

Lorenzo Beretta

IBM Research, Cambridge, MA

• lorenzo2beretta@gmail.com • lorenzo2beretta.github.io

Research Interests

High-dimensional geometry, high-dimensional probability, sublinear algorithms, property testing, optimal transport.

Education

- **Ph.D. in Computer Science University of Copenhagen** Oct 2020 – Apr 2024
Advised by Mikkel Thorup & Mikkel Abrahamsen
- **Scuola Normale Superiore (Honors Program)** 2015 – 2020
During my B.S. and M.S, I took an additional 2-year workload of math and physics courses
- **M.S. Computer Science, University of Pisa** Sep 2018 – Oct 2020
Grade 110/110 cum Laude
- **B.S. Mathematics, University of Pisa** Sep 2015 – Oct 2018
Grade 110/110 cum Laude

Appointments

- **Goldstine Fellow at IBM, Cambridge, MA** Sep 2025 – present
Hosted by Kenneth Clarkson
- **Postdoc at University of California, Santa Cruz** Sep 2024 – Sep 2025
Hosted by Vaggos Chatziafratis

Awards

- **Herman Goldstine Postdoctoral Fellowship at IBM** 2025
- **Best Student Paper Award, SODA 2022** 2022
*for “Better Sum Estimation via Weighted Sampling”, also invited to **HALG 2022** and **TALG special issue***
- **EU TALENT Doctoral Fellowship Grant** 2020
I was granted a PhD fellowship by the Horizon 2020 Marie Skłodowska-Curie program (grant n. 801199)
- **Undergraduate Honors Program: Scuola Normale Superiore** 2015
I was admitted to Scuola Normale Superiore, top math program in Italy (≈ 15 students admitted per year)

Publications

Peer Reviewed Conference Proceedings

Faster Estimation of the Average Degree of a Graph Using Random Edges and Structural Queries
with Deeparnab Chakrabarty, C. Seshadhri
Symposium on Discrete Algorithms (SODA), 2025 C12

Feature Selection and Junta Testing are Statistically Equivalent <i>with</i> Nathaniel Harms, Caleb Koch Symposium on Discrete Algorithms (SODA), 2025	C11
Approximating High-Dimensional Earth Mover's Distance as Fast as Closest Pair <i>with</i> Vincent Cohen-Addad, Rajesh Jayaram, Erik Waingarten Symposium on Foundations of Computer Science (FOCS), 2025	C10
New Statistical and Computational Results for Learning Junta Distributions International Conference on Randomization and Computation (RANDOM), 2025	C9
Sketched Lanczos uncertainty score: a low-memory summary of the Fisher information <i>with</i> Marco Miani, Søren Hauberg Advances in Neural Information Processing Systems (NeurIPS), 2024	C8
Online sorting and online TSP: randomized, stochastic, and high-dimensional <i>with</i> Mikkel Abrahamsen, Ioana Bercea, Jonas Klausen and László Kozma European Symposium on Algorithms (ESA), 2024	C7
Approximate Earth Mover's Distance in Truly-Subquadratic Time <i>with</i> Aviad Rubinfeld Symposium on Theory of Computing (STOC), 2024	C6
Multi-Swap k-Means++ <i>with</i> Vincent Cohen-Addad, Silvio Lattanzi, Nikos Parotsidis Advances in Neural Information Processing Systems (NeurIPS), 2023	C5
Locally Uniform Hashing <i>with</i> Ioana Bercea, Jonas Klausen, Jakob Bæk Tejs Houen, Mikkel Thorup Symposium on Foundations of Computer Science (FOCS), 2023	C4
Online Sorting and Translational Packing of Convex Polygons <i>with</i> Anders Aamand, Mikkel Abrahamsen, Linda Kleist Symposium on Discrete Algorithms (SODA), 2023	C3
Better Sum Estimation via Weighted Sampling <i>with</i> Jakub Tetek Symposium on Discrete Algorithms (SODA), 2022	
Best Student Paper Award, invited to HALG 2022 and TALG special issue	C2
Online Packing to Minimize Area or Perimeter <i>with</i> Mikkel Abrahamsen International Symposium on Computational Geometry (SoCG), 2021	C1

Journal Publications

Better Sum Estimation via Weighted Sampling <i>with</i> Jakub Tetek Transactions on Algorithms (TALG)	J2
An Optimal Algorithm to Find Champions of Tournament Graphs <i>with</i> Franco Maria Nardini, Roberto Trani, Rossano Venturini IEEE Transactions on Knowledge and Data Engineering (TKDE)	J1

Academic Service

- **Conference Review**

ESA (2022, 2023, 2024), FOCS (2023), ICALP (2025), ISAAC (2024), ITCS (2024), NeurIPS (2025), SODA (2026), SOSA (2024), STOC (2025), SWAT(2024)

- **Journal Review**

Journal of Computational Geometry (JoCG)

Internships

- **Stanford University** Feb 2023 – Aug 2023
I worked with Aviad Rubinstein on sublinear-time matching algorithms
- **Google Research** Oct 2022 – Dec 2022
I worked on designing, analyzing and implementing clustering algorithms
- **Quantitative Investment Internship, Société Générale** Aug 2019 – Oct 2019
I worked on implementing efficient algorithms for optimal execution.

Teaching and Leadership

- **Teaching Assistant, Copenhagen University** 2021 – 2022
I served twice as T.A. for the “Randomized Algorithm” graduate course at Copenhagen University
- **Scout Leader Volunteer** 2017 – 2020
I volunteered as a Scout leader, managing a troop of about 30 teenagers