Science, March Break Open House, 2015.

Introduction to Processing, workshop for CS Educators Summer Conference, 2011, 2015.

Creating artistic images using halftoning, Presentation at the 2010 International Olympiad of Informatics, 2010.

Celtic Knotwork, Think About Math presentation, 2010–2011.

Introduction to computer graphics, CEMC Workshop in Computer Science for Young Women, 2010–2011.

Geometric Sculpture, Shad Valley workshop, 2007, 2009, 2010, 2012, 2015, 2016.

Some computational properties of polyominoes, talk for top competitors in the Canadian Computing Competition, 2009.

Talk and lab tours for CEMC Math Teachers Workshop, 2009.

Campus day, 2005–2006.

CS4U@Waterloo day, 2005–2006.

Ontario Universities Fair, 2004, 2008, 2009.

Introduction to computer graphics, Imperial Oil Seminar in Computer Science for Young Women, 2003–2008, 2015, 2016.

Plenary presentations for incoming students at CS Exposed (2006, 2007), Jumpstart Friday (2008, 2009).

Professional activities

Editor-in-chief of the Journal of Mathematics and the Arts, published by Taylor & Francis.

Member of selection panel for NSERC/CC New Media Initiative program (2009–2011).

Member of the board of the Bridges organization.

Workshop chair for Bridges 2015.

Chair of Bridges 2009, mathematical connections in art, music, and science.

Co-chair (with Tobias Isenberg) of NPAR 2009, the Seventh International Symposium on Non-Photorealistic Animation and Rendering.

Co-chair (with Aaron Hertzmann) of NPAR 2004, the Third International Symposium on Non-Photorealistic Animation and Rendering.

Organizer for MOSAIC 2000, The Millennial Open Symposium on the Arts and Interdisciplicary Computing.

Steering committees for NPAR and CAe.

Program committees for Bridges (2008–2016), CAe (2008–2011), Computer Graphics International (2015), Evo-MUSART (2010–2011), Expressive (2013, 2014, 2016), GI (2006 & 2011), GRAPP (2006), NPAR (2006–2011), SIGGRAPH Art Papers (2011), and SMI Fabrication and Sculpting Event (2015).

Additional conference reviewing for CGGM, CGI, COCOON, EGSR, Eurographics, SIGGRAPH, SIGGRAPH Asia, and UIST.

Journal reviewing for ACM Transactions on Graphics, Computer Graphics Forum, Computers and Graphics, Geometric Models, IEEE Transactions on Visualization and Computer Graphics, Journal of Computing and Cultural Heritage, Journal of Discrete Algorithms, Journal of Graphics Tools, Journal of Mathematics and the Arts, Notices of the AMS, Pattern Recognition, Pattern Recognition Letters, Symmetry Integrability and Geometry: Methods and Applications, Symmetry Journal, and Tbilisi Mathematics Journal.

Other refereeing: NSERC strategic grant, textbook proposals, MITACS applications, Alberta iCORE application, NSERC CRD application, Canadian and international tenure applications, Guggenheim Fellowship, MacArthur Foundation Fellowship, Notices of the AMS, NSERC Discovery, TVCG Editor-in-chief selection committee.

Member of ACM and SIGGRAPH.