Mark Gillespie

Curriculum Vitae

Academic Appointments

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

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

[6] **Mark Gillespie**, Denise Yang, Mario Botsch, and Keenan Crane
Ray Tracing Harmonic Functions
ACM Transactions on Graphics (SIGGRAPH), 43, 4. 2024. DOI: 10.1145/3658201

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

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

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

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

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

Other Publications

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

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

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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 about 840 submissions*

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*