Yi-Chieh (Jessica) Wu

yjw@cs.hmc.edu http://www.cs.hmc.edu/~yjw Last update on May 9, 2022 Harvey Mudd Computer Science Department 301 Platt Blvd Claremont, CA 91711 USA Office: (909) 621-8127

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 Infere	nce
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	v
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 CollegeCLAREMONT, CAAssociate Professor, Department of Computer ScienceJul 2021 – presentAssistant Professor, Department of Computer ScienceJul 2016 – Jun 2021Visiting Assistant Professor, Department of Computer ScienceJul 2014 – Jun 2016Taught core and elective Computer Science and college-wide courses. Advised clinic projects (undergraduate seniorcapstone projects sponsored by industrial partners). Mentored undergraduate research. Served department andcollege on committees and in educational outreach.

Research Interests

Computational biology, in particular, the development and application of mathematical and computational models and methods, efficient algorithms, and powerful software tools. I apply techniques from the fields of machine learning, optimization, and statistics to projects in evolutionary genomics.

ADMINISTRATIVE POSITIONS

Harvey Mudd College

Director of Postdoctoral Program in Interdisciplinary Computation

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.

CLAREMONT, CA

Jul 2021 – present

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WORK EXPERIENCE

Computational Biology Group,

Computer Science and Artificial Intelligence Laboratory, MIT CAMBRIDGE, MA Feb 2014 - Aug 2014 Postdoctoral Associate 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

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 Advisor: Lydia Kavraki Jan 2005 – Aug 2005 Research Assistant 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

- [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, 2021. In press. [Impact factor (2020): 3.71]
- [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 (2019): 5.610]
- [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.]

REDMOND, WA

- [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] <u>Matthew LeMay</u>, 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] <u>Ross Mawhorter, Nuo Liu</u>, 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] <u>Haoxing Du*, Yi Sheng Ong*, Marina Knittel, Ross Mawhorter, Nuo Liu, Gianluca Gross, Reiko Tojo</u>, 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] <u>Ricson Cheng</u>, <u>Matt Dohlen*</u>, <u>Chen Pekker*</u>, <u>Gabriel Quiroz</u>, <u>Jincheng Wang</u>, 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] <u>Bo Zhang</u> 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

- [A3] Sumaira Zaman^{*}, Samuel Sledzieski^{*}, Bonnie Berger, Yi-Chieh Wu, and Mukul S. Bansal. "Phylogenetic reconciliation reveals extensive ancestral recombination in Sarbecoviruses and the SARS-CoV-2 lineage." *bioRxiv*, August 2021.
- [A2] <u>Xingyao Chen[‡]</u>, <u>Thomas Dougherty</u>, <u>Chan Hong</u>, <u>Rachel Schibler</u>, <u>Yi Cong Zhao</u>, 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 14th Annual LIDS Student Conference, Cambridge, MA, January 29–30, 2009.

GRANTS

- [G2] CAREER: Algorithms for Gene Family Evolution with Gene Duplication, Loss, and Coalescence National Science Foundation. Award IIS-1751399. May 15, 2018–Apr 30, 2023. \$505,522.
- [G1] Data Science at the 5Cs Claremont Colleges Consortial Fund for Cross-Campus Projects. Nov 2016. \$960.

Awards and Honors

at Harvey Mudd College

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 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, Recipient, Apr 2009 Texas Society of Professional Engineers' Outstanding Senior ECE Engineering Student, Feb 2007 Rice Engineering Alumni Outstanding Junior Award, Apr 2006, Senior Merit Award, Apr 2007 Computing Research Association (Committee on the Status of Women in Computing Research) 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: CWIC-SoCal 2018, ACM-BCB 2017

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

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)

Other: ACM Task Force on Data Science: Artificial Intelligence and Machine Learning (Summer-Fall 2019)

COURSES TAUGHT OR ASSISTED

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

Harvey Mudd College

Department of Computer Science	
[H7] Principles of Computer Science (CS 60)	$F21^{\alpha}, S22$
[H6] Artificial Intelligence (CS 151)	F20, S21, F21 ^{β}
[H5] Data Science Ethics (CS 181R)	$\mathrm{S19^{\gamma}}$
[H4] Introduction to Biology and Computer Science (CS 5 Green)	$F17^{\delta}, F19$
[H3] Machine Learning (CS 158)*	S15, F15, S17, F17, S18, S19, S20, S21
[H2] Software Development (CS 121)	F14, S15, F15, S16, F16 $^{\epsilon}$, F18
[H1] Computer Science Clinic (CS 183)	all semesters
College-Wide or Joint Courses	
[H2] Introduction to Computational Biology (MCB 118b) [†]	$\mathrm{S17}^{\zeta},\mathrm{S18}^{\zeta},\mathrm{S21}^{\eta}$
[H1] Introduction to Academic Writing (Writ 1) ^{\dagger}	$F16^{ heta}, F19^{\iota}$
	 * Developed by me. [†] Half-semester course. ^α Co-taught with Katherine Breeden. ^β Co-taught with James Boerkoel. ^γ Co-taught with Michael Spezio [Scripps College]. ^δ Co-taught with Eliot Bush. ^ϵ Co-taught with Yekaterina Kharitonova. ^ζ Co-taught with Yekaterina Kharitonova. ^γ Co-taught with Morgan Carr-Markell. ^θ Co-taught with Stephen Adolph. ^ℓ Co-taught with Francis Su.
МІТ	
Department of Electrical and Computer Engineering	
[M7] Grader. Introduction to Inference (6.8080)	F12, S14
[M6] Grader, Digital Image Processing (6.344)	S11
[M5] <i>Tutor</i> , Signals and Systems (6.003) through MIT HKN	S09

- [M4] Co-Instructor, Review of Signals and Systems (6.097)
- [M3] *Grader*, Discrete-Time Signal Processing (6.341)
- [M2] Co-Instructor, Linear Algebra and Differential Equations Review (6.913)
- [M1] Teaching Assistant, Probabilistic Systems Analysis (6.041)

W09, W10

W08 F07

F08, F09, F10, F11

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

TTOU	vey mudu conege, chuergraduate student nesearch	
[28]	Nathaniel (Nat) Efrat-Henrici '21 (Summer 2020; Schmidt Academy Scholar at Caltech)	
[27]	Matthew LeMay '21 (Summer 2020 – Fall 2020^{α} ; PhD candidate at UT Austin)	[C8,J13]
[26]	Julia Vendemiatti '21 (Summer 2020; Schmidt Academy Scholar at Caltech)	
[25]	Tatsuki Kuze '22 (Summer 2019)	[C7]
[24]	Julia Qian '22 (Summer – Fall 2019)	[C7]
[23]	Mia Taylor '22 (Summer 2019)	
[22]	Taeyun Lee '21 (Spring 2019 – Summer 2019)	
[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^{α} ; PhD candidate at MIT),	
	CRA Outstanding Undergraduate Researcher Finalist	[C5, C6, C7]
[18]	Ross Mawhorter '19 (Summer 2017^{α} , Summer 2020^{α} ; PhD candidate at UC Santa Cruz)	[C5, C6, J12]
[17]	Reiko Tojo '18 (Summer 2017 $^{\alpha}$; Software Engineer at Pure Storage)	[C5]
[16]	Gianluca (Luca) Gross [U Penn] '19 (Summer 2017^{α})	[C5, C7]
[15]	Andrew Ramirez [Cal Tech] '20 (Summer 2017^{α})	[C3]
[14]	Eli Zupke [Cal Poly Pomona] '20 (Summer 2017^{α})	[C3]
[13]	Moira Dillion '18 (Summer 2017^{β} ; Program Manager at Microsoft)	
[12]	Jingwen Liao '18 (Summer 2017 ^{β} ; 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)	[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 U Penn)	[C2]

 $^{\alpha}$ Co-advised with Ran Libeskind-Hadas. $^{\beta}$ 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

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

OUTREACH

within Harvey Mudd College	
Interviewer, Presidential Scholar's Program	April 2020
Panelist, Decemberfest Program	Dec 2019
Coordinator, Student Trip to SoCal-CWIC 2018 (Celebration of Women in Comput	ing) 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 $2014 - present$
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, T2	X 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, Science Scien	ridge, MA Spring 2010