Diane Hoffoss

Mathematician | Large Scale Sculptural Artist
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Curriculum Vita

Appointments

Professor of Mathematics, University of San Diego	2021-pres
Associate Professor of Mathematics and Computer Science, University of San Diego	2007-2021
Assistant Professor of Mathematics and Computer Science, University of San Diego	2001-2007
NASA Summer Faculty Fellow – worked on optimization problems concerning the scheduling of the telecommunications in the Mars Relay Network	2003
G.C. Evans Instructor of Mathematics, Rice University	1999-2001
Assistant Professor of Mathematics and Computer Science, The Colorado College	1997-1999
Teaching Associate/Assistant, University of California, Santa Barbara	1993-1997
Member of Technical Staff, Mathematics, Computer Science, and Communications Research Division, Bellcore (Formerly Bell Labs)	1989-1990
Visiting Researcher, Geometry Center, Minneapolis, MN	1989
Summer Program Instructor and Teaching Assistant, Virginia Tech	1988-1989

Education

Ph.D. Mathematics, University of California, Santa Barbara (advisor: Daryl Cooper)	1998
M.A. Mathematics, University of California, Santa Barbara	1993
B.S. Mathematics, Virginia Tech (Magna Cum Laude, Phi Beta Kappa, With Honors)	1989

Minor: Computer Science

Vision

Images are a powerful tool to help communicate big ideas. My fascination with visual representation of ideas drew me to the Geometry Supercomputer Project when I was barely out of college, and from there to a lifelong fascination with mathematical areas such as 3-manifold topology, hyperbolic geometry, and flows and foliations. In a wonderful stroke of fortune, I have recently been able to realize my passion for mathematics and for visual communication in a new format, through expression as large scale light and sculptural art. I feel like I am truly finding my home.

Grants, Honors and Awards

30. **Granted $10,000 Honorarium for** *Unfolding Humanity* **from the Burning Man Project**, which is a rare distinction. Out of approximately 600 original applicants, only 75 art installations were bestowed with this award. 2023

29. **Granted $250 from Chasing Wonder** to create art pieces to bring to the unconference 2023

28. **Granted $15,000 for *Park Social* from the City of San Diego Commission for Arts and Culture** to create and install a socially relevant and engaging art project in a public park 2020

27. **Enhanced Student Faculty Interaction Grant**, USD, for Math Modeling Club/Competition yearly 2001-20

26. **Enhanced Student Faculty Interaction Grant**, USD, to bring my Problem Solving class to a puzzle based Escape Room 2020

25. **Spotlight Article**, Annual Issue of the STEAM Journal, for About Time 2019

24. **Granted $495 from San Diego Collaborative Arts Project** to support development and build of Halo, a mathematics based and student created art project, with Art Builds 2019

23. **Maker of Merit** for *Unfolding Humanity*, San Diego Maker Faire 2018

22. **Granted $10,000 from San Diego Collaborative Arts Project** to support development and build of *Unfolding Humanity*, a large scale mathematical sculpture representing an unsolved question in mathematics 2018

21. **Awarded $5,000 FIRSt Humanities Grant** through USD for *Unfolding Humanity* as collaborative faculty-student research project advancing the humanities. With S. Babka, S. Devadoss, G. Hoople, N. Parde 2018

20. **Helped acquire an additional $25,000** funding for *Unfolding Humanity* through donations and other fundraising ($40,000 total), with S. Devadoss 2018

19. **Granted funds** to support summer SURE scholar Sydney Platt for work on *Unfolding Humanity* 2018

18. **Invited to showcase** developing project *Unfolding Humanity* at Desert Arts Preview 2018

17. **Granted $1 million from The Fletcher Jones Foundation for *Reimagining Mathematics***, to realize a dramatic redesign of department learning and research spaces, with S. Devadoss, L. McGrath, P. Myers, C. Parker, and A. Kettner 2017

16. **Received USD Library Grant** for finding and using an online OER textbook 2016

15. **Nominated for Faculty/Staff Member of the Year** by Lambda Nu Chapter of Order of Omega 2013

14. **Nominated for Davies Teaching Excellence Award** by USD's Mathematics and Computer Science Department 2012

13. **Honored at USD's Mortar Board's Faculty Appreciation Dinner** 2012

12. **Teaching and Learning Grant**, USD 2012

11. **Non-Reassigned Time Faculty Research Grant**, USD 2005,07,08,12

10. **Reassigned Time Faculty Research Grant**, USD 2004-05

9. **Center for Learning and Teaching Grant**, USD, for revamping our assembly language course 2003

8. **Computer Technology Honorarium**, for applying computer technology to a non-Euclidean Geometry course, Colorado College 1999

7. **Benezet Summer Faculty Research Grant**, Colorado College 1998

6. **Faculty Research Release Time Award**, Colorado College 1998

5. **Project NExT (New Experiences in Teaching) Fellow**, Mathematical Association of America 1997
4. **Dissertation Fellowship**, UC Santa Barbara 1997
3. **Outstanding Graduate Student Teaching Award**, UCSB Math Department 1997
2. **Graduate Student Teaching Award**, UCSB Graduate Division 1997
1. **Outstanding Faculty Member**, UCSB Residence Hall Association 1997

Papers and Publications

15. *Morse Functions to Graphs and Topological Complexity for Hyperbolic 3-Manifolds*, with J. Maher, **Communications in Analysis and Geometry**, Vol. 30, No. 4 (2022), pp. 843-868 .
14. *At the Intersection of Mathematics, Art and Religious Studies: Unfolding Humanity*, with S. Babka and S. Devadoss, under review by **Zygon: Journal of Religion and Science** .
13. Interviewed for cerebral beauty sections of multiple award winning documentary *It's Beautiful* by **Melibe Productions**, (2020) .
12. *Makerspaces on the Continuum: Examining Undergraduate Student Learning in Formal and Informal Settings*, with Gordon Hoople, Alex Mejia, and Satyan Devadoss, **International Journal of Engineering Education** Vol. 36, No. 4 (2020) 1184–1195 .
11. *About Time: Visualizing Time at Burning Man*, with G. Hoople, A. Choi-Fitzpatrick, N. Parde, M. Mellette, R. Nishimura, V. Gutman, Spotlight Article in **The STEAM Journal**, Volume 4, Issue 1 (2019) .
10. *Unfolding Humanity: Mathematics at Burning Man*, with S. Devadoss, **Notices of the American Mathematical Society**, 66 (2019) 572–575 .
9. Interviewed for 2 hour *Unfolding Humanity* episode for **Burner Podcast**, with M. Elliott, Episode 97, April 3, 2019 .
8. *Morse Area and Scharlemann-Thompson Width for Hyperbolic 3-Manifolds*, with J. Maher, **Pacific Journal of Mathematics** 281-1 (2016), 83–102 .
7. *Problems in Groups, Geometry, and Three-Manifolds*, with Kelly Delp and Jason Manning, (2015) **arXiv.org:1512.04620** .
6. *Suspension Flows are Quasigeodesic*, **Journal of Differential Geometry**, Vol. 76, No. 2 (2007) 215–248 .
5. Resources from my Keynote Address to Rice University School Mathematics Program's Spring Networking Conference were incorporated into a *Geometry Module* for comprehensive teacher training, with funding from the Texas Education Agency and the Texas Higher Education Coordinating Board (2004) .
4. *Boundary Slopes* – This computer program calculates boundary slopes of surfaces in cusped manifolds using degenerations of an ideal triangulation of a manifold (1992).
3. *LAURE Integrity Tester* – A computer program written in the language LAURE which checks whether the language is still valid after changes in implementation; Published as part of the LAURE computer language by Bellcore (1990).
2. *LAURE Tutorial* – A tutorial introducing users to the computer language LAURE; Published as part of documentation for LAURE by Bellcore (1990).
1. *Length Spectra* – A computer program which calculates complex length spectra of a manifold given matrix generators for its fundamental group. Included in **SnapPea** (now **SnapPy**), a program for creating and studying hyperbolic 3-manifolds (1989).

Artistic and Creative Work

Lead Artist, Lighting Artist and Project Co-Lead for *Unfolding Humanity Renaissance*, a completely reinvisioned structure with an improved entry system and vastly improved electonics system and LED controller system, and over 100 new LED animations. Installed at Burning Man 2023

Artist for Bubble Lamp, which uses programmed LEDs shining through acrylic rods filled with bubbles to create its glow. Created for Chasing Wonder (2023)

Artist for MidCentury Lamp, uses programmed LEDs shining through slits in a a thin sheet of wood that has been bent using kerfing (the structure itself was created by Dan Reeves). Created for Chasing Wonder (2023)

Lighting Artist and Electronics Co-Lead for *Re:Emergence* Our collective ArtBuilds designed, fabricated, and installed a 20' tall, 60' long sculpture called *Emergence* at Burning Man 2022. I was involved in many parts of the process from ideation to fabrication, but I was was most responsible for the LED animation programming which illuminated the sculpture, project managing the electronics team, and assisting with creating the electronics to support it. This sculpture is one of 2 finalists accepted for installation in a public park in Arlington, Texas, pending funding (2022)

Co-Artist and Lighting Artist for *Reflexion* ArtBuilds designed, fabricated, and installed an interactive sculpture called *Reflexion* for the City of San Diego's Park Social initiative. For this project I designed the lighting art, contributed to its physical design, gave joint presentations at various city meetings, and met with La Jolla Parks superintendent to discuss placement strategies, supervised volunteers during the fabrication, and helped with each install and deinstall. The final sculpture has had 4 installations so far:

- La Jolla Cove's Ellen Scripps Browning Park from June 10-27, 2022
- USD's campus from Oct 7-21, 2022
- La Jolla Cove's Ellen Scripps Browning Park from Oct 21 - Nov 4, 2022
- The Soap Factory event space near Barrio Logan, Nov 4, 2022 - present

We are awaiting word about a future install at Liberty Station this summer. (2022)

Lighting Artist and Electronics Co-Lead for *Emergence* ArtBuilds designed and fabricated the sculpture *Emergence* for the art festival Everywhen. Emergence was a proof-of-concept prototype for our much larger sculpture Re:Emergence, above. As is usual, I was involved in most parts of the process, but I was was most responsible for the LED animation programming which illuminated the sculpture and assisting with creating the electronics to support it. USD posted an article about this sculpture on their website's front page. (2021)

Artist for Refurbished *Unfolding Humanity Prototype Pentagon* Refurbished electronics and physical structure of prototype pentagon that we built when fabricating *Unfolding Humanity*. Co-supervised its installation in the hallway in the math department, including installing the power supply and microcontrollers which drive the LED animations in a control box in Serra 134. (2021)

Artist for CoLab's Electronics Lab Floor As part of my renovation of CoLab's new electronics lab, with a desire to turn it into a beautiful space that would inspire artistic creativity, I resurfaced the floor and painted / resined an image of a galaxy. (2021)

Leadership Team Member for Ventilator Project San Diego Collaborative Arts Project's COVID-19 Response Project (SDCAP-CRP) produced the open source ApolloBVM Bag Ventilators, which were developed at Rice University. Many of the parts are manufactured in San Diego by our volunteers using 3D printers, a CNC Laser cutter, soldering irons and expertise in electronics assembly; the remaining hardware and electronics components are purchased from the web. We have produced 11 ventilators so far, which were donated to hospitals inTijuana and

to the California Governor's Office of Emergency Services, and the Navajo Nation. Many of these are already in use. (2020)

Lighting Artist and Electronics Co-Lead for *Traversing Through Dust*, a 30' tall, 140' long semicircular suspension bridge art installation. As Lighting Artist, I developed a lighting plan which complements and highlights the metal architecture, and wrote the computer program to drive the LED animations. As Electronics Lead I lead the team which powered, wired, and implemented the lighting plan. (2019)

Lighting Consultant and Burn Perimeter Lead for *About Time*, a 30 foot long, 3,000 pound wooden sundial which reflected on the role time plays in our lives and that went up in flames at Burning Man 2019. As Lighting Consultant I advised on electronics hardware choices, LED color selection and animation design, and as Burn Perimeter Lead I recruited and organized the volunteers to hold an alert perimeter around the artwork during its burning, to keep the visitors to the experience safe from any potential hazards arising from the fire or eventual collapse of the sculpture. (2019)

Founding member of Art Builds, a collective of faculty and students at USD that fosters interdisciplinary collaboration in participatory art installation. (2019)

Lead Artist, Project Manager, and LED Programmer for *Unfolding Humanity*, a 12' tall, two-ton metal, wood, acrylic and LED interactive sculpture. The project showcased an unsolved problem of mathematics, suggested a possible shape of our universe, and commented on the relationship between humanity and technology. Unfolding Humanity has been installed both at Burning Man 2018 and outside the Old Globe Theater for Maker Faire for a 2 week stint. We are pursuing offers for future installs in Las Vegas and beyond.

As Lead Artist, I developed the main artistic ideas behind the project, produced a plan to realize these visions in a physical construction, and protected the artistic integrity of a project which is heavily bound by engineering constraints.

As LED Programmer, I designed and programmed a variety of LED animations for the faces and interior edges of the sculpture, creating internal animations reflecting the theme of being afloat in the universe.

As Project Manager, I applied for grants, communicated with Burning Man and Old Globe about installation details, developed budget and construction timeline for the project, recruited and organized 70 volunteers from the community to help with the physical construction of the wooden faces and electrical and lighting system, developed the construction timeline across 2 locations: the USD machine shop and CoLab collaborative arts space, ensured that materials were purchased and delivered in time with the build timeline, scheduled tools with CoLab management, developed the build timeline for assembly and disassembly at our 2 installation sites, and recruited volunteers to help with onsite assembly and disassembly.(2017-2019)

Software Lead and Lighting Artist for *The Journey Project*, a large scale, $118K multimedia art installation. As Software Lead, coordinated a team of about 10 software developers to develop a comprehensive sound- and touch-responsive, audio and light experience. As Lighting Artist, developed and coded countless animations for the installation, and updated coding for custom light effects and helped install structure for several events including Burning Man 2017, Old Globe Theater during Maker Faire with lighting as adjunct to 2 of their plays, San Diego Pride, and Youtopia as their temple called *The Sacred Journey*, with lighting indicating humanity's progression through evolution, birth, and spiritual enlightenment (2017).

Student Research and Project Supervision

30. Unfolding Humanity Renaissance Fabrication. About 15 students worked on the refabrication of this project over the summer, including 7 or 8 which I personally supervised in electronics roles. 2023

29. **Re:Emergence Fabrication.** SURE scholars Navin Rai and Ysabel Yu joined a group of 7 USD engineering students who assisted ArtBuilds with the engineering, fabrication, and test install of our sculpture Re:Emergence 2022

28. **Re:Emergence Fabrication II.** Co-mentored high school students, Jose Barcelo and Charlie Chavez, as they assisted in the fabrication of this art project, under the *Bridging the Gap* mentorship program. 2022

27. **Configuration Space of a Winged Cube.** SURE scholar Giacomo Radaelli investigated flexible polyhedra and determined the configuration space of a *winged cube*. USD Alum Jordan Matuszewski joined this research without pay, and Jenny Lee from Oberlin and Emily Zhang from Wellesley participated part time. 2021

26. **Virtual Reality Configuration Space.** Fletcher Jones scholar Phillip Miller created a virtual reality representation of the configuration space of the winged cube, in which physically moving in the configuration space in VR caused the configuration of the cube change in real time based on your location. 2021

25. **Emergence Art Installation.** I co-supervised engineering students Nicolas De La Fuente, Jane Kim, and Rosie Pham on their design of the sculpture Emergence, from giving art critique and suggestions throughout the summer, to building a narrative and descriptive video of the piece, to fabrication and installation at the art festival Everywhen in October. 2021

24. **Hyperbolic Dürer's Conjecture Presentation.** Fletcher Jones 2020 students Sean Kim and Jordan Matuszewski presented their research with my support on *Hyperbolic Dürer's Conjecture* at Northern California Undergraduate Mathematics Conference. 2021

23. **Hyperbolic Dürer's Conjecture.** Fletcher Jones Scholars Jordan Matuszewski and Sean Kim translated Dürer's Unfolding Conjecture into hyperbolic space, and investigated special classes of polyhedra. 2020

22. **COMAP's Mathematical Contest in Modeling.** Recruited and supported 81 teams of students to participate in COMAP's annual International Mathematical Modeling Contest. Three of our teams have earned a "Meritorious" score and five more have earned "Honorable Mention." 2001-

21. **Sound Direction Detection and Response** Fletcher Jones Scholars Kelli Kufta and Sean Hough created *Halo* , a suspended ring of LEDs that reads in sound wave data to a 6-microphone array, and uses time delay of sound to determine a direction and produces a visual LED response. 2019

20. **Dodecahedron Mirror Lamps** Kate Rumann and Kiana Guastaferro designed and constructed five dodecahedron model lamps with infinite internal mirror reflections as artistic gifts for our highest contributing donors to *Unfolding Humanity*, exhibited at North County Maker Faire 2019

19. **Engineering Problem Solving for Unfolding Humanity.** SURE scholar Sydney Platt spent the summer solving fabrication and engineering problems for *Unfolding Humanity*. 2018

18. **Fabrication of *Unfolding Humanity*.** At least 12 additional students and alums (Quinn Pratt, Michael Sween, Kate Rumann, Kiana Guastaferro, Melissa Carin, Glenn Moss, Sarina Haghiat, Nat Yee, Ava Bellizzi, Gabby Goerke, James Enders, D.D. Latimore, Kelli Kufta, Sean Hough) helped with the fabrication and later refurbishing of *Unfolding Humanity*. 2018

17. **Lighting Animation for The Journey Project.** Computer Science majors Erick Perez, Alexander Alvarez, and Seth Nakanishi contributed lighting animation routines for *The Journey Project*. 2017

16. **Building Topology exhibit *Taping Shape*.** Five of my topology students helped build *Taping Shape* , a multi-room, large scale topological surface, large enough to walk through, out of packing tape, at the Reuben H Fleet Science Center 2017

15. α-Regular Stick Number. Danielle Watson investigated α-regular stick number and presented a poster for USD's Undergraduate Research Conference. Danielle earned the award for Best Poster. 2014

14. Cryptography Honors Thesis. Advisor for Kelly Fromm's honors thesis entitled "The Applications of Algorithms and Mathematics in the Military: Cryptography of Past, Present, and Future Warfare" 2013

13. Knot Theory and DNA Project. Brent Allman presented his class project on Knot Theory and DNA at the Pacific Coast Undergraduate Math Conference. 2013

12. Spread of Yellow Fever in Senegal. Sami Armstrong presented the research project she did for our Biomathematics class at USD's Undergraduate Research Conference, and also at the local Mathematical Association of America meeting (where she earned the Best Poster award). 2013

11. Putnam Competition. Increased Putnam Competition participation from 3-5 per year to 11 students my first year and 14 the next. 2010-11

10. COMAP MCM Solution Presentation. Veronica Rindge presented her team's solution to COMAP's International Mathematical Modeling Contest at Pacific Coast Undergraduate Math Conference. 2012

9. Brunnian Links Presentation. Carolyn Yarnall presented her proving the non-existence of convex planar Brunnian Links of 5 components at Pacific Coast Undergraduate Math Conference. 2007

8. COMAP MCM Solution Presentation. Sabrina Pierard presented her team's solution to COMAP's International Mathematical Modeling Contest at Pacific Coast Undergraduate Math Conference. 2007

7. Convex Planar Brunnian Links. Carolyn Yarnall proved that there do not exist any convex planar Brunnian links of 5 components. 2006

6. Eigenvectors and Google PageRank. Carolyn Yarnall presented at Pacific Coast Undergraduate Math Conference about how Google uses Eigenvectors to help rank web pages in search. 2006

5. Shape of Space. Justin Webster and Carolyn Yarnall worked through Jeff Weeks' book *Shape of Space*. 2005

4. Modeling Clam Evolution. Senior Thesis Committee Member for Kevin Brink's Applied Math Thesis entitled *Clam Evolution Using a Continuous Age and Time Structured Model.* 2005

3. Convex Planar Brunnian Links. Michelle Wilkerson filled in Hugh Howards' proof that there exists no 4 component, planar convex Brunnian links, and began generalizing to the 5 component case. 2005

2. Error Correcting Codes and Sphere Packings. Michelle Wilkerson studied the relationship between error correcting codes and sphere packings. 2004

1. Mathematical Association of America Section Meeting Posters. Advised 6 groups of students presenting posters at the MAA Section Meeting at USD. One student's poster received the Best Poster award, and three groups were from my 100 level Investigations in Mathematics course. 2004

Service and Engagement with USD and Larger Community

64. Mathematics Department Chair — Fall 2023 -
63. Production Leadership Team member for San Diego Youtopia, a 4-day fundraising event for the nonprofit entity which supports San Diego CoLab, an arts collaborative makerspace that I am deeply involved with. 2022-23
62. Paper referee, for an article submitted for publication to the *International Journal of Engineering Education* concerning the introduction of design projects in early math classes for industrial engineering students. 2022
61. Director at San Diego CoLab, a nonprofit arts collaborative makerspace. I help with decision making and direction setting for the lab. I played a lead role in the creation of a functional classroom, I led the charge for a safety decluttering and clean-out of most of the major areas in the Lab, and worked with past president of San Diego Fine Woodworking Association to help make safety and functional improvements to our woodworking area. Currently assisting in transition to potential larger new home, including meeting with potential donors, negotiating with landlord, and developing a new business model 2021-
60. Education Lead at San Diego CoLab, an arts collaborative workspace. As CoLab's first ever Education Lead, I am building a curriculum of safety certification training and creative classes using CoLab's tools. A major goal is to create tighter ties and further opportunities for collaboration between the University and artistic and maker community in San Diego by developing classes and activities at both places which are strengthened by the inclusion of the other 2020-
59. Electronics Lab Lead at San Diego CoLab; I renovated an old brewing space into a functional space for electronics building, including several soldering stations, a computer design station, and a 3D printer area. Planned out the space and decided on all equipment. My goal is to make this a highly functional place for artists to build their dream electronic-based art. 2020-
58. Introduction to Soldering Course I designed and co-teach this course for CoLab. 2021-
57. Mathematics Department Website Redesign Committee Advised on possible improvements from the initial design we were given 2021
56. Pre-Hiring Committee Member for Math Department faculty hire; helped write our cluster proposal 2021
55. Dean's Advisory Committee Helped develop rationale for creation of this new committee supporting the Dean in major decisions. 2019-2021
54. Academic Program Review Committee Chair for Mathematics Department 2018-2020
53. Undergraduate Curriculum Committee member 2020
52. Mathematics consultant to JPW Communications for Wonderful World of Water brochure 2020
51. Pre-Hiring Committee and Hiring Committee member for Mathematics Department faculty hire 2020
50. Textbook Reviewer. Reviewed chapter of Stewart's revised Calculus Concepts and Contexts 2020
49. Mid-Century Lamp Creation Class Wired electronics for, programmed LED microcontrollers for, and co-Taught *Mid-Century Lamps: Screenprinting, CNC Laser, and Electronics Lab* course at CoLab with L. Hemingway and D. Reeves 2020

48. **DIY Face Mask Class** Taught and supported participants as they sewed their first face mask at the start of the pandemic. Online for CoLab Education with G. Roth 2020

47. **Dean's Advisory Committee** member 2019-

46. **Fostering deepening partnership between USD and the San Diego creative and maker community**, engaging both in meaningfully collaborative work creating large scale, academically based sculptures, helping USD to achieve its vision as an Anchor Institution 2017-

45. **Online Math Placement Exam Creator.** Created, programmed, and maintained database-backed, web-based Math Placement Exam, including
    - Nightly automated interfacing with USD's Banner Student Registration System
    - Secure logins for students and faculty
    - Two levels of on-line exams with immediate scoring
    - A (deprecated) sign-up system on which students can reserve lab computers
    - Policy information and links to practice exams
    - Automated score reporting system for faculty and administrators
    - More than 24,000 lines of code 2003-2020

44. **Reappointment Committee Chair** for Adam Boocher 2019

43. **Advanced Integration.** Developed successful proposal giving Advanced Integration core credit for our Geometry course 2019

42. **Taught *2D Video Game Creation from Scratch™,*** an introductory computer programming course for middle school students 2017

41. **Taught a Robotics workshop** for the general public as part of the STEAM Youth and Community Conference associated with the STEAM Academy held on our campus 2016,17

40. **Taught *Creative Computing from Scratch™,*** an introductory computer programming course for middle school girls 2016

39. **Second Year Student Experience Task Force** member, committee addressing diversity, invited by President Harris 2016

38. **Faculty Director** for Intersections LLC 2016

37. **Living Learning Community Committee** member 2016

36. **Hiring Committee** member for department's applied math tenure track hire 2016

35. **Department Space Committee** member, committee developed new floorplan to help align space with our new vision for our program 2016

34. **Mathematics Department Committee on Growth**, chair 2016

33. **Faculty Director** for Space Place and Sound LLC 2015

32. **Geometry/Topology Consultant** for *Pop Out Pets* , a plush toy that can be unfolded three different ways to become three different animals 2015

31. **Undergraduate Student Success Network** member by appointment of provost 2015

30. **University's Retention Committee** member 2015

29. **Taught *Creative Computing from Scratch™***, an introductory computer programming course for middle school girls sponsored by GirlTECH 2014,15

28. **Budget Committee** member 2012-14
27. **Mathematics and Quantitative Reasoning Subcommittee** member for new Core 2011-12
26. **Core Planning Committee** member 2011-12
25. **Organized Math Career Talks** by Chris Waters (NSA), Laura Bloom (biomathematician from Pfizer), Suneel Sundar (NSA), Alice Alsberge (actuary from Cheiron), Carole Newton (biomathematician from UCLA), and Dave Polidori (Johnson & Johnson) 2001-12
24. **Co-taught Animations and Robotics Computer Camp** for 11-13 year olds with L. McGrath 2011
23. **Alternate, University Senate** 2009-11
22. **Alternate, Executive Committee for University Senate** 2009-11
21. **Refereed 4 papers** for American Mathematical Monthly and Mathematics Magazine 2002-10
20. **HSP-BioBridge Science Gone Wild! Program** Activity Leader 2008
19. **Recruiting and Retention.** Introduced students to wide range of math careers by hosting talks and developing Careers in Mathematics Website; developed Marketing Plan for increasing size of our major with Steven Pultz; wrote letters to incoming freshmen interested in math to inform them about major. Actively encourage students to major (ongoing). 2001-08
18. **Reviewed on-line homework questions and solutions** for Stewart's Calculus text 2007
17. **Phi Beta Kappa Treasurer**, USD Chapter 2005-07
16. **Academic Affairs and Planning Committee** member 2005-07
15. **CIO Search Committee** member, appointed by provost 2005
14. **Graduate Studies Committee** Chair 2005
13. **Expert** , AskNSDL (National Science Database Library) ESTME (Excellence in Science, Technology, and Mathematics Education) Week 2004
12. **Founding Member of Phi Beta Kappa**, USD Chapter 2004
11. **Hosted talks by MacArthur Fellow Jeff Weeks:** a public forum talk about his work trying to discover the shape of space, and a higher level talk for our majors 2004
10. **Graduate Studies Committee** Member 2002-04
9. **Hosted Morwen Thistlethwaite's talk** in USD's Science Lecture Series 2003
8. **Helped design** USD's Math and Computer Science Department's new computer classroom 2003
7. **Panelist, Moderator**; Academic Panel, Johns Hopkins University's Center for Talented Youth College Colloquium 2001-03
6. **College Visiting Day** Mathematics Department Representative 2002
5. **Judge**, Student Research Posters at Mathematical Association of America meeting 2002
4. **Advised Admissions Office Recruiters.** Advised recruiters and created flier for high school visits about mathematics at USD 2001,02
3. **Academic Assembly Meeting Teller** 2001

2. **Reviewed Linear Algebra Text** for publisher Addison Wesley 2000

1. **Math Department subcommittees**: Assessment, Growth, Space, Math Major, Recruitment Website Redesign, Math Placement, Applied Mathematics, Course Rotation, Computer Classroom Design, Space Utilization, Applied Mathematics Hiring Committee, several RRT Committees 2001-

Invited Addresses and Media Appearances

54. **NBC 7** interview August 4, aired on August 25
U of San Diego Math Professor is Brian Behind Sculpture Featured At Burning Man 2023

53. **CBS 8** interview September 5
San Diego Group Behind Burning Man Art Shares Experience 2023

52. **Mathematics Department Seminar** at USD
The Imaginative Desert 2023

51. **Natural Landscapes and Human Meaning: The Desert** at USD's Humanities Center
The Imaginative Desert 2023

50. **NBC 7** interview August 4, aired on August 25
U of San Diego Math Professor is Brian Behind Sculpture Featured At Burning Man 2023

49. **CBS 8** interview September 5
San Diego Group Behind Burning Man Art Shares Experience 2023

48. **Art and Technology Lecture Series** at Mesa College, November 18, 2022
Building Big Art, with Gordon Hoople and Nate Parde 2022

47. **KUSI News** San Diego, News segment about Reflexion, June 18, 2022
New Interactive Art Sculpture has People Spinning & Reflecting 2022

46. **NBC San Diego** San Diego, News segment about Reflexion, June 16, 2022
Interactive Art Sculpture Mirrors Beach in La Jolla 2022

45. **CBS8 News** San Diego, Interview December 10, 2020
NASA names team to train for moon-landing, 4 astronauts have San Diego ties 2020

44. **NASA** Astronaut Introduction Video, December 9, 2020
Meet Artemis Team Member Jonny Kim 2020

43. **Interviews With Women In STEM** Spotify podcast, Interview September 8, 2020
Diane Hoffoss: Professor and Researcher in Topology 2020

42. **Wellesley College Public Lecture**, *Unfolding Humanity: Mathematics at Burning Man* 2020

41. **Babu Banarasi Das University, India, Popular Mathematics Lecture Series**
Unfolding Humanity: Mathematics at Burning Man 2020

40. **KUSI News** San Diego, Interview January 13, 2020
Professors Taught New Astronauts During Time at the University of San Diego 2020

39. **University of Virginia Public Lecture**, *Unfolding Humanity: Mathematics at Burning Man* 2019

38. University of Virginia Geometry Seminar
Morse Area and Topological Complexity for Hyperbolic 3-Manifolds 2019

37. College of Staten Island CUNY Public Lecture, *Unfolding Humanity: Mathematics at Burning Man* 2019

36. University of Maryland Baltimore Campus Public Lecture
Unfolding Humanity: Mathematics at Burning Man 2019

35. U.C. Berkeley Topology Seminar
Morse Area and Topological Complexity for Hyperbolic 3-Manifolds 2019

34. U.C. Berkeley Graduate Student Topology Seminar, *Manifold Complexity and Widths* 2019

33. USD's Math Department Seminar, *How Wide Is A Manifold?* 2019

32. Joint AMS / MAA Meetings Special Session on Mathematics and the Arts
Unfolding Humanity: Burning Man Mathematics (with S. Devadoss) 2019

31. NBC San Diego News Interview August 14, 2018
USD Group Creates Burning Man Festival Installation 2018

30. USD's Math Department Seminar, *Building a Large Scale Mathematical Sculpture* 2018

29. USD Humanities Center, The Idea of Beauty Series
Beauty in Mathematics 2018

28. USD's Math Department Seminar, *Orthospectra of 3-Manifolds* 2017

27. The Journey Project Fundraising Video Series, *Diane's Story of Lights* 2017

26. USD's Math Department Seminar
My experience working on The Journey Project, and other mathematically based sculptural art 2017

25. California State University Long Beach Colloquium, *A Comparison of 3-Manifold Widths* 2014

24. UCSD's Southern California Undergraduate Mathematics Conference, Keynote Address
The Shape of Space 2012

23. Tokyo Institute of Technology, Tokyo Japan, *A Comparison of 3-Manifold Widths* 2009

22. Geometric Topology Conference at Peking University, Beijing China
A Comparison of 3-Manifold Widths 2007

21. University of California, Santa Barbara Colloquium, *How Linear Algebra Helps You Surf* 2006

20. University of San Diego Brown Bag Talk, *How Linear Algebra Helps You Surf* 2006

19. Wellesley College Mathematics Colloquium, *Knots, Unknots, and the Jones Polynomial* 2003

18. USD's Science Lecture Series *Surgery, Mutants, and the Jones Polynomial* 2002

17. UC San Diego Topology Seminar, *Suspension Flows Are Quasigeodesic* 2002

16. Combinatorial Aspects of Geometry and Topology Conference, Rice University
Surgery, Mutants, and the Jones Polynomial 2001

15. Rice University School Mathematics Project Spring Workshop, Keynote Address
The Shape of Space 2001

14. Georgia Topology Conference, Session on Foliations and Dynamics
Suspension Flows are Quasigeodesic 2000

13. Cascade Topology Conference, *Suspension Flows are Quasigeodesic* 2000

12. VIrginia Tech Research Colloquium, *Using Foliations to Understand 3-Manifolds* 1999

11. International Meeting of the Australian and American Mathematical Societies
Suspension Flows are Quasigeodesic 1999

10. AMS Sectional Meeting, Wake Forest, Recent Results in 3-Manifold Topology Special Session
Suspension Flows are Quasigeodesic 1998

9. Laminations, Foliations, and Dynamics in Geometry and Topology Conference, SUNY Stony Brook
Suspension Flows are Quasigeodesic 1998

8. Joint AMS/MAA Meetings, Kleinian Groups and Hyperbolic 3-Manifolds Special Session
Suspension Flows are Quasigeodesic 1998

7. The Colorado College Research Colloquium, *Some Invariants of 3-Manifolds* 1998

6. The Colorado College Research Colloquium, *Surgery, Mutants, and the Jones Polynomial* 1998

5. Joint Meetings of the AMS/MAA, Project NExT Special Session
Teaching Undergraduates to Write Mathematical Proofs 1998

4. Texas Christian University Research Colloquium, *Using Foliations to Understand 3-Manifolds* 1997

3. Georgia Topology Conference, Laminations and Foliations of 3-Manifolds Special Session
Quasigeodesic Flows on Hyperbolic 3-Manifolds Which Fiber Over the Circle 1997

2. AMS Sectional Meeting, Albuquerque, Analysis and Geometry of Foliations Special Session
Suspension Flows are Quasigeodesic, 1997

1. Wahsatch Topology Conference, *Suspension Flows are Quasigeodesic* 1997

Courses Taught

University of San Diego, 2001-

- Investigations in Mathematics x 8
- Symmetries, Shape, and Space (new course)
- Survey of Calculus x 6
- Calculus I x 2
- Calculus II x 13
- Calculus II Preceptorial x 3
- Calculus II Honors
- Calculus III x 27
- Foundations of Higher Math x 9
- Applied Math for Engineering I x 2
- Linear Algebra x 2
- Differential Equations
- Real Analysis I x 5
- Real Analysis II
- Complex Analysis x 2
- Number Theory
- Cryptography
- Abstract Algebra
- Geometry x 2
- Fundamental Groups & Covering Spaces (new course) x 4
- Knot Theory (new course) x 4
- Biomathematics (new course)
- Problem Solving x 4
- Independent study: Error Correcting Codes
- Independent Study: Brunnian Links
- Independent Study: Convex Planar Brunnian Links
- Independent Study: Lattice Knots
- Independent Study: Stick Number for Knots
- Independent Study: α-Regular Stick Number
- Assembly Language Programming x 3

Rice University, 1999-2001

- Calculus I
- Calculus II x 2
- Linear Algebra
- Multivariable Calculus
- Graduate Geometric Topology
- Graduate Student Teaching Seminar

Colorado College, Mathematics Courses, 1997-1999

- PreCalc/Calc 2 block sequence
- Calculus I x 3
- Calculus II
- Non-Euclidean Geometry

Colorado College, Computer Science Courses, 1997-1999

- Introduction to Digital Computing x 3
- Computer Science I
- Object Oriented Programming
- Independent Study: Java

U.C. Santa Barbara, 1993-1997

- Mathematics Achievement Program x 2
- Summer Transitional Enrichment Program Pre-Calculus x 2
- Mathematics For Elementary School Teachers
- Pre-Calculus
- Calculus for Social and Life Sciences I
- Calculus for Social and Life Sciences II
- Calculus I
- Vector Calculus
- Introduction to Proofs x 2
- Multivariable Calculus
- Linear Algebra

Virginia Tech, 1988

- Problem Solving