

Mark Gillespie

Curriculum Vitae

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Academic Appointments

Sept. 2024– **Postdoctoral Researcher**, *École Polytechnique*, Palaiseau, France
present

Education

2018–2024 **PhD Computer Science**, *Carnegie Mellon University*
Advisor: Keenan Crane

2014–2018 **B.S. Computer Science & B.S. Mathematics**, *California Institute of Technology*

Journal Articles

Mark Gillespie, Denise Yang, Mario Botsch, and Keenan Crane

- [6] *Ray Tracing Harmonic Functions*
ACM Transactions on Graphics (SIGGRAPH), 43, 4. 2024. DOI: 10.1145/3658201
[Best Paper, Honorable Mention]

- Yuichi Hirose, **Mark Gillespie**, Angelica M. Bonilla Fominaya, and James McCann
[5] *Solid Knitting*
ACM Transactions on Graphics (SIGGRAPH), 43, 4. 2024. DOI: 10.1145/3658123
[Best Paper, Honorable Mention]

- Nicole Feng, **Mark Gillespie**, and Keenan Crane
[4] *Winding Numbers on Discrete Surfaces*
ACM Transactions on Graphics (SIGGRAPH), 42, 4. 2023. DOI: 10.1145/3592401

- Hsueh-Ti Derek Liu, **Mark Gillespie**, Benjamin Chislett, Nicholas Sharp, Alec Jacobson, and Keenan Crane
[3] *Surface Simplification Using Intrinsic Error Metrics*
ACM Transactions on Graphics (SIGGRAPH), 42, 4. 2023. DOI: 10.1145/3592403

- Mark Gillespie**, Nicholas Sharp, and Keenan Crane
[2] *Integer Coordinates for Intrinsic Geometry Processing*
ACM Transactions on Graphics (SIGGRAPH ASIA), 40, 6. 2021. DOI: 10.1145/3478513.3480522

- Mark Gillespie**, Boris Springborn, and Keenan Crane
[1] *Discrete Conformal Equivalence of Polyhedral Surfaces*
ACM Transactions on Graphics (SIGGRAPH), 40, 4. 2021. DOI: 10.1145/3450626.3459763

Other Publications

Mark Gillespie

- [3] *Evolving Intrinsic Triangulations*
PhD Thesis, Carnegie Mellon University. 2024. DOI: 10.1184/R1/25898782.v1

- Yuichi Hirose, **Mark Gillespie**, Angelica M. Bonilla Fominaya, and James McCann
[2] *Solid Knitting (Abstract)*
SCF Adjunct '24 Article 15, 2 pages. 2024. DOI: 10.1145/3665662.3673257

- Nicholas Sharp, **Mark Gillespie**, and Keenan Crane
[1] *Geometry Processing with Intrinsic Triangulations*
SIGGRAPH '21 Courses. 2021. DOI: 10.1145/3450508.3464592

Other Research Experience

- July 2023 **Visiting Researcher**, *Technische Universität Berlin, Berlin*, Host: Boris Springborn
Summer 2022 **Visiting Graduate**, *University of California, San Diego*, Host: Albert Chern
Summer 2017 **Arthur R. Adams Undergraduate Researcher**, *Caltech*, Mentor: Peter Schröder
Summer 2016 **Arthur R. Adams Undergraduate Researcher**, *Caltech*, Mentor: Mathieu Desbrun
2016–2017 **Undergraduate Researcher**, *Caltech*, Mentor: Alan Barr

Awards & Honors

- 2024 Two SIGGRAPH Best Paper Award Honorable Mentions *Awarded to 12 papers out of ~840 submissions; ~top 1.5% of papers*
2019–2022 NSF Graduate Research Fellowship *Awarded to top 15% of applicants across all areas of science; \$147,000 over 3 years*
2016–2017 Arthur R Adams SURF Fellow
2017 SIGGRAPH ACM Turing Award Celebration Grant

Selected Talks

- Nov. 2024 **Solid Knitting & Harmonic Hitting**, *IST Austria*
Aug. 2024 **Ray Tracing Harmonic Functions**, *ACM SIGGRAPH 2024*
Sept. 2023 **Intrinsic Triangulations in Geometry Processing**, *IST Austria*
Aug. 2023 **Intrinsic Triangulations in Geometry Processing**, *Geometry Workshop in Obergurgl*
Jul. 2023 **Intrinsic Triangulations in Geometry Processing**, *TU Berlin SFB TRR 109 Colloquium*
Apr. 2022 **Discrete Conformal Equivalence of Polyhedral Surfaces**, *UCSD Pixel Cafe*
Nov. 2021 **Integer Coordinates for Intrinsic Geometry Processing**, *ACM SIGGRAPH Asia 2021*
Aug. 2021 **Discrete Conformal Equivalence of Polyhedral Surfaces**, *ACM SIGGRAPH 2021*
Aug. 2021 **Geometry Processing with Intrinsic Triangulations**, *ACM SIGGRAPH 2021 Courses*
June 2021 **Geometry Processing with Intrinsic Triangulations**, *SIAM International Meshing Roundtable Courses (IMR 2021)*

Service

- Departmental Organizer, Graphics Reading Group (2022–2023); Organizer, Graphics Seminar (2020–2021); Panel Speaker (CSD Visit Day 2020, 2023, CSD Introductory Course 2022); Organizer, PhD mutual mentorship pod (2022–2024)
Reviewing SIGGRAPH (2019, 2022, 2023, 2024), SIGGRAPH Asia (2022, 2023, 2024), ACM Transactions on Graphics (2024), Eurographics (2024), Computer Graphics Forum (2024), Journal of Computational and Applied Mathematics (2024), Computer-Aided Design (2023), Transactions on Visualization and Computer Graphics (2023, 2024), Computers & Graphics (2021)
Mentorship Summer Geometry Initiative volunteer (2024), Advising Master’s student (2022–2023), CMU Summer Undergraduate Research Fellowship (2020)

Press Coverage

- July 2024 **Cosmos magazine**, *3D knitting could make solid but soft furniture*
July 2024 **Interesting Engineering**, *Beware IKEA: Solid knitted three-dimensional furniture could be a reality*
July 2024 **New Atlas**, *Innovative ‘solid knitting’ machine builds 100% reconfigurable objects*
July 2024 **ZME Science**, *Solid knitting: a different spin on 3D printing that can make furniture out of yarn*

July 2024 **ACM SIGGRAPH Blog**, *Beyond the Threads*

July 2024 **CMU News**, *Robotics Institute Introduces Solid Knitting as New Fabrication Technique*