

# Mark Gillespie

*Curriculum Vitae*

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 google scholar |  MarkGillespie

## Academic Appointments

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École Polytechnique,

Postdoctoral Researcher

Sept. 2024–present

## Education

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Carnegie Mellon University,

PhD in Computer Science | Advisor: Keenan Crane

2018–2024

California Institute of Technology,

B.S. in Computer Science and B.S. in Mathematics

2014–2018

## Journal Articles

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

*Ray Tracing Harmonic Functions*

- [6] 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

*Solid Knitting*

- [5] ACM Transactions on Graphics (SIGGRAPH), 43, 4. 2024. DOI: 10.1145/3658123  
[\[Best Paper, Honorable Mention\]](#)

Nicole Feng, **Mark Gillespie**, and Keenan Crane

*Winding Numbers on Discrete Surfaces*

- [4] 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

*Surface Simplification Using Intrinsic Error Metrics*

- [3] ACM Transactions on Graphics (SIGGRAPH), 42, 4. 2023. DOI: 10.1145/3592403

**Mark Gillespie**, Nicholas Sharp, and Keenan Crane

*Integer Coordinates for Intrinsic Geometry Processing*

- [2] ACM Transactions on Graphics (SIGGRAPH ASIA), 40, 6. 2021. DOI: 10.1145/3478513.3480522

**Mark Gillespie**, Boris Springborn, and Keenan Crane

*Discrete Conformal Equivalence of Polyhedral Surfaces*

- [1] ACM Transactions on Graphics (SIGGRAPH), 40, 4. 2021. DOI: 10.1145/3450626.3459763

## Other Publications

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**Mark Gillespie**

*Evolving Intrinsic Triangulations*

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

Yuichi Hirose, **Mark Gillespie**, Angelica M. Bonilla Fominaya, and James McCann

*Solid Knitting (Abstract)*

- [2] SCF Adjunct '24 Article 15, 2 pages. 2024. DOI: 10.1145/3665662.3673257

Nicholas Sharp, **Mark Gillespie**, and Keenan Crane

*Geometry Processing with Intrinsic Triangulations*

- [1] SIGGRAPH '21 Courses. 2021. DOI: 10.1145/3450508.3464592

## Awards & Honors

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

## Other Research Experience

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<b>Technische Universität Berlin,</b>	July 2023
Visiting Researcher   <i>Host: Boris Springborn</i>	
<b>University of California, San Diego,</b>	Summer 2022
Visiting Graduate   <i>Host: Albert Chern</i>	
<b>California Institute of Technology,</b>	Summer 2017
Arthur R. Adams Undergraduate Researcher   <i>Mentor: Peter Schröder</i>	
<b>California Institute of Technology,</b>	Summer 2016
Arthur R. Adams Undergraduate Researcher   <i>Mentor: Mathieu Desbrun</i>	
<b>California Institute of Technology,</b>	2016–2017
Undergraduate Researcher   <i>Mentor: Alan Barr</i>	

## Selected Talks

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<b>Solid Knitting &amp; Harmonic Hitting</b> , IST Austria	Nov. 2024
<b>Ray Tracing Harmonic Functions</b> , ACM SIGGRAPH 2024	Aug. 2024
<b>Intrinsic Triangulations in Geometry Processing</b> , IST Austria	Sept. 2023
<b>Intrinsic Triangulations in Geometry Processing</b> , Geometry Workshop in Obergurgl	Aug. 2023
<b>Intrinsic Triangulations in Geometry Processing</b> , TU Berlin SFB TRR 109 Colloquium	Jul. 2023
<b>Discrete Conformal Equivalence of Polyhedral Surfaces</b> , UCSD Pixel Cafe	Apr. 2022
<b>Discrete Conformal Equivalence of Polyhedral Surfaces</b> , Toronto Geometry Colloquium	Mar. 2022
<b>Integer Coordinates for Intrinsic Geometry Processing</b> , ACM SIGGRAPH Asia 2021	Nov. 2021
<b>Discrete Conformal Equivalence of Polyhedral Surfaces</b> , ACM SIGGRAPH 2021	Aug. 2021
<b>Geometry Processing with Intrinsic Triangulations</b> , ACM SIGGRAPH 2021 Courses	Aug. 2021
<b>Geometry Processing with Intrinsic Triangulations</b> , SIAM IMR 2021 Courses	June 2021

## Service

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### 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

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<b>Knitting Industry Creative</b> , “Solid Knitting – a new fabrication technique”	<i>August 2024</i>
<b>Textile Technology Source</b> , “Solid-knitting machine builds reconfigurable objects”	<i>August 2024</i>
<b>Design Boom</b> , “Carnegie Mellon University’s researchers develop ‘solid knitting’”	<i>August 2024</i>
<b>Material District</b> , “Solid knitting: 3D printing with yarn”	<i>August 2024</i>
<b>Cosmos Magazine</b> , “3D knitting could make solid but soft furniture”	<i>July 2024</i>
<b>Interesting Engineering</b> , “Beware IKEA: Solid knitted three-dimensional furniture could be a reality”	<i>July 2024</i>
<b>New Atlas</b> , “Innovative ‘solid knitting’ machine builds 100% reconfigurable objects”	<i>July 2024</i>
<b>ZME Science</b> , “Solid knitting: a different spin on 3D printing that can make furniture out of yarn”	<i>July 2024</i>
<b>ACM SIGGRAPH Blog</b> , “Beyond the Threads”	<i>July 2024</i>
<b>CMU News</b> , “Robotics Institute Introduces Solid Knitting as New Fabrication Technique”	<i>July 2024</i>