Younhun Kim

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Education

Massachusetts Institute of Technology, Cambridge, MA, USA
Ph.D. in Applied Mathematics 2023
Dissertation: *Algorithms for Reconstructing Biological History from Genomic Data*

Brown University, Providence, RI, USA
Sc.B. Mathematics & Computer Science 2016
Magna Cum Laude, Department Honors

Employment History

Brigham and Women's Hospital, Boston, MA, USA
Postdoctoral Research Fellow . . . . . 2023 – Present

Jump Trading, Chicago, IL, USA
Quantitative Research Intern . . . . . Summer 2020 & 2021

Orbis Systems, Jersey City, NJ, USA
Programmer 2009-2013

Peer-Reviewed Publications

- **Y. Kim**, F. Koehler, A. Moitra, E. Mossel, G. Ramnarayan. "How Many Subpopulations is Too Many? Exponential Lower Bounds for Inferring Population Histories," *RECOMB 2019*, *Journal of Computational Biology.*
- M.D.M. Leiserson, F. Vandin, H. Wu, J.R. Dobson, J.V. Eldridge, J.L. Thomas, A.Papoutsaki, **Y. Kim**, ..., B.J. Raphael. "Pan-cancer network analysis identifies combinations of rare somatic mutations across pathways and protein complexes," *Nature Genetics*, Dec 2014.
  - Produced code, data and benchmarks.
  - Analysis of pan-cancer datasets using HotNet2 software.

Preprints & Publications Under Review

- **Y. Kim**, ..., B. Berger, T.E. Gibson. "Strain Tracking with Uncertainty Quantification," *Nature Microbiology, in submission.*
- T. E. Gibson, **Y. Kim**, . . . , G. K. Gerber. "Intrinsic Instability of the Dysbiotic Microbiome Revealed Through Dynamical Systems Inference at Scale," *Nature Methods, in submission.*
- **Y. Kim**, E. Mossel, G. Ramnarayan, P. Turner. "Efficient Reconstruction of Stochastic Pedigrees," *arXiv:2005.03810*

Teaching Experience

- **MIT 18.650: Statistics**, Recitation Instructor
  - Led problem-solving sessions, held office hours and gave lectures to review course material.
  - Transitioned to online learning during 2020 pandemic.
- **MIT 18.600: Probability**, Recitation Instructor
  - Led problem-solving sessions, held office hours and gave lectures to review course material.
  - Gave a substitute main lecture on Markov Chains.
- **MIT edX Micromasters 18.6501x: Statistics**, Teaching Assistant
  - Designed online instructional material based on pre-recorded lectures.
  - Recorded supplemental instructional videos on multiple hypothesis testing.
  - Answered student questions online.
- **MIT 18.418: Topics in Comp. Bio.**, Teaching Assistant
  - Led classroom discussions, coordinated student presentations.
- **Brown CSCI 1810: Computational Biology.**, Head TA
  - Co-designed the curriculum of homeworks and projects with professor.
  - Led a team of 2-4 TAs to handle class logistics.
- **MIT edX Micromasters 6.431x: Probability**, Teaching Assistant
- **MIT 18.404: Theory of Computation**, Grader
- **MIT 18.085: Computational Science and Engineering**, Teaching Assistant
- **Brown APMA 1740: Recent Applications in Prob. & Stat.**, Teaching Assistant

Academic Mentorship

- **RSI**, Research Mentor.
  - Mentored a Regeneron STS 2018 semifinalist project in Dynamical Systems.
- **MIT PRIMES**, Research Mentor.
  - Mentored a Regeneron STS 2018 finalist project in Enumerative Combinatorics.
- **MIT Directed Reading Program**, Reading group mentor.
- **MIT MathROOTS**, Mentor and Residential Counselor.
- **NYCIML**, Contest problem reviewer.

Talks & Posters

"Strain Tracking With Uncertainty Quantification"
Poster, **CSHL Microbiome** 2022
Best Poster Award, **MIT Microbiome Symposium** 2022

"Strain Tracking from Time-series Data"
Poster, **ICML Compbio** 2020

Seminars Organized

MIT Bioinformatics Seminar 2018, 2022
MIT Graduate Student Applied Math Seminar (SPAMS) 2018, 2019

Awards

MIT Mathematics Bershadsky Mentorship Award 2022
MIT Akamai Presidential Fellowship 2016
Phi Beta Kappa, Rhode Island 2016
Brown Univ. Undergraduate Teaching & Research Award 2014