Yi-Chieh (Jessica) Wu

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Profile

I am a computational biologist who develops and applies models and methods from the fields of statistics, optimization, and machine learning to better understand evolutionary genomics.

Education

Massachusetts Institute of Technology — Cambridge, MA
Ph.D. in Electrical Engineering and Computer Science — Feb 2014
Thesis: Computational Evolutionary Genomics:
Phylogenomic Models Spanning Domains, Genes, Individuals, and Species
Research Advisor: Manolis Kellis
Thesis Committee: Eric Alm, Constantinos Daskalakis, Daniel Hartl

S.M. in Electrical Engineering and Computer Science — Jun 2009
Thesis: Deciphering the Neural Code for Retinal Ganglion Cells through Statistical Inference
Research Advisor: John L. Wyatt

Rice University — Houston, TX
B.S.E.E. (Electrical Engineering), specialization in Systems — May 2007
Honors: Summa Cum Laude; President's Honor Roll, All Semesters

Hong Kong University of Science and Technology — Kowloon, Hong Kong
Rice University Study Abroad, School of Electrical and Electronic Engineering — Spring 2006
Honors: Dean's List

Academic Appointments

Harvey Mudd College — Claremont, CA
Associate Professor, Department of Computer Science — Jul 2021 – present
Assistant Professor, Department of Computer Science — Jul 2016 – Jun 2021
Visiting Assistant Professor, Department of Computer Science — Jul 2014 – Jun 2016
Taught core and elective Computer Science and college-wide courses. Advised clinic projects (undergraduate senior capstone projects sponsored by industrial partners). Mentored undergraduate research. Served department and college on committees and in educational outreach.

Administrative Positions

Harvey Mudd College — Claremont, CA
Director of Postdoctoral Program in Interdisciplinary Computation — Jul 2021 – Jun 2023
Led program to train recent PhD recipients to help them develop as researchers, become excellent teachers of computational courses, and obtain faculty positions that bridge their home discipline and computer science. Supervised postdoctoral scholars and mentors, liaised with departments, ran program assessment, and managed budget.

Work Experience

Verily Life Sciences — South San Francisco, CA
Senior Data Scientist – Computational Biology Group — Apr 2023 – present
Visiting Researcher – Computational Biology Group — Jun 2022 – Mar 2023
Developed computational pipelines and applied statistical analyses to provide insight into complex biological problems in human disease and wastewater surveillance. Worked with cross-functional teams to develop, ingest, manage,

and analyze ddPCR, ATACseq, RNAseq, and amplicon sequencing protocols and data. Worked with academic collaborators, state public health departments, and the Centers for Disease Control and Prevention to deliver actionable insights. Co-wrote project proposals. Mentored junior employees.

Computational Biology Group,
Computer Science and Artificial Intelligence Laboratory, MIT CAMBRIDGE, MA
Postdoctoral Associate Feb 2014 – Aug 2014
Research Assistant Advisor: Manolis Kellis Jun 2009 – Jan 2014
Studied principles underlying gene and genome evolution through phylogenetics and comparative genomics. Developed algorithms for (1) inferring evolutionary domains and reconstructing their most parsimonious history, (2) accounting for topological uncertainty in gene trees by combining sequence data and gene tree-species tree reconciliation in a statistical framework, (3) inferring gene duplications and losses in the presence of incomplete lineage sorting through maximum parsimony, and (4) inferring evolutionary histories with variable event costs. Analyzed various genomes, including human, mouse, fly, worm, fungi, and mosquito.

Retinal Implant Research Group, Research Laboratory of Electronics, MIT CAMBRIDGE, MA
Research Assistant Advisor: John L. Wyatt Sep 2007 – Jun 2009
Developed neural models and information coding algorithms to analyze retinal ganglion cell spike trains. Incorporated receptive field models into a statistical inference framework in order to estimate visual stimuli parameters from population recordings.

National Instruments AUSTIN, TX
Software Engineer Intern – High-Frequency Measurements Group May 2007 – Aug 2007
Added PM/PSK functionality to an RF signal generator. Developed IVI-compliant driver for a USB power sensor.

Microsoft Corporation REDMOND, WA
Software Design Engineer in Test Intern – Unified Communications Group May 2006 – Aug 2006
Developed an automated solution to service deployment of Microsoft Communicator for use in testing and preproduction.

Physical and Biological Computing Group, Rice University HOUSTON, TX
Research Assistant Advisor: Lydia Kavraki Jan 2005 – Aug 2005
Developed computational models of protein structure and function. Developed a flexible parser for use in predicting protein function through geometric structural comparison. Modeled protein binding site flexibility by generating physical conformations along principal components.

Nanophysics for Devices Group, University of Texas at Dallas RICHARDSON, TX
Research Intern Advisor: Anvar Zakhidov Jun 2002 – Jul 2002
Part of Welch Summer Scholar Program. Synthesized colloids and analyzed their structures and characteristics. Engineered conjugated polymer coated silica and yeast cells for use as photonic crystals.

PUBLICATIONS

Undergraduate authors underlined. *Equal contribution. †Co-senior authors. ‡Student authors listed alphabetically.

Journal Articles

[J14] Sumaira Zaman*, Samuel Sledzieski*, Bonnie Berger, **Yi-Chieh Wu**, and Mukul S. Bansal. "virDTL: Viral Recombination Analysis through Phylogenetic Reconciliation and its Application to Sarbecoviruses and SARS-CoV-2." *Journal of Computational Biology*, 30(1):3–20, January 2023. [Impact factor (2021): 1.549]

[J13] Matthew LeMay, Ran Libeskind-Hadas, and **Yi-Chieh Wu**. "A Polynomial-Time Algorithm for Minimizing the Deep Coalescence Cost for Level-1 Species Networks." *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 19(5):2642–2653, September 2022. [Impact factor (2021): 3.70]

[J12] Santi Santichaivekin, Qing Yang, Jingyi Liu, Ross Mawhorter, Justin Jiang, Trenton Wesley, **Yi-Chieh Wu**, and Ran Libeskind-Hadas. "eMPRess: A Systematic Cophylogeny Reconciliation Tool." *Bioinformatics*, November 2020. [Impact factor: 6.937]

[J11] Jennifer Rogers, Andrew Fishberg, Nora Youngs, and **Yi-Chieh Wu**. "Reconciliation Feasibility in the Presence of Gene Duplication, Loss, and Coalescence with Multiple Individuals per Species." *BMC Bioinformatics*, 18:292–, June 2017. [Impact factor: 2.213.]

[J10] Mukul S. Bansal*, **Yi-Chieh Wu***, Eric J. Alm, and Manolis Kellis. "Improved Gene Tree Error Correction in the Presence of Horizontal Gene Transfer." *Bioinformatics*, 31(8):1211–1218, April 2015. [Impact factor: 5.766.]

[J9] Roadmap Epigenomics Consortium (96 authors). "Integrative Analysis of 111 Reference Human Epigenomes." *Nature*, 518(7539):317–330, February 2015. [Impact factor: 38.138.]

[J8] Michael C. Fontaine*, James B. Pease*, Aaron Steele, Robert M. Waterhouse, Daniel E. Neafsey, Igor V. Sharakhov, Xiaofang Jiang, Andrew B. Hall, Flaminia Catteruccia, Evdoxia Kakani, Sara N. Mitchell, **Yi-Chieh Wu**, Hilary A. Smith, R. Rebecca Love, Mara K. Lawniczak, Michel A. Slotman, Scott J. Emrich, Matthew W. Hahn, and Nora J. Besansky. "Extensive Introgression in a Malaria Vector Species Complex Revealed by Phylogenomics." *Science*, 347(6217):1258524, January 2015. [Impact factor: 34.661.]

[J7] The Anopheles Genomes Cluster Consortium (120 authors). "Highly Evolvable Malaria Vectors: The Genomes of 16 Anopheles Mosquitoes." *Science*, 347(6217):1258522, January 2015. [Impact factor: 34.661.]

[J6] The Mouse ENCODE Consortium (138 authors). "A Comparative Encyclopedia of DNA Elements in the Mouse Genome." *Nature*, 515(7527):355–364, November 2014. [Impact factor: 41.456.]

[J5] Alan P. Boyle*, Carlos L. Araya*, Cathleen Brdlik, Philip Cayting, Chao Cheng, Yong Cheng, Kathryn Gardner, LaDeana W. Hillier, Judith Janette, Lixia Jiang, Dionna Kasper, Trupti Kawli, Pouya Kheradpour, Anshul Kundaje, Jingyi Jessica Li, Lijia Ma, Wei Niu, E. Jay Rehm, Joel Rozowsky, Matthew Slattery, Rebecca Spokony, Robert Terrell, Dionne Vafeados, Daifeng Wang, Peter Weisdepp, **Yi-Chieh Wu**, Dan Xie, Koon-Kiu Yan, Elise A. Feingold, Peter J. Good, Michael J. Pazin, Haiyan Huang, Peter J. Bickel, Steven E. Brenner, Valerie Reinke, Robert H. Waterston, Mark Gerstein, Kevin P. White†, Manolis Kellis†, and Michael Snyder†. "Comparative Analysis of Regulatory Information and Circuits across Distant Species." *Nature*, 512(7515):453–456, August 2014. [Impact factor: 41.456.]

[J4] **Yi-Chieh Wu**, Matthew D. Rasmussen*, Mukul S. Bansal*, and Manolis Kellis. "Most Parsimonious Reconciliation in the Presence of Gene Duplication, Loss, and Deep Coalescence using Labeled Coalescent Trees." *Genome Research*, 24(3):475–486, March 2014. [Impact factor: 14.630.]

[J3] **Yi-Chieh Wu**, Matthew D. Rasmussen, Mukul S. Bansal, and Manolis Kellis. "TreeFix: Statistically Informed Gene Tree Error Correction Using Species Trees." *Systematic Biology*, 62(1):110–120, January 2013. [Impact factor: 11.532.]

[J2] **Yi-Chieh Wu**, Matthew D. Rasmussen, and Manolis Kellis. "Evolution at the Subgene Level: Domain Rearrangements in the Drosophila Phylogeny." *Molecular Biology and Evolution*, 29(2):689–705, February 2012. [Impact factor: 10.353.]

[J1] Preston B. Landon, Jose Gutierrez, John P. Ferraris, Itzel Lucio Martinez, Rajiv Giridharagopal, **Yi-Chieh Wu**, Sergey Lee, Kunjal Parikh, Jessica Gillespie, Geoffrey Ussery, Behzad Karimi, Ray Baughman, Anvar Zakhidov, and R. Glosser. "Inverse Gold Photonic Crystals and Conjugated Polymer Coated Opals for Functional Materials." *Physica B: Condensed Matter*, 338(1-4):165–170, October 2003. [Impact factor: 0.908.]

Conference Proceedings (Peer-Reviewed)

[C8] Matthew LeMay, **Yi-Chieh Wu**, and Ran Libeskind-Hadas. "The Most Parsimonious Reconciliation Problem in the Presence of Incomplete Lineage Sorting and Hybridization is NP-Hard." In *21st International Workshop on Algorithms in Bioinformatics (WABI 2021)*, pages 1:1–1:10, Virtual due to COVID-19, August 2–4, 2021.

[C7] Morgan Carothers‡, Joseph Gardi, Gianluca Gross, Tatsuki Kuze, Nuo Liu, Fiona Plunkett, Julia Qian, and **Yi-Chieh Wu**. "An Integer Linear Programming Solution for the Most Parsimonious Reconciliation Problem under the Duplication-Loss-Coalescence Model." In *11th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB 2020)*, Virtual due to COVID-19, September 21–24, 2020. [Acceptance rate: 44% (57/130).]

[C6] Ross Mawhorter, Nuo Liu, Ran Libeskind-Hadas, and **Yi-Chieh Wu**. "Inferring Pareto-Optimal Reconciliations across Multiple Event Costs under the Duplication-Loss-Coalescence Model." In *17th Annual International Conference on Research in Computational Molecular Biology Comparative Genomics Satellite (RECOMB-CG 2019)*, Montpellier, France, October 1–4, 2019. *BMC Bioinformatics*, 20:639, December 2019.

[C5] Haoxing Du*, Yi Sheng Ong*, Marina Knittel, Ross Mawhorter, Nuo Liu, Gianluca Gross, Reiko Tojo, Ran Libeskind-Hadas, and **Yi-Chieh Wu**. "Multiple Optimal Reconciliations under the Duplication-Loss-Coalescence Model." In *17th Asia Pacific Bioinformatics Conference (APBC 2019)*, Wuhan, China, January 14–16, 2019. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 18(6):2144–2156, November 2021.

[C4] Ricson Cheng, Matt Dohlen*, Chen Pekker*, Gabriel Quiroz, Jincheng Wang, Ran Libeskind-Hadas, and **Yi-Chieh Wu**. "Reconciliation Feasibility of Non-Binary Gene Trees under a Duplication-Loss-Coalescence Model." In *5th International Conference on Algorithms for Computational Biology (AlCoB 2018)*, pages 11–23, Hong Kong, June 25–27, 2018. [Oral presentation, acceptance rate: 55% (11/20).]

[C3] Jordan Haack, Eli Zupke, Andrew Ramirez, **Yi-Chieh Wu**, and Ran Libeskind-Hadas. "Computing the Diameter of the Space of Maximum Parsimony Reconciliations in the Duplication-Transfer-Loss Model." In *16th Asia Pacific Bioinformatics Conference (APBC 2018)*, Yokohama, Japan, January 15–17, 2018. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 16(1):14–22, January 2019. [Acceptance rate: 36% (53/146).] **Best student paper award.**

[C2] Bo Zhang and **Yi-Chieh Wu**. "Coestimation of Gene Trees and Reconciliations under a Duplication-Loss-Coalescence Model." In *13th International Symposium on Bioinformatics Research and Applications (ISBRA 2017)*, pages 196–210, Honolulu, HI, May 29 – June 1, 2017. [Oral presentation, acceptance rate: 43% (51/118).]

[C1] Ran Libeskind-Hadas, **Yi-Chieh Wu**, Mukul S. Bansal, and Manolis Kellis. "Pareto-optimal Phylogenetic Tree Reconciliation." In *22nd Annual International Conference on Intelligent Systems for Molecular Biology (ISMB 2014)*, Boston, MA, July 11–15, 2014. *Bioinformatics*, 30 (12): i87–i95, June 2014. [Oral presentation, acceptance rate: 19% (37/191).]

arXiv/bioRxiv Preprints

[A2] Xingyao Chen‡, Thomas Dougherty, Chan Hong, Rachel Schibler, Yi Cong Zhao, Reza Sadeghi, Naim Matasci, **Yi-Chieh Wu**, and Ian Kerman. "Predicting Antibody Developability from Sequence using Machine Learning." *bioRxiv*, June 2020.

[A1] **Yi-Chieh Wu**, Mukul S. Bansal, Matthew D. Rasmussen, Javier Herrero, and Manolis Kellis. "Phylogenetic Identification and Functional Characterization of Orthologs and Paralogs across Human, Mouse, Fly, and Worm." *bioRxiv*, May 2014.

Talks

Invited Talks

[T4] "Gene Tree-Species Tree Reconciliation under Duplication, Loss, and Coalescence." *Rancho Santa Ana Botanic Garden Botany/Phylogenetics Seminar*, Claremont, CA, April 14, 2017.

[T3] "Computer Science meets Biology: Models and Algorithms for Understanding Evolution." *Computer Science Teacher's Association – Inland Empire Chapter*, Claremont, CA, February 21, 2017.

[T2] "Gene Tree-Species Tree Reconciliation under Duplication, Loss, and Coalescence." *UCLA Bioinformatics Seminar Series*, Los Angeles, CA, November 28, 2016.

[T1] "Evolution at the Subgene Level: Characterizing Domain Rearrangements in the Drosophila Phylogeny." *Harvey Mudd College Biology Colloquium*, Claremont, CA, March 30, 2016.

Meetings, Retreats, and Working Groups

[M5] "Phylogenetic Tree Reconciliation with Variable Gene Duplication, Loss, and Transfer Costs." *Broad Institute Medical and Population Genetics Meeting*, Cambridge, MA, July 10, 2014.

[M4] "Most Parsimonious Reconciliation in the Presence of Gene Duplication, Loss, and Deep Coalescence using Labeled Coalescent Trees." *Boston Evolutionary Genomics Supergroup Retreat*, Cambridge, MA, August 30, 2013.

[M3] "ENCODE/modENCODE Ortholog Resource." *Encode Analysis Working Group (AWG)/PI Meeting*, Cambridge, MA, May 22–23, 2012.

[M2] "Accounting for Sub-Gene Evolution and Statistical Uncertainty in Phylogenetic Reconstruction." *NIMBioS Working Group: Gene Tree Reconciliation*, Knoxville, TN, August 11, 2011.

[M1] "Deciphering the Retinal Neural Code through Statistical Inference." *MIT 14^{th} Annual LIDS Student Conference*, Cambridge, MA, January 29–30, 2009.

Grants

External

[G1] CAREER: Algorithms for Gene Family Evolution with Gene Duplication, Loss, and Coalescence
National Science Foundation. Award IIS-1751399. May 15, 2018–Apr 30, 2024. $505,522.
Role: Sole Investigator

Internal

Reviewed by colleagues on department, college, or consortium committees.

[I2] Computational Algorithms to Analyze the Dynamics of Protein Localization in the African Trypanosome
Claremont Colleges' Collaborative HHMI Undergraduate Science Education Award. Summer 2017. $10,650.
Role: Coauthor of proposal, co-mentored students on data visualization and analysis

[I1] Data Science at the 5Cs
Claremont Colleges' Consortial Fund for Cross-Campus Projects. Nov 2016–May 2017. $960.
Role: Project Leader

Awards and Honors

at **Harvey Mudd College**

CRA-E Undergraduate Research Faculty Mentoring Award	awarded Feb 2023
Harvey Mudd College Outstanding Faculty Member	nominated 2018

prior to **Harvey Mudd College**

MIT/Whitehead/Broad Computational Genetics Training Program Fellowship	awarded Oct 2012
Kambourides Graduate Fellowship in Computational Engineering	awarded Jan 2011
Google Anita Borg Memorial Scholarship Recipient	Apr 2009
National Science Foundation Graduate Research Fellowship	awarded Jun 2007
Sid Richardson Residential College Athena Award	May 2007
Google Anita Borg Memorial Scholarship Finalist	Mar 2007
Texas Society of Professional Engineers' Outstanding Senior ECE Engineering Student	Feb 2007
Rice Engineering Alumni Senior Merit Award	Apr 2007
Rice Engineering Alumni Outstanding Junior Award	Apr 2006
Computing Research Association - Women (CRA-W) Distributed Mentor Program Participant	Summer 2005
ExxonMobil and Teagle Foundation Scholarship	Fall 2004 – Spring 2008
Louis J. Walsh Scholarship in Engineering	Aug 2004, Aug 2005, Aug 2006
George S. Cohen Memorial Scholarship	Aug 2003, Aug 2005
Emma S. McGree Scholarship	Aug 2003, Aug 2005
National Merit Scholar	Spring 2003

Presidential Scholar Program Semifinalist	Spring 2003
National Honor Society Scholarship	Spring 2003
TestMasters SAT Perfect Score Scholarship	Spring 2003

Professional Activities

Journal Peer Reviewer: Annals of Applied Statistics, Molecular Biology and Evolution, INFORMS Transactions on Education, SIAM Undergraduate Research Online, Systematic Biology

Program Committees: ISBRA 2022, CWIC-SoCal 2018, ACM-BCB 2017

External Reviewer (Guest Reviewer for Conference): RECOMB 2022, RECOMB 2021, RECOMB 2020, ACM-BCB 2018, RECOMB 2016

Steering Committees and Task Forces: Schmidt Academy for Software Engineering at Caltech (Fall 2021 – present), ACM Task Force on Data Science: Artificial Intelligence and Machine Learning (Summer – Fall 2019)

Professional Memberships: Association for Computing Machinery (ACM), International Society for Computational Biology (ISCB), Institute of Electrical and Electronic Engineers (IEEE)

Honor Society Memberships: Phi Beta Kappa (inducted Spring 2007), Tau Beta Pi (inducted Spring 2007), Eta Kappa Nu (inducted Spring 2006)

Courses Taught or Assisted

Abbreviations: F(all), S(pring), W(inter).

Harvey Mudd College

Department of Computer Science

[H9]	Principles of Computer Science (CS 60)	F21$^{\alpha}$, S22
[H8]	Artificial Intelligence (CS 151)	F20, S21, F21$^{\beta}$
[H7]	Data Science Ethics (CS 181R)	S19$^{\gamma}$
[H6]	Introduction to Biology and Computer Science (CS 5 Green)	F17$^{\delta}$, F19
[H5]	Machine Learning (CS 158)*	S15, F15, S17, F17, S18, S19, S20, S21
[H4]	Software Development (CS 121)	F14, S15, F15, S16, F16$^{\epsilon}$, F18
[H3]	Computer Science Clinic (CS 183)	all semesters

College-Wide or Joint Courses

[H2]	Introduction to Computational Biology (MCB 118b)†	S17$^{\zeta}$, S18$^{\zeta}$, S21$^{\eta}$
[H1]	Introduction to Academic Writing (Writ 1)†	F16$^{\theta}$, F19$^{\iota}$

* Developed by me.
† Half-semester course.
$^{\alpha}$ Co-taught with Katherine Breeden.
$^{\beta}$ Co-taught with James Boerkoel.
$^{\gamma}$ Co-taught with Michael Spezio [Scripps College].
$^{\delta}$ Co-taught with Eliot Bush.
$^{\epsilon}$ Co-taught with Yekaterina Kharitonova.
$^{\zeta}$ Co-taught with Matina Donaldson-Matasci.
$^{\eta}$ Co-taught with Morgan Carr-Markell.
$^{\theta}$ Co-taught with Stephen Adolph.
$^{\iota}$ Co-taught with Francis Su.

MIT

Department of Electrical and Computer Engineering

[M7]	*Grader*, Introduction to Inference (6.S080)	F12, S14
[M6]	*Grader*, Digital Image Processing (6.344)	S11
[M5]	*Tutor*, Signals and Systems (6.003) through MIT HKN	S09
[M4]	*Co-Instructor*, Review of Signals and Systems (6.097)	W09, W10
[M3]	*Grader*, Discrete-Time Signal Processing (6.341)	F08, F09, F10, F11

[M2] *Co-Instructor*, Linear Algebra and Differential Equations Review (6.913) W08
[M1] *Teaching Assistant*, Probabilistic Systems Analysis (6.041) F07

Rice University

Department of Electrical Engineering
[R6] *Course Assistant*, Signals and Systems (ELEC 301) F06
[R5] *Course Assistant*, Fundamentals of Electrical Engineering (ELEC 241) F05
[R4] *Lab Assistant*, Fundamentals of Computer Engineering (ELEC 220) S05

Department of Computer Science
[R3] *Course Assistant*, Real-World Software Engineering (COMP 415) S07
[R2] *Course Assistant*, Software Construction Methodology (COMP 410) F06

Department of Computational and Applied Mathematics Engineering
[R1] *Lab Assistant*, Introduction to Engineering Computation (CAAM 201) F04, F05

Student Mentorship

Publications listed. For graduates, immediate post-college plans shown.

Harvey Mudd College, Undergraduate Student Research

[29] Dylan Cassidy [UConn] '24 (Summer 2022$^{\alpha}$)
[28] Nathaniel (Nat) Efrat-Henrici '21 (Summer 2020; Schmidt Academy Scholar at Caltech)
[27] Matthew LeMay '21 (Summer 2020 – Fall 2020$^{\beta}$; PhD candidate at UT Austin) [C8,J13]
[26] Julia Vendemiatti '21 (Summer 2020; Schmidt Academy Scholar at Caltech)
[25] Tatsuki Kuze '22 (Summer 2019; Software Engineer at Bloomberg LP) [C7]
[24] Julia Qian '22 (Summer – Fall 2019; Software Engineer at Microsoft) [C7]
[23] Mia Taylor '22 (Summer 2019; Software Engineer at Meta),
CRA Outstanding Undergraduate Researcher Honorable Mention
[22] Taeyun Lee '21 (Spring 2019 – Summer 2019; Software Engineer at Bloomberg LP)
[21] Fiona Plunkett '21 (Summer 2018; Quantitative Trader at SIG) [C7]
[20] Morgan Carothers '20 (Spring 2018 – Spring 2019; Software Development Engineer at Amazon) [C7]
[19] Nuo (Ivy) Liu '20 (Summer 2017$^{\beta}$; PhD candidate at MIT),
CRA Outstanding Undergraduate Researcher Finalist [C5,C6,C7]
[18] Ross Mawhorter '19 (Summer 2017$^{\beta}$, Summer 2020$^{\beta}$; PhD candidate at UC Santa Cruz) [C5,C6,J12]
[17] Reiko Tojo '18 (Summer 2017$^{\beta}$; Software Engineer at Pure Storage) [C5]
[16] Gianluca (Luca) Gross [UPenn] '19 (Summer 2017$^{\beta}$) [C5,C7]
[15] Andrew Ramirez [Cal Tech] '20 (Summer 2017$^{\beta}$) [C3]
[14] Eli Zupke [Cal Poly Pomona] '20 (Summer 2017$^{\beta}$) [C3]
[13] Moira Dillion '18 (Summer 2017$^{\gamma}$; Program Manager at Microsoft)
[12] Jingwen Liao '18 (Summer 2017$^{\gamma}$; PhD candidate at UC San Diego)
[11] Joseph Gardi '20 (Spring 2017, Spring 2018; Machine Learning Consultant) [C7]
[10] Marina Knittel '18 (Fall 2016, Spring 2017, Fall 2017, Spring 2018; PhD candidate at U Maryland) [C5]
[9] Haoxing Du '19 (Summer 2016; Scholar at Perimeter Institute in Theoretical Physics,
PhD candidate at UC Berkeley) [C5]
[8] Yi Sheng (Aaron) Ong '19 (Spring 2016 – Summer 2016; Software Engineer at Airbnb) [C5]
[7] Cheng Wai Koo '16 (Spring 2016; high school mathematics teacher in Singapore)
[6] Varsha Kishore '18 (Spring 2016, Spring 2017, Fall 2017, Spring 2018; PhD candidate at Cornell)
[5] Andrew Fishberg '16 (Fall 2015 – Spring 2016; Staff at Lincoln Labs) [J11]
[4] Jennifer Rogers '16 (Fall 2015 – Spring 2016; PhD candidate at U Wash)
NSF Graduate Research Fellowship [J11]
[3] Suhail (Yash) Farooqui '18 (Summer 2015; Freelancer at Upwork)
[2] Pratyush Kapur '18 (Summer 2015; Software Engineer at Bird)
[1] Bo Zhang '17 (Spring 2015 – Spring 2017; PhD candidate at UPenn) [C2]

$^{\alpha}$ Co-advised with Mukul Bansal [UConn].
$^{\beta}$ Co-advised with Ran Libeskind-Hadas.

[γ] Co-advised with Danae Schulz.

Harvey Mudd College, Curriculum Development

[2] Thomas Cintra '22, Huey Fields '20, Katelyn Mendoza [Upward Bound program], Yun Zhang [Pitzer] '19 (Data Science Ethics, Summer 2019)

[1] Jonathan Raygoza '19 (Software Development, Summer 2018)

Harvey Mudd College, Independent Study Projects

[3] Ethan Falicov '21, Olivia Watkins '19, Jiawen Zhu '19 (Translate written mathematical expressions to syntax trees, Fall 2018)

[2] Mehdi Drissi '19, Aditya Khant '21, Vivaswat Ojha '19, Eric Weiner '21 (Simulate music through synthetic spectrograms, Fall 2018)

[1] Pedro Sandoval '19 (Practice continuous integration and testing, Fall 2018)

MIT, High School Student Research

[1] Arman Bilge, Lexington High School (Mar 2013 – Mar 2014[α])
Bayesian Reconstruction of Coevolutionary Histories
2013 Siemens Competition, Individuals Category, Second Place ($50k scholarship)

[α] Co-advised with Rachel Sealfon.

Service

Departmental Service, Harvey Mudd College

Clarity in Expectations Subcommittee	AY 2021-2022
Mentoring Coordinator	AY 2021-2022
Visitors Search Committee	Spring 2021
Chair Search Advisory Committee	Spring 2021
Honors and Awards Subcommittee	Spring 2020, Spring 2021
Off-Campus Majors Subcommittee	AY 2019-2020
Curriculum Subcommittee	Fall 2018, Spring 2020, AY 2020-2021
Off-Campus Advisor for Claremont McKenna Students	AY 2017-2022
Study Abroad Advisor	AY 2017-2021
Course Scheduling Wrangler	AY 2017-2018
Graduate School and Fellowship Advisor	AY 2016-2017

Collegial Service, Harvey Mudd College

External Member of Engineering Department Faculty Search and Physics Department Faculty Search	Spring 2022
Budget Committee	AY 2019-2022
Steering Committee, Diversity, Equity, and Inclusion Strategic Planning Workshops	AY 2018-2019
Steering Committee, Nelson Speaker Series, Topic: Data Science	Fall 2018
Study Abroad Committee	AY 2018-2019
Computing Committee	AY 2017-2018

Outreach

within **Harvey Mudd College**

Panelist, Virtual Discovery Day Program for prospective students	Oct 2021
Interviewer, Presidential Scholar's Program	April 2020
Panelist, Decemberfest Program for prospective students	Dec 2019
Coordinator, Student Trip to SoCal-CWIC 2018 (Celebration of Women in Computing)	Apr 2018
Chaperone, Student Trip to Grace Hopper Celebration	Oct 2015, Oct 2016
Workshop Leader, SWE WEST (Women and Engineer Scientists of Tomorrow)	Mar 2016
Attendee, Admitted Students Program Women's Lunch / Dinner	Apr 2015, Apr 2016, Apr 2017, Apr 2018, Apr 2019
Group Leader, FAST (Future Achievers in Science and Technology) Program	Nov 2014, Oct 2015,

	Nov 2018, Sep 2019
Participant, W-ACM (Association of Computing Machinery – Women's Chapter)	Sep 2014 – Jun 2022

outside of **Harvey Mudd College**

Evaluator, *Regeneron Science Talent Search*	Nov 20–23, 2020
Judge, *LA County Science and Engineering Fair*, Pasadena, CA	Mar 29, 2019
Mentor, CRA-W Student Opportunity Lab, *Grace Hopper Celebration*, Houston, TX	Oct 19–21, 2016
Computer Science Instructor, Women's Technology Program, *MIT*, Cambridge, MA	Summer 2012, Summer 2014
Mentor Scientist, Cambridgeport Elementary School, *Science Club for Girls*, Cambridge, MA	Spring 2010