

Yatish Turakhia

Assistant Professor, UC San Diego (UCSD)

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Research Highlights

I primarily work at the intersection of **computer architecture** and **computational biology**. In particular, my research lab develops parallel algorithms, software, and domain-specific hardware accelerators that enable **faster** and **cheaper** progress in biology and medicine.

Current Position

July 2021-Present **University of California, San Diego (UCSD)**
Assistant Professor, Department of Electrical and Computer Engineering (ECE)
Affiliate Faculty, Department of Computer Science and Engineering (CSE)
Affiliate Faculty, Department of Bioengineering
Affiliate Faculty, Bioinformatics and Systems Biology (BISB) Graduate Program

Education and Training

2019–2021 Postdoctoral scholar, **Genomics Institute, UC Santa Cruz**
2014–2019 PhD in Electrical Engineering, **Stanford University**
2009–2014 B.Tech & M.Tech in Electrical Engineering, **Indian Institute of Technology (IIT) Bombay**

Doctoral Dissertation

Topic *Hardware Acceleration and Algorithms for Genomic Sequence Alignment and its Applications*
Advisors Prof. William J. Dally, Prof. Gill Bejerano
External committee Prof. Mark Horowitz, Prof. Euan Ashley, Prof. Moses Charikar

Relevant Publications

📰 Press Coverage 📖 Featured on the Cover Page

Journals:

[38] J. McBroome, A. dB Schneider, C. Roemer, M. T. Wolfinger, A. S. Hinrichs, A. O. Toole, C. Ruis, **Y. Turakhia**, A. Rambaut, R. Corbett-Detig, “A framework for automated scalable designation of viral pathogen lineages from genomic data”, **Nature Microbiology**, Feb 2024.

News Medical

[37] A.d.B. Schneider, M. Su, A.S. Hinrichs, J. Wang, H. Amin, J. Bell, D.A. Wadford, A. O. Toole, E. Scher, M.D. Perry, **Y. Turakhia**, N.D. Maio, S. Hughes, R. Corbett-Detig, “SARS-CoV-2 lineage assignments using phylogenetic placement/USHER are superior to pangoleARN machine-learning method”, **Virus Evolution**, Jan 2024.



[36] A. Hinrichs, C. Ye, **Y. Turakhia**, R. Corbett-Detig, “Keeping Up With a Pandemic of Genomes: The Ongoing Evolution of USHER”, **Nature Genetics**, 2023.

[35] K. Smith, C. Ye, **Y. Turakhia**†, “Tracking and curating putative SARS-CoV-2 recombinants with RIVET”, **Bioinformatics**, Sep. 2023



UC San Diego Today

[34] W. Wang, J. Barbetti, T. Wong, B. Thornlow, R. Corbett-Detig, **Y. Turakhia**, R. Lanfear, B.Q. Minh, “DecentTree: scalable Neighbour-Joining for the genomic era”, **Bioinformatics**, Sep. 2023

- [33] H. Chen, **Y. Turakhia**, G. Bejerano, D. Kingsley “Whole-genome Comparisons Identify Repeated Regulatory Changes Underlying Convergent Appendage Evolution in Diverse Fish Lineages”, **Molecular Biology and Evolution**, Sep. 2023 [featured on the **cover page**].
- [32] B. Thornlow, A. Kramer, C. Ye, N. D. Maio, J. McBroome, A. S. Hinrichs, R. Lanfear, **Y. Turakhia**, R. Corbett-Detig, “Online Phylogenetics with matOptimize Produces Equivalent Trees and is Dramatically More Efficient for Large SARS-CoV-2 Phylogenies than de novo and Maximum-Likelihood Implementations”, **Systematic Biology**, May 2023.
- [31] C. Ruis, T. P. Peacock, L. M. Polo, D. Masone, S. Alvarez, A. S. Hinrichs, **Y. Turakhia**, C. Ye, J. McBroome, R. Corbett-Detig, J. Parkhill, R. A. Floto, “*A lung-specific mutational signature enables inference of viral and bacterial respiratory niche*”, **Microbial Genomics**, May 2023.
- [30] N. D. Maio, P. Kalaghatgi, **Y. Turakhia**, R. Corbett-Detig, B. Q. Minh, N. Goldman, “Maximum likelihood pandemic-scale phylogenetics”, **Nature Genetics**, Apr. 2023.
- [29] **Y. Turakhia***†, B. Thornlow*, A. S. Hinrichs, J. McBroome, N. Ayala, C. Ye, K. Smith, N. D. Maio, D. Haussler, R. Lanfear, R. Corbett-Detig†, “*Pandemic-Scale Phylogenomics Reveals The SARS-CoV-2 Recombination Landscape*”, **Nature**, Aug. 2022.
- 📖 **Phys.org, EurekAlert, Scienmag, News Medical, Verve Times**
- [28] C. Ye, B. Thornlow, A. S. Hinrichs, D. Torvi, R. Lanfear, R. Corbett-Detig, **Y. Turakhia**†, “*matOptimize: A parallel tree optimization method enables online phylogenetics for SARS-CoV-2*”, **Bioinformatics**, June 2022.
- 📖 **MedicalXPress, UK Today News, UCSD Newscenter**
- [27] J. McBroome, J. Martin, A.d.B Schneider, **Y. Turakhia**, R. Corbett-Detig, “*Identifying SARS-CoV-2 regional introductions and transmission clusters in real time*”, **Virus Evolution**, June 2022.
- 📖 **MedicalXPress, EurekAlert, Scienmag, News Medical, The Academic Times**
- [26] N. D. Maio, L. Weilguny, C. R. Walker, **Y. Turakhia**, R. Corbett-Detig, N. Goldman, “*phast-Sim: efficient simulation of sequence evolution for pandemic-scale datasets*”, **PLoS Computational Biology**, April 2022.
- [25] J. Schull*, **Y. Turakhia***, J. Hemker*, W. Dally, G. Bejerano, “*Champagne: Whole-genome phylogenomic character matrix method places Myomorpha basal in Rodentia*”, **Genome Biology and Evolution (GBE)**, February 2022.
- [24] A. Kramer, **Y. Turakhia**, R. Corbett-Detig, “*ShUSHER: private browser-based placement of sensitive genome samples on phylogenetic trees*”, **Journal of Open Source Software (JOSS)**, Oct 2021.
- [23] J. McBroome*, B. Thornlow*, A. S. Hinrichs, N. D. Maio, N. Goldman, D. Haussler, R. Corbett-Detig†, **Y. Turakhia**†, “*A daily-updated database and tools for comprehensive SARS-CoV-2 mutation-annotated trees*”, **Molecular Biology and Evolution (MBE)**, Sep. 2021.
- [22] **Y. Turakhia**†, B. Thornlow, A. S. Hinrichs, N. D. Maio, L. Gozashti, R. Lanfear, D. Haussler, and R. Corbett-Detig†, “*Ultrafast Sample Placement on Existing Trees (USHER) Empowers Real-Time Phylogenetics for the SARS-CoV-2 Pandemic*”, **Nature Genetics**, April 2021.
- 📖 **MedicalXPress, EurekAlert, Scienmag, News Medical, The Academic Times**
- [21] N. D. Maio, C. R. Walker, **Y. Turakhia**, R. Lanfear, R. Corbett-Detig, N. Goldman, “*Mutation rates and selection on synonymous mutations in SARS-CoV-2*”, **Genome Biology and Evolution (GBE)**, March 2021.
- [20] **Y. Turakhia***, N. D. Maio*, B. Thornlow*, L. Gozashti, R. Lanfear, C. R. Walker, A. S. Hinrichs, J. D. Fernandes, R. Borges, G. Slodkowicz, L. Weilguny, D. Haussler, N. Goldman, R. Corbett-Detig, “*Stability of SARS-CoV-2 Phylogenies*”, **PLOS Genetics**, Nov 2020.

- [19] **Y. Turakhia***, H. I. Chen*, A. Marcovitz*, G. Bejerano, “A fully-automated method discovers loss of mouse-lethal and human-monogenic disease genes in 58 mammals”, *Nucleic Acids Research (NAR)*, Sep. 2020.
-  [18] W. Dally, **Y. Turakhia**, S. Han, “Domain-Specific Hardware Accelerators”, *Communications of the ACM (CACM)*, Jul. 2020 [featured on the **cover page**].
- [17] A. Marcovitz*, **Y. Turakhia***, H. I. Chen*, M. Gludemans, B. A. Braun, H. Wang, G. Bejerano, “A functional enrichment test for molecular convergent evolution finds a clear protein-coding signal in echolocating bats and whales”, *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, Oct. 2019.
-  **Phys.org, Science Daily, News Medical**
- [16] **Y. Turakhia**, G. Bejerano, W. Dally, “Darwin: A Genomic Co-processor”, *IEEE Micro (Top Picks)*, May 2019.
- [15] **Y. Turakhia**, G. Liu, S. Garg, D. Marculescu, “Thread Progress Equalization: Dynamically Adaptive Power-Constrained Performance Optimization of Multi-threaded Applications”, *Transactions on Computers (TC)*, April 2017.

Conferences:

-  [14] S. Walia, C. Ye, A. Bera, D. Lodhavia, **Y. Turakhia**, “TALCO: Tiling Genome Sequence Alignment using Convergence of Traceback Pointers”, *International Symposium on High-Performance Computer Architecture (HPCA)*, 2024 (**Best paper award finalist**).
- [13] S. D. Goenka*, **Y. Turakhia***, B. Paten, M. Horowitz, “SegAlign: A Scalable GPU-Based Whole Genome Aligner”, *International Conference for High Performance Computing, Networking, Storage and Analysis (SC)*, 2020.
- [12] **Y. Turakhia***, S. D. Goenka*, G. Bejerano, W. Dally, “Darwin-WGA: A Co-processor Provides Increased Sensitivity in Whole Genome Alignments with High Speedup”, *International Symposium on High-Performance Computer Architecture (HPCA)*, 2019.
-  [11] **Y. Turakhia**, G. Bejerano, W. Dally, “Darwin: A Genomic Co-processor Provides 15,000× Speedup on long read assembly”, *Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, 2018 (**Best paper award**).

 **The Next Platform, The Morning Paper**

- [10] **Y. Turakhia**, B. Raghunathan, S. Garg, D. Marculescu, “HaDeS: Architectural Synthesis for Heterogeneous Dark Silicon Chip Multi-processors”, *Design Automation Conference (DAC)*, 2013.
- [9] B. Raghunathan, **Y. Turakhia**, S. Garg, D. Marculescu, “Cherry-Picking: Exploiting Process Variations in Dark-Silicon Homogeneous Chip Multi-Processors”, *Design, Automation, and Test in Europe Conference (DATE)*, 2013.

Book Chapters:

- [8] S. Garg, **Y. Turakhia**, D. Marculescu, “Heterogeneous Dark Silicon Chip Multi-Processors Design and Run-time Management”, *The Dark Side of Silicon (Energy Efficient Computing in the Dark Silicon Era)*, **Springer**, 2016.

Pre-prints:

- [7] N. D. Maio, K. Smith, **Y. Turakhia**, N. Goldman, “Highly recurrent multi-nucleotide mutations in SARS-CoV-2”, *bioRxiv preprint*, Dec 2024 (DOI: 10.1101/2024.12.14.628346).
- [6] Y. Cao, A. Gupta, J. Liang, **Y. Turakhia**[†], “DP-HLS: A High-Level Synthesis Framework for Accelerating Dynamic Programming Algorithms in Bioinformatics”, *arXiv preprint*, Nov. 2024 (DOI: arXiv:2411.03398).
- [5] S. Walia, H. Motwani, K. Smith, R. Corbett-Detig, **Y. Turakhia**[†], “Compressive Pangenomics Using Mutation-Annotated Networks”, *bioRxiv preprint*, Aug 2024 (DOI: 10.1101/2024.07.02.601807).

- [4] A. Gupta, S. Mirarab, **Y. Turakhia**[†], “Accurate, scalable, and fully automated inference of species trees from raw genome assemblies using ROADIES”, bioRxiv preprint, Aug 2024 (DOI: 10.1101/2024.05.27.596098).
- [3] **Y. Turakhia**, S. Das, T. Aamodt, W. Dally, “HoLiSwap: Reducing Wire Energy in L1 Caches”, arXiv preprint, Jan. 2017 (DOI: arXiv:1701.03878).

Workshop papers:

- [2] R. Snytsar, **Y. Turakhia**, “Parallel approach to sliding window sums”, International Conference on Algorithms and Architectures for Parallel Processing (**ICA3PP**), 2019.
- [1] V. Kumar, P. Engineer, M. Datar, **Y. Turakhia**, S. Agarwal, S. Diwale and S. Patkar, “Framework for Application Mapping over Packet-switched Network of FPGAs : Case studies”, FPGAs for Software Programmers Workshop (**FPL**) at the International Conference on Field Programmable Logic and Applications, 2015.

(* implies co-first authors)

(†implies corresponding author(s))

Patents

- [1] **Y. Turakhia**, J. Jaffari, A. Panda, K. Chatha, “An Architecture for Sparse Neural Network Acceleration”, US 10,871,964 B2 (expires 2039-08-09).

Awards and Achievements

- 2024 Jacobs School Early Career Faculty Development Award [Funding support to help early-career faculty build interdisciplinary research collaborations at UCSD]
- 2024 Outstanding Young Scientist, World Laureates Association (WLA) Forum 2024
- 2024 Faculty Career Development Program (FCDP) grant [Recognizes and rewards junior UCSD faculty who have promoted diversity and equal opportunity along with their academic ventures]
- 2023 MIT Technology Review TR35 Award [Global List of 35 Innovators Under 35]
- 2023 Hellman Fellowship [Endowed program to support the research of assistant professors who show promise for great distinction in their chosen fields across each of the ten UC campuses]
- 2023 Amazon Research Award
- 2019 IEEE Micro Top Picks 2018 [Awarded to top 9.7% of total submissions]
- 2018 Best paper award (ASPLOS) [Awarded to top 0.62% of total submissions]
- 2016 NVIDIA Graduate Fellowship [Awarded to top 1% of applicants]
- 2016, 2017 Finalist, Qualcomm Innovation Fellowship [Awarded to top 25% of applicants]
- 2016 QualStar award, Qualcomm Research [For significant contributions to Qualcomm as a research intern]
- 2014 Atheros Founders Fellowship, Stanford University [School of Engineering fellowship at Stanford University]
- 2013 Richard Newton Young Student Fellowship, Design Automation Conference
- 2012 Undergraduate Research Award (URA-01), IIT Bombay

Keynote and Invited Talks

Mar 2025 “**Building Ultra-large Pangenomes**”
BME Seminar, UC Santa Cruz, 2025

Feb 2025- “**Domain-Specific Hardware Acceleration of Bioinformatics**” presented at these venues:

1. EE P538A Guest Lecture, University of Washington (virtual)
2. ECE 290 Guest Lecture: University of California San Diego

Nov 2024- ***“Algorithms, Software, and Hardware Accelerators for the Next Wave of Genomic Data”***

HPC Sync talk, AMD, 2024

WLA Forum 2024, Shanghai, China

Nov 2024 ***“Scaling Up Phylogenetics”***

ICERM Workshop on Algorithmic Advances and Implementation Challenges: Developing Practical Tools for Phylogenetic Inference, Brown University

Jan 2023- ***“Ultra-large Pangenomics”*** presented at these venues:

Genetics, Bioinformatics, & Systems Biology Colloquium (GSBC), UCSD, 2024

Guest Lecture for “CSE290: Life in Code”, UCSD, 2024

Nov 2021-Apr 2024 ***“Pandemic-scale phylogenetics”*** presented at these venues:

Guest lecture (virtual) for “CS5220: Applied High Performance and Parallel Computing”, Cornell University, 2024

West African Center for Emerging Infectious Diseases (WAC-EID) (virtual), 2023

Cornell University (virtual), 2023

ASM NGS 2022 conference keynote talk, 2022

Massachusetts General Hospital, 2022

Phyloseminar Lecture Series, 2022

UCSD ECE 291 Lecture Series, 2022

21st IEEE International Workshop on High Performance Computational Biology (HiCOMB), 2022

Phyloseminar Lecture Series, 2022

UCSD ECE 291 Lecture Series, 2022

UCSD CSE 290 Lecture Series, 2021

UCSD Faculty-to-Faculty Seminar Series, 2021

Aug 2021 ***“USHER: the one-stop-shop SARS-CoV-2 phylogenetics package”***

Bioinformatics Workshop on Virus Evolution and Molecular Epidemiology (VEME), 2021

Apr 2021 ***“Real-Time SARS-CoV-2 Phylogenetics with USHER”***

BME281C: Genomic Science Seminar Series, UC Santa Cruz

Oct 2020-May 2021 ***“Accelerating Biology and Medicine with Hardware Specialization”*** presented at these venues:

1. EE seminar (virtual), IIT Bombay

2. Computer Engineering Club seminar (virtual), Technion - Israel Institute of Technology

3. S21 seminar (virtual), New York University

4. ECE 290 seminar, UC San Diego

Oct-Nov 2020 ***“Ultrafast Sample Placement on Existing Trees (USHER) Empowers Real-Time Phylogenetics for the SARS-CoV-2 Pandemic”*** presented at these venues:

1. COVID-19 Dynamics & Evolution Meeting, San Diego (virtual)

2. BME280B: Seminar on Bioinformatics & Bioengineering, UCSC (virtual)

Feb-Apr 2020 ***“Domain-specific acceleration of genomics to enable biological discoveries”***
presented at these venues:

1. Cornell Tech/Cornell (NYC and Ithaca, NY)
2. Columbia University (New York City, NY)
3. MIT (Boston, MA)
4. UC San Diego (San Diego, CA)
5. UT Austin (Austin, TX) (virtual)
6. Rice University (Houston, TX) (virtual)

2019 ***“GPU-acceleration of long read de novo assembly for pan-genome analysis”***
NVIDIA workshop, The American Society of Human Genetics (ASHG) (Houston, TX)

2017-2019 ***“Darwin: A Genomics Co-processor”*** (or variant) presented at these venues:

1. Microsoft Research (Redmond, WA)
2. Pacific Biosciences (Menlo Park, CA)
3. Qualcomm Research (San Diego, CA)
4. NVIDIA (San Jose, CA)
5. Usenix ATC 2019 (Renton, WA)
6. UCSC (Santa Cruz, CA)
7. Platform Lab Retreat (Aptos, CA)
8. Stanford DevBio 3D talk (Stanford, CA)
9. CS Faculty Lunch (Stanford, CA)
10. International SoC Conference (Irvine, CA)

2018 ***“All Gene Survey In Mammalian Genomes Reveals Surprising Genes Losses”***
Stanford Developmental Biology Retreat (Monterey, CA)

- o Microsoft Research (Redmond, WA)
- o Pacific Biosciences (Menlo Park, CA)
- o UCSC (Santa Cruz, CA)
- o Stanford DevBio 3D talk (Stanford, CA)
- o Platform Lab Annual Review (Stanford, CA)
- o Usenix ATC “best-of-the-rest” talk (Renton, WA)
- o Qualcomm Research (San Diego, CA)
- o NVIDIA GPU Tech Conference (San Jose, CA)
- o Platform Lab Retreat (Aptos, CA)
- o CS Faculty Lunch (Stanford, CA)
- o International SoC Conference (Irvine, CA)

Press Coverage

Sep 2023 K. Connor, *“Electrical Engineer Named MIT Technology Review Innovator Under 35”*, **UC San Diego Today**.

Aug 2022 E. Cerf, *“New study shows COVID-19 genomic recombination is uncommon but disproportionately occurs in spike protein region”*, **UCSC Newscenter**. Also covered by:

- o **Phys.org**
- o **EurekAlert**
- o **Scienmag**
- o **News Medical**
- o **Verve Times**

Jun 2022 R. Miyatsu, *“The team behind a tree of 10 million Covid sequences”*, **UCSC Newscenter**.

Jun 2022 K. Kumar, *“New phylogenetic tool can handle the SARS-CoV-2 data load”*, **UCSD Newscenter**. Also covered by:

- o **MedicalXPress**
- o **UK Today News**

Apr 2022 E. Cerf, *“Genomics Institute tool becomes primary method to identify lineages of COVID-19 worldwide”*, **UCSC Newscenter**.

Jan 2022 N. Mathur, *“Researchers develop a website to identify SARS-CoV-2 regional clusters in real-time”*, **News-Medical.Net**.

Dec 2021 N. Mathur, *“A pandemic-scale phylogenetic analysis tool”*, **News-Medical.Net**.

Nov 2021 D. Cox, *“Omicron’s full impact will be felt in countries where fewer are vaccinated”*, **The Guardian**.

- Sep 2021 A. Olena, "*Plenty of Evidence for Recombination in SARS-CoV-2*", **The Scientist**.
- Aug 2021 S. Robertson, "*New phylogenomic platform identifies increased recombination rates in SARS-CoV-2*", **News-Medical.Net**.
- Jun 2021 D. Cox, "*How the Delta variant took over*", **Wired UK**.
- May-2021 Staff, "*Nature Papers Present Nautilus Genome, Tool to Analyze Single-Cell Data, More*", **GenomeWeb**.
- May 2021 T. Stephens, "*New tools enable rapid analysis of coronavirus sequences and tracking of variants*", **UCSC Newscenter**. Also covered by:
 - o **MedicalXPress**
 - o **EurekAlert!**
 - o **ScienMag**
 - o **Technology Networks**
 - o **LabManager**
 - o **Santa Cruz Tech Beat**
- May 2021 N. Gallagher, "*Ultrafast platform enables real-time tracking of COVID-19 strains for contact tracing*", **The Academic Times**.
- Apr 2021 Staff, "*UCSC's Million-COVID-Genome Tree Could be a First*", **UCSC Genomics Institute news**. Also covered by:
 - o **Santa Cruz Tech Beat**
- Apr 2021 S. S. Dutta, "*Researchers identify novel SARS-CoV-2 variant unregistered on genomic sequence databases*", **News-Medical.Net**.
- Jan 2021 L. Krieger, "*The hunt for COVID-19 genomes that could worsen pandemic*", **Mercury News**.
- Nov 2020 Staff, "*PLOS Papers on SARS-CoV-2 Phylogenies, Swiss Influenza Spread, Infant Meningitis in Ethiopia*", **GenomeWeb**.
- Feb 2020 F. Foertter, "*2019 Update: NVIDIA's Growing Genomics Ecosystem*", **NVIDIA blog**.
- Oct 2019 K. Conger, "*Scientists uncover genetic similarities among species that use sound to navigate*", **Phys.org**. Also covered by:
 - o **Science Daily**
 - o **News Medical**
- Oct 2019 C. Young, "*Genetic Similarities Uncovered between Species That Use Echolocation*", **Interesting Engineering**.
- Oct 2018 G. Miller, "*Microsoft unveils genomics innovation and new partners at ASHG 2018*", **Microsoft Industry Blogs**.
- Apr 2018 A. Coyer, "*Darwin: a genomics co-processor provides up to 15,000x acceleration on long read assembly*", **The Morning Paper**.
- Mar 2018 J. Butler, "*The Future Of Biology Is Full-Stack*", **Eclipse Ventures blog**.
- Feb 2017 N. Hemsoth, "*Unwinding Moore's Law from Genomics with Co-Design*", **The Next Platform**.

Work Experience

- Oct 2019-Jun 2021 Postdoctoral Scholar, **Genomics Institute, UC Santa Cruz (Santa Cruz, CA)**
- Jun-Sep 2018 Research Intern, Genomics Team , **Microsoft Research (Redmond, WA)**
- Sep 2017-Mar 2018 Consulting Researcher, Genomics Team, **Microsoft Research (Redmond, WA)**
- Jun-Aug 2016 Research Intern, SoC Architecture Research, **Qualcomm Research (San Diego, CA)**
- Jun-Sep 2015 Summer Intern, Platform Architecture Group, **Apple Inc. (Cupertino, CA)**
- May-Jul 2013 Summer Undergraduate Research Intern, **Carnegie Mellon University (Pittsburgh, PA)**
- & May-Jul 2012

Current Students

PhD

- 2021-Present **Sumit Walia**, Electrical and Computer Engineering (ECE)
2022-Present **Anshu Gupta**, Computer Science and Engineering (CSE)
2023-Present **Pranav Gangwar**, Electrical and Computer Engineering (ECE)
2023-Present **Yu-Hsiang Tseng**, Electrical and Computer Engineering (ECE)
2024-Present **Sunreet Khanna**, Electrical and Computer Engineering (ECE)

Masters

- 2023-Present **Zexing Chen**, Electrical and Computer Engineering (ECE)

Undergraduates

- 2025-Present **Jaden Seangmany**, Electrical and Computer Engineering (ECE)
2025-Present **Qiwen Wu**, Electrical and Computer Engineering (ECE)
2024-Present **Manu Bhat**, Electrical and Computer Engineering (ECE)
2021-Present **Kyle Smith**, Bioinformatics

Previous Mentoring Experience

Thesis Supervised:

- Sep 2022-Mar 2024 "*Compressive Microbial Pangenomics*", MS in CSE Thesis, **Harsh Motwani**

Research:

- Sep 2022-Mar 2024 **Yingqi Cao**, Electrical and Computer Engineering (ECE) BS/MS student
Jan 2023-Dec 2024 **Jason Liang**, Electrical and Computer Engineering (ECE) BS/MS student
Jan 2023-Dec 2024 **Haochen Jiang**, Electrical and Computer Engineering (ECE) masters student
Sep 2023-Aug 2024 **Arnav Saxena**, Electrical and Computer Engineering (ECE) undergraduate student
Jan 2024-Jun 2024 **Harsh Gurnani**, Computer Science and Engineering (CSE) undergraduate student
Sep 2022-Mar 2024 **Harsh Motwani**, Computer Science and Engineering masters student
Sep 2023-Mar 2024 **Anoushka Saraswat**, Electrical and Computer Engineering masters student
Apr 2023-Mar 2024 **Girish Krishnan**, Electrical and Computer Engineering undergraduate student
Apr 2023-Mar 2024 **Carolyn Zhang**, Electrical and Computer Engineering undergraduate student
Jan 2021-Jun 2023 **Cheng Ye**, Electrical and Computer Engineering masters student
Sep 2022-Apr 2023 **Arkid Kalyan Bera**, Electrical and Computer Engineering masters student
Sep 2022-Apr 2023 **Debabrata Chaudhury**, Electrical and Computer Engineering masters student
Sep 2022-Apr 2023 **Dhruvi Lodhavia**, Electrical and Computer Engineering masters student
Jan 2022-Apr 2023 **Alireza Mohammadidoost**, Electrical and Computer Engineering masters student
Apr 2022-Jun 2023 **Tian Liu**, Bioinformatics undergraduate
Jun 2022-Nov 2022 **Arthur Lu**, UCSD Electrical and Computer Engineering undergraduate
Mar 2022-Sep 2022 **Carol Bao**, UCSD Electrical and Computer Engineering undergraduate
Mar 2022-Sep 2022 **Xuan Wang**, UCSD Electrical and Computer Engineering undergraduate
Mar 2022-Sep 2022 **Xiaoxiao (Crystal) Zou**, UCSD Electrical and Computer Engineering undergraduate
Oct 2021-Apr 2022 **Saurabh Shetty**, UCSD Computer Science and Engineering masters student
Mar 2021-Sep 2021 **Shoh Mollenkamp**, UCSD Electrical and Computer Engineering undergraduate
Apr 2021-Sep 2021 **Devika Torvi**, UCSD Bioinformatics undergraduate
Mar 2021-Jun 2021 **Zihao Kong**, UCSD Electrical and Computer Engineering undergraduate
Jul 2020-Sep 2021 **James Hemker**, Stanford Computer Science undergraduate
Jan 2021-Mar 2021 **Nick Keener**, UCSC Bioinformatics PhD student
Oct 2020-Dec 2020 **Jesse Leavitt**, UCSC Bioinformatics PhD student

Oct 2019-Dec 2019 **Mobin Asri**, UCSC Bioinformatics PhD student
Mar 2018-Sep 2019 **James Schull**, Stanford Computer Science undergraduate
Jan-Jun 2019 **George Horrell**, Stanford Computer Science undergraduate
Jan-Sep 2018 **Sneha Goenka**, Stanford Electrical Engineering PhD candidate
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High School
Summer 2022 **Vidhi Kulkarni**
Summer 2022 **Ronnie Volman**
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Career Deveopment:
2022-Present **Curriculum Advisor** for Computer Engineering, UCSD
2014-2021 **Alumni Mentor**, IIT Bombay
2011-2014 **Department Academic Mentor**, IIT Bombay

Teaching Experience

Spring 2024 Instructor, "ECE 111: Advanced Digital Design Project", University of California San Diego
Winter 2024 Instructor, "ECE 284: Parallel Computing in Bioinformatics", University of California San Diego
Fall 2023 Instructor, "ECE 108: Digital Circuits", University of California San Diego
Spring 2023 Instructor, "ECE 111: Advanced Digital Design Project", University of California San Diego
Winter 2023 Instructor, "ECE 284: Parallel Computing in Bioinformatics", University of California San Diego
Winter 2022 Instructor, "ECE 284: Parallel Computing in Bioinformatics", University of California San Diego
Spring 2022 Instructor, "ECE 111: Advanced Digital Design Project", University of California San Diego
Winter 2019 Teaching Assistant & Lecturer, "CS 273A: The Human Genome Source Code", Stanford University
Spring 2016 Teaching Assistant, "EE 382c: Interconnection Networks", Stanford University
Spring 2014 Teaching Assistant, "EE 224: Digital Systems", IIT Bombay
Autumn 2013 Teaching Assistant, "EE 717: Advanced Computing for Electrical Engineers", IIT Bombay

Professional Service

————— **Program committee (PC) member**

1. ACM/IEEE 52nd International Symposium on Computer Architecture (ISCA 2025)
2. ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2025)
3. ACM/IEEE 51st International Symposium on Computer Architecture (ISCA 2024)
4. ISCB 31st Conference on Intelligent Systems for Molecular Biology (ISMB 2024)
5. ISCB 30th Conference on Intelligent Systems for Molecular Biology (ISMB 2023)
6. ISCB 30th European Conference on Computational Biology (ECCB 2022)
7. ISCB 29th Conference on Intelligent Systems for Molecular Biology (ISMB 2022)
8. 21st IEEE International Workshop on High Performance Computational Biology (HiCOMB 2022)
9. ISCB 29th Conference on Intelligent Systems for Molecular Biology (ISMB 2021)

————— **Reviewer**

1. ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2021)

2. Nature
3. Nature Biotechnology
4. Nature Communications
5. Nature Communications Biology (CommsBio)
6. PLOS Global Public Health
7. PLOS Genetics
8. Molecular Biology and Evolution (MBE)
9. OUP Bioinformatics
19. Genome Biology and Evolution (GBE)
11. Virus Evolution
12. Frontiers in Microbiology
13. Briefings in Bioinformatics (BiB)
14. Scientific Reports
15. PLoS ONE
16. IEEE/ACM International Symposium on Computer Architecture (ISCA 2020)
17. IEEE Transactions on Computers (TC)
18. IEEE Transactions on Architecture and Code Optimization (TACO)
19. IEEE Computer Architecture Letters (CAL)
20. IEEE Transactions on Parallel and Distributed Systems (TPDS)
21. IEEE Transactions on Biomedical Circuits and Systems (TBioCAS)
22. Concurrency and Computation: Practice and Experience (CCPE)
23. Future Generation Computer Systems (FGCS)
24. IEEE Design and Test
25. IEEE Journal of Solid State Circuits (JSSC)

Panels

1. NSF Information and Intelligent Systems (IIS) panel 2025

Co-organizer

1. 1st Emerging Computer Systems Challenges and Applications in Biomedicine (**BioSys**) workshop, in conjunction with the International Conference on Architectural Support for Programming Languages and Operating Systems (**ASPLOS**) 2024.
2. 3rd Accelerator Architecture in Computational Biology and Bioinformatics (**AACBB**) workshop, in conjunction with High-Performance Computer Architecture (**HPCA**) 2020.
3. 4th Accelerator Architecture in Computational Biology and Bioinformatics (**AACBB**) workshop, in conjunction with International Symposium on Computer Architecture (**ISCA**) 2022.
4. 4th Accelerator Architecture in Computational Biology and Bioinformatics (**AACBB**) workshop, in conjunction with International Symposium on Computer Architecture (**ISCA**) 2023.

Teacher/Lecturer

1. Bioinformatics Workshop on Virus Evolution and Molecular Epidemiology (**VEME**) 2021.
2. ECE Summer Internship Prep Program (SIPP) 2021.

Admissions Committee/Advisor

- 2021-Present Curriculum Advisor, Computer Engineering (CE)
- 2023 Admissions Committee, Computer Engineering (CE)
- 2023 Teaching Innovations Committee, Electrical and Computer Engineering (ECE)
- 2023 Computer Engineering (CE) Undergraduate Curriculum Committee

- 2022 Admissions Committee, Machine Learning and Data Science (MLDS)
2022 Admissions Committee, Computer Engineering (CE)
2022 Admissions Committee, Bioinformatics and Systems Biology (BISB)

Thesis/Proposal/Preliminary Exam Committee

1. Karla Godinez-macias, Bioinformatics and Systems Biology (BISB) PhD student
2. Sean Kinzer, Computer Science and Engineering (CSE) PhD student
3. Afif Elghraoui, Electrical and Computer Engineering (ECE) PhD student
4. Shashank Bhalla, Electrical and Computer Engineering (ECE) PhD student
5. Zheng Li, Electrical and Computer Engineering (ECE) MS student
6. Jessica Au, Bioinformatics and Systems Biology (BISB) PhD student
7. Mahdi Morafah, Electrical and Computer Engineering (ECE) PhD student
8. Zihan Xia, Electrical and Computer Engineering (ECE) PhD student
9. Ruiyi Zhang, Electrical and Computer Engineering (ECE) PhD student
10. Mahdi Morafah ,Electrical and Computer Engineering (ECE) PhD student
11. Yuwei Cao, Bioinformatics and Systems Biology (BISB) PhD student
12. Rohan Mahapatra, Computer Science and Engineering (CSE) PhD student