

Siavash Mirarab

CONTACT INFORMATION	UC San Diego (ECE) 9500 Gilman Drive, Mail code 0407 La Jolla, CA 92093-0407	e-mail: smirarab@ucsd.edu , phone: 858 822 6245 http://ecweb.ucsd.edu/~smirarab/ google scholar: http://goo.gl/gEswQ5
ACADEMIC POSITIONS	UC San Diego (UCSD) , San Diego, CA, United States Department of Electrical and Computer Engineering <i>Assistant Professor</i>	July 2015 – present
EDUCATION	<i>Ph.D</i> University of Texas at Austin , Austin, Texas, Department of Computer Science <ul style="list-style-type: none">Advisors: Prof. Tandy Warnow, Prof. Keshav PingaliNovel scalable approaches for multiple sequence alignment and phylogenetic reconstruction <i>Master of Science (University of Waterloo, ON, Canada)</i> <ul style="list-style-type: none">Electrical and Computer Engineering, Advisors: Prof. Ladan TahvildariThesis: A Bayesian Framework for Software Regression Testing <i>Bachelor of Science (University of Tehran)</i> <ul style="list-style-type: none">Electrical and Computer Engineering (Specialized in software engineering).	Jan. 2011 – July 2015 Sept. 2006 – Sept. 2008 Sept. 2001 – Dec. 2005
MAJOR AWARDS	NSF CAREER award Alfred P. Sloan Research Fellow. Honorable Mention for the 2015 ACM Doctoral Dissertation Award. Howard Hughes Medical Institute International Student Fellowship. National Science and Engineering Research Council of Canada (NSERC), Canada Graduate Scholarship (CGS-D) converted to PGS-D outside Canada.	2019 2017 2016 2012 - 2015 2011- 2012
OTHER AWARDS	UT, Austin, Computer Science, Bert Kay Dissertation Award, 2015 UT, Austin, College of Natural Sci., Dean’s Excellence Award (2011), Dean’s Prestigious Fellowship Award (2011 – 2014), and MCD fellowship (2011)	
RESEARCH FUNDING	NSF: CISE-1845967: “CAREER: Robust & scalable genome...” \$549k (5 years) NSF: CISE-1815485 : “III: SMALL: New algorithms for genome ...” \$500k (3 years) NSF: CISE-1565862: “CRII: III: Using genomic context to ...” \$170k (2 years) NIH-CFAR: “Accuracy of HIV transmission network ...” \$439K (2 years) CFAR, “Algorithms for prioritizing prevention intervention ... HIV”, \$50K Sloan foundation fellowship, \$60K (2 years) Other gifts and internal grants ≈\$100K	2019 2018 2016 2016 2019–2020 2016–2018 2017–2019
PHD STUDENTS	Niema Moshiri, Now: Assistant Teaching Professor, UCSD (CSE Dep.) Erfan Sayyari, Now: PostDoctoral Researcher, UCSD (CMI) Current: Metin Balaban, Yueyu Jiang, Uyen Mai, Maryam Rabie, Nora Rachtman, Shahab Sarmashghi (co-supervisor), Chao Zhang	2015 – 2019 2015 – 2019 2016 – now

1. Chao Zhang, Celine Scornavacca, Erin Molloy, and Siavash Mirarab. ASTRAL-Pro: quartet-based species tree inference despite paralogy. *Molecular Biology and Evolution*, in press, 2020.
2. Kristine Bohmann, Vineet Bafna, Siavash Mirarab, and M. Thomas P. Gilbert. Beyond DNA barcoding: The unrealised potential of genome skim data in sample identification. *Molecular Ecology*, in press, 2020.
3. Metin Balaban and Siavash Mirarab. Phylogenetic double placement of mixed samples. *Bioinformatics (ISMB special issue)*, in press, 2020.
4. Ekin Tilic, Erfan Sayyari, Josefin Stiller, Siavash Mirarab, and Greg W Rouse. More is needed Thousands of loci are required to elucidate the relationships of the flowers of the sea’ (Sabellida, Annelida). *Molecular Phylogenetics and Evolution*, in press, 2020.
5. Francesco Asnicar, Andrew Maltez Thomas, Francesco Beghini, Claudia Mengoni, Serena Manara, Paolo Manghi, Qiyun Zhu, Mattia Bolzan, Fabio Cumbo, Uyen May, Jon G Sanders, Moreno Zolfo, Evguenia Kopylova, Edoardo Pasolli, Rob Knight, Siavash Mirarab, Curtis Huttenhower, and Nicola Segata. Precise phylogenetic analysis of microbial isolates and genomes from metagenomes using PhyloPhlAn 3.0. *Nature Communications*, 11(1):2500, 2020.
6. Eleonora Rachtman, Metin Balaban, Vineet Bafna, and Siavash Mirarab. The impact of contaminants on the accuracy of genome skimming and the effectiveness of exclusion read filters. *Molecular Ecology Resources*, 1755–0998.13135, 2020.
7. Metin Balaban, Shahab Sarmashghi, and Siavash Mirarab. APPLES: Scalable Distance-Based Phylogenetic Placement with or without Alignments. *Systematic Biology*, 69(3):566–578, 2020.
8. Maryam Rabiee and Siavash Mirarab. INSTRAL: Discordance-Aware Phylogenetic Placement Using Quartet Scores. *Systematic Biology*, 69(2):384–391, 2020.
9. Maryam Rabiee and Siavash Mirarab. Forcing external constraints on tree inference using ASTRAL. *BMC Genomics*, 21(S2):218, 2020.
10. Qiyun Zhu*, Uyen Mai*, Wayne Pfeiffer, Stefan Janssen, Francesco Asnicar, Jon G. Sanders, Pedro Belda-Ferre, Gabriel A. Al-Ghalith, Evguenia Kopylova, Daniel McDonald, Tomasz Kosciolk, John B Yin, Shi Huang, Nimaichand Salam, Jian-yu Jiao, Zijun Wu, Zhenjiang Z. Xu, Kalen Cantrell, Yimeng Yang, Erfan Sayyari, Maryam Rabiee, James T Morton, Sheila Podell, Dan Knights, Wen-jun Li, Curtis Huttenhower, Nicola Segata, Larry Smarr, Siavash Mirarab, and Rob Knight. Phylogenomics of 10,575 genomes reveals evolutionary proximity

- between domains Bacteria and Archaea. *Nature Communications*, 10(1):5477, 2019.
11. James H Leebens-Mack*, Michael S Barker*, Eric J Carpenter*, Michael K Deyholos*, Matthew A Gitzendanner*, Sean W Graham*, Ivo Grosse*, Zheng* Li, Michael Melkonian*, Siavash Mirarab*, Martin Porsch*, Marcel Quint*, Stefan A Rensing*, Douglas E Soltis*, Pamela S Soltis*, Stevenson*, and the rest of One Thousand Plant Transcriptomes Initiative. One thousand plant transcriptomes and the phylogenomics of green plants. *Nature*, 574(7780):679–685, 2019.
 12. Erfan Sayyari, Ban Kaway, and Siavash Mirarab. TADA: phylogenetic augmentation of microbiome samples enhances phenotype classification. *Bioinformatics (ISMB special issue)*, 35(14):i31–i40, 2019.
 13. Lei Chen, Qiang Qiu, Yu Jiang, Kun Wang, Zeshan Lin, Zhipeng Li, Faysal Bibi, Yongzhi Yang, Jinhuan Wang, Wenhui Nie, Weiting Su, Guichun Liu, Qiye Li, Weiwei Fu, Xiangyu Pan, Chang Liu, Jie Yang, Chenzhou Zhang, Yuan Yin, Yu Wang, Yue Zhao, Chen Zhang, Zhongkai Wang, Yanli Qin, Wei Liu, Bao Wang, Yandong Ren, Ru Zhang, Yan Zeng, Rute R. da Fonseca, Bin Wei, Ran Li, Wenting Wan, Ruoping Zhao, Wenbo Zhu, Yutao Wang, Shengchang Duan, Yun Gao, Yong E. Zhang, Chunyan Chen, Christina Hvilsom, Clinton W. Epps, Leona G. Chemnick, Yang Dong, Siavash Mirarab, Hans Redlef Siegmund, Oliver A. Ryder, M. Thomas P. Gilbert, Harris A. Lewin, Guojie Zhang, Rasmus Heller, and Wen Wang. Large-scale ruminant genome sequencing provides insights into their evolution and distinct traits. *Science*, 364(6446):eaav6202, 2019.
 14. Shahab Sarmashghi, Kristine Bohmann, M. Thomas P. Gilbert, Vineet Bafna, and Siavash Mirarab. Skmer: assembly-free and alignment-free sample identification using genome skims. *Genome Biology (also appeared in RECOMB 2018)*, 20(1):34, 2019.
 15. John Yin, Chao Zhang, and Siavash Mirarab. ASTRAL-MP: scaling ASTRAL to very large datasets using randomization and parallelization. *Bioinformatics*, 35(20):3961–3969, 2019.
 16. Metin Balaban, Niema Moshiri, Uyen Mai, Xingfan Jia, and Siavash Mirarab. TreeCluster: Clustering biological sequences using phylogenetic trees. *PLOS ONE*, 14(8):e0221068, 2019.
 17. Niema Moshiri, Manon Ragonnet-Cronin, Joel O Wertheim, and Siavash Mirarab. FAVITES: simultaneous simulation of transmission networks, phylogenetic trees and sequences. *Bioinformatics*, 35(11):1852–1861, 2019.

18. Peter Houde, Edward L Braun, Nitish Narula, Uriel Minjares, and Siavash Mirarab. Phylogenetic Signal of Indels and the Neoavian Radiation. *Diversity*, 11(7):108, 2019.
19. Maryam Rabiee, Erfan Sayyari, and Siavash Mirarab. Multi-allele species reconstruction using ASTRAL. *Molecular Phylogenetics and Evolution*, 130:286–296, 2019.
20. Shyam Gopalakrishnan, Mikkel-Holger S. Sinding, Jazmín Ramos-Madrigal, Jonas Niemann, Jose A. Samaniego Castruita, Filipe G. Vieira, Christian Carøe, Marc de Manuel Montero, Lukas Kuderna, Aitor Serres, Víctor Manuel González-Basallote, Yan-Hu Liu, Guo-Dong Wang, Tomas Marques-Bonet, Siavash Mirarab, Carlos Fernandes, Philippe Gaubert, Klaus-Peter Koepfli, Jane Budd, Eli Knispel Rueness, Claudio Sillero, Mads Peter Heide-Jørgensen, Bent Petersen, Thomas Sicheritz-Ponten, Lutz Bachmann, Øystein Wiig, Anders J. Hansen, and M. Thomas P. Gilbert. Interspecific Gene Flow Shaped the Evolution of the Genus *Canis*. *Current Biology*, 28(21):3441–3449.e5, 2018.
21. Daniel McDonald and American Gut Consortium. American Gut: an Open Platform for Citizen Science Microbiome Research. *mSystems*, 3(3):e00031–18, 2018.
22. Wolf L. Eiserhardt, Alexandre Antonelli, Dominic J. Bennett, Laura R. Botigué, J. Gordon Burleigh, Steven Dodsworth, Brian J. Enquist, Félix Forest, Jan T. Kim, Alexey M. Kozlov, Ilia J. Leitch, Brian S. Maitner, Siavash Mirarab, William H. Piel, Oscar A. Pérez-Escobar, Lisa Pokorny, Carsten Rahbek, Brody Sandel, Stephen A. Smith, Alexandros Stamatakis, Rutger A. Vos, Tandy Warnow, and William J. Baker. A roadmap for global synthesis of the plant tree of life. *American Journal of Botany*, 105(3):614–622, 2018.
23. Stefan Janssen, Daniel McDonald, Antonio Gonzalez, Jose A. Navas-Molina, Lingjing Jiang, Zhenjiang Zech Xu, Kevin Winker, Deborah M. Kado, Eric Orwoll, Mark Manary, Siavash Mirarab, and Rob Knight. Phylogenetic Placement of Exact Amplicon Sequences Improves Associations with Clinical Information. *mSystems*, 3(3):e00021–18, 2018.
24. Chao Zhang, Maryam Rabiee, Erfan Sayyari, and Siavash Mirarab. ASTRAL-III: polynomial time species tree reconstruction from partially resolved gene trees. *BMC Bioinformatics*, 19(S6):153, 2018.
25. Uyen Mai and Siavash Mirarab. TreeShrink: fast and accurate detection of outlier long branches in collections of phylogenetic trees. *BMC Genomics*, 19(S5):272, 2018.
26. Erfan Sayyari and Siavash Mirarab. Testing for Polytomies in Phylogenetic Species Trees Using Quartet Frequencies. *Genes*, 9(3):132, 2018.

27. Erfan Sayyari, James B. Whitfield, and [Siavash Mirarab](#). DiscoVista: Interpretable visualizations of gene tree discordance. *Molecular Phylogenetics and Evolution*, 122:110–115, 2018.
28. Ali Akbari, Joseph J Vitti, Arya Iranmehr, Mehrdad Bakhtiari, Pardis C Sabeti, [Siavash Mirarab](#), and Vineet Bafna. Identifying the favored mutation in a positive selective sweep. *Nature Methods*, 15(4):279–282, 2018.
29. Niema Moshiri and [Siavash Mirarab](#). A Two-State Model of Tree Evolution and Its Applications to Alu Retrotransposition. *Systematic Biology*, 67(3):475–489, 2018.
30. Erfan Sayyari, James B Whitfield, and [Siavash Mirarab](#). Fragmentary Gene Sequences Negatively Impact Gene Tree and Species Tree Reconstruction. *Molecular Biology and Evolution*, 34(12):3279–3291, 2017.
31. Luke R. Thompson, Jon G. Sanders, Daniel McDonald, Amnon Amir, Joshua Ladau, Kenneth J. Locey, Robert J. Prill, Anupriya Tripathi, Sean M. Gibbons, Gail Ackermann, Jose A. Navas-Molina, Stefan Janssen, Evguenia Kopylova, Yoshiki Vázquez-Baeza, Antonio González, James T. Morton, [Siavash Mirarab](#), Zhenjiang Zech Xu, Lingjing Jiang, Mohamed F. Haroon, Jad Kanbar, Qiyun Zhu, Se Jin Song, Tomasz Kosciolk, Nicholas A. Bokulich, Joshua Lefler, Colin J. Brislawn, Gregory Humphrey, Sarah M. Owens, Jarrad Hampton-Marcell, Donna Berg-Lyons, Valerie McKenzie, Noah Fierer, Jed A. Fuhrman, Aaron Clauset, Rick L. Stevens, Ashley Shade, Katherine S. Pollard, Kelly D. Goodwin, Janet K. Jansson, Jack A. Gilbert, Rob Knight, and The Earth Microbiome Project Consortium. A communal catalogue reveals Earth’s multiscale microbial diversity. *Nature*, 551(7681):457–463, 2017.
32. Uyen Mai and [Siavash Mirarab](#). TreeShrink: Efficient Detection of Outlier Tree Leaves. In *Comparative Genomics. RECOMB-CG 2017. Lecture Notes in Computer Science*, volume 10562, 116–140. Springer, Cham, 2017.
33. Chao Zhang, Erfan Sayyari, and [Siavash Mirarab](#). ASTRAL-III: Increased Scalability and Impacts of Contracting Low Support Branches. In *Comparative Genomics. RECOMB-CG 2017. Lecture Notes in Computer Science*, volume 10562, 53–75. Springer, Cham, 2017.
34. Uyen Mai, Erfan Sayyari, and [Siavash Mirarab](#). Minimum variance rooting of phylogenetic trees and implications for species tree reconstruction. *PLOS ONE*, 12(8):e0182238, 2017.
35. Shubhanshu Shekhar, Sebastien Roch, and [Siavash Mirarab](#). Species Tree Estimation Using ASTRAL: How Many Genes Are Enough? *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 15(5):1738–1747, 2018.

36. [Siavash Mirarab](#). Phylogenomics: Constrained gene tree inference. *Nature Ecology & Evolution*, 1:0056, 2017.
37. Erfan Sayyari and [Siavash Mirarab](#). Anchoring quartet-based phylogenetic distances and applications to species tree reconstruction. *BMC Genomics*, 17(S10):101–113, 2016.
38. Erfan Sayyari and [Siavash Mirarab](#). Fast Coalescent-Based Computation of Local Branch Support from Quartet Frequencies. *Molecular Biology and Evolution*, 33(7):1654–1668, 2016.
39. Nam Nguyen, Michael Nute, [Siavash Mirarab](#), and Tandy Warnow. HIPPI: highly accurate protein family classification with ensembles of HMMs. *BMC Genomics*, 17(S10):765, 2016.
40. James E Tarver, Mario dos Reis, [Siavash Mirarab](#), Raymond J Moran, Sean Parker, Joseph E. O’Reilly, Benjamin L King, Mary J. O’Connell, Robert J Asher, Tandy Warnow, Kevin J Peterson, Philip C.J. Donoghue, and Davide Pisani. The Interrelationships of Placental Mammals and the Limits of Phylogenetic Inference. *Genome Biology and Evolution*, 8(2):330–344, 2016.
41. [Siavash Mirarab](#), Md. Shamsuzzoha Bayzid, Bastien Boussau, and Tandy Warnow. Response to Comment on “Statistical binning enables an accurate coalescent-based estimation of the avian tree”. *Science*, 350(6257):171, 2015.
42. Joel Cracraft, Peter Houde, Simon Y W Ho, David P Mindell, Jon Fjeldså, Bent Lindow, Scott V Edwards, Carsten Rahbek, [Siavash Mirarab](#), Tandy Warnow, M Thomas P Gilbert, Guojie Zhang, Edward L Braun, and Erich D Jarvis. Response to Comment on “Whole-genome analyses resolve early branches in the tree of life of modern birds”. *Science*, 349(6255):1460, 2015.
43. Ruth Davidson, Pranjali Vachaspati, [Siavash Mirarab](#), and Tandy Warnow. Phylogenomic species tree estimation in the presence of incomplete lineage sorting and horizontal gene transfer. *BMC Genomics*, 16(Suppl 10):S1, 2015.
44. Jed Chou, Ashu Gupta, Shashank Yaduvanshi, Ruth Davidson, Mike Nute, [Siavash Mirarab](#), and Tandy Warnow. A comparative study of SVDquartets and other coalescent-based species tree estimation methods. *BMC Genomics*, 16(Suppl 10):S2, 2015.
45. [Siavash Mirarab](#) and Tandy Warnow. ASTRAL-II: coalescent-based species tree estimation with many hundreds of taxa and thousands of genes. *Bioinformatics*, 31(12):i44–i52, 2015.
46. Nam Nguyen, [Siavash Mirarab](#), Keerthana Kumar, and Tandy Warnow. Ultra-large alignments using phylogeny-aware profiles. *Genome Biology*, 16(1):124, 2015.

47. Md Shamsuzzoha Bayzid, [Siavash Mirarab](#), Bastien Boussau, and Tandy Warnow. Weighted Statistical Binning: Enabling Statistically Consistent Genome-Scale Phylogenetic Analyses. *PLoS ONE*, 10(6):e0129183, 2015.
48. Erich D Jarvis*, [Siavash Mirarab](#)* , 100 other authors, Edward L Braun, Tandy Warnow, Wang Jun, M Thomas P Gilbert, and Guojie Zhang. Whole-genome analyses resolve early branches in the tree of life of modern birds. *Science*, 346(6215):1320–1331, 2014.
49. [Siavash Mirarab](#), Md. Shamsuzzoha Bayzid, Bastien Boussau, and Tandy Warnow. Statistical binning enables an accurate coalescent-based estimation of the avian tree. *Science*, 346(6215):1250463, 2014.
50. Naim Matasci, Ling-Hong. Hung, Zhixiang Yan, Eric J Carpenter, Norman J Wickett, [Siavash Mirarab](#), Nam Nguyen, Tandy Warnow, 34 other authors, Jim Leebens-Mack, and Gane Ka-Shu Wong. Data access for the 1,000 Plants (1KP) project. *GigaScience*, 3(1):17, 2014.
51. Norman J. Wickett*, [Siavash Mirarab](#)* , Nam Nguyen, Tandy Warnow, 36 other authors, Gane Ka-Shu Wong, and James Leebens-Mack. Phylotranscriptomic analysis of the origin and early diversification of land plants. *Proceedings of the National Academy of Sciences (PNAS)*, 111(45):E4859–4868, 2014.
52. [Siavash Mirarab](#), Md. Shamsuzzoha Bayzid, and Tandy Warnow. Evaluating Summary Methods for Multilocus Species Tree Estimation in the Presence of Incomplete Lineage Sorting. *Systematic Biology*, 65(3):366–380, 2014.
53. [Siavash Mirarab](#), Nam Nguyen, Sheng Guo, Li-San Wang, Junhyong Kim, and Tandy Warnow. PASTA: Ultra-Large Multiple Sequence Alignment for Nucleotide and Amino-Acid Sequences. *Journal of Computational Biology*, 22(05):377–386, 2015.
54. [Siavash Mirarab](#), Nam Nguyen, and Tandy Warnow. PASTA: ultra-large multiple sequence alignment. In *Proceedings of the 18th International Conference on Research in Computational Molecular Biology (RECOMB)*, 177–191, 2014.
55. [Siavash Mirarab](#), Rezwana Reaz, Md. Shamsuzzoha Bayzid, Théo Zimmermann, M Shel Swenson, and Tandy Warnow. ASTRAL: Genome-Scale Coalescent-Based Species Tree. *Bioinformatics (ECCB)*, 30(17):i541–i548, 2014.
56. Nam Nguyen, [Siavash Mirarab](#), Bo Liu, Mihai Pop, and Tandy Warnow. TIPP: taxonomic identification and phylogenetic profiling. *Bioinformatics*, 30(24):3548–3555, 2014.
57. Théo Zimmermann, [Siavash Mirarab](#), and Tandy Warnow. BBICA: Improving the scalability of *BEAST using random binning. *BMC Genomics*, 15(Suppl 6):S11, 2014.

58. Arlin Stoltzfus, Hilmar Lapp, Naim Matasci, Helena Deus, Brian Sidlauskas, Christian M Zmasek, Gaurav Vaidya, Enrico Pontelli, Karen Cranston, Rutger Vos, Campbell O Webb, Luke J Harmon, Megan Pirrung, Brian O'Meara, Matthew W Pennell, [Siavash Mirarab](#), Michael S Rosenberg, James P Balhoff, Holly M Bik, Tracy A Heath, Peter E Midford, Joseph W Brown, Emily Jane McTavish, Jeet Sukumaran, Mark Westneat, Michael E Alfaro, Aaron Steele, and Greg Jordan. Phylotastic! Making tree-of-life knowledge accessible, reusable and convenient. *BMC Bioinformatics*, 14(1):158, 2013.
59. Md. Shamsuzzoha Bayzid, [Siavash Mirarab](#), and Tandy Warnow. Inferring optimal species trees under gene duplication and loss. In *Proceedings of the Pacific Symposium on Biocomputing (PSB)*, 250–61, 2013.
60. Nam Nguyen, [Siavash Mirarab](#), and Tandy Warnow. MRL and SuperFine+MRL: new supertree methods. *Algorithms for Molecular Biology*, 7(1):3, 2012.
61. [Siavash Mirarab](#), Nam Nguyen, and Tandy Warnow. SEPP: SATé-Enabled Phylogenetic Placement. In *Proceedings of the Pacific Symposium on Biocomputing (PSB)*, 247–58, 2012.
62. [Siavash Mirarab](#), Soroush Akhlaghi, and Ladan Tahvildari. Size-constrained regression test case selection using multicriteria optimization. *Software Engineering, IEEE Transactions on*, 38(4):936–956, 2012.
63. [Siavash Mirarab](#) and Tandy Warnow. FastSP: linear time calculation of alignment accuracy. *Bioinformatics*, 27:3250–8, 2011.
64. Hyunsook Do, [Siavash Mirarab](#), Ladan Tahvildari, and Gregg Rothermel. The effects of time constraints on test case prioritization: A series of controlled experiments. *Software Engineering, IEEE Transactions on*, 36:593–617, 2010.
65. [Siavash Mirarab](#) and Ladan Tahvildari. An empirical study on bayesian network-based approach for test case prioritization. In *Proceedings of ICST*, 278–287. IEEE, 2008.
66. [Siavash Mirarab](#), Afshar Ganjali, Ladan Tahvildari, Shimin Li, Weining Liu, and Mike Morrissey. A requirement-based software testing framework: An industrial practice. In *Proceedings ICSM*, 452–455. IEEE, 2008.
67. Hyunsook Do, [Siavash Mirarab](#), Ladan Tahvildari, and Gregg Rothermel. An empirical study of the effect of time constraints on the cost-benefits of regression testing. In *Proceedings of FSE*, 71–82. ACM, 2008.
68. Mehdi Amoui, Mazeiar Salehie, [Siavash Mirarab](#), and Ladan Tahvildari. Adaptive action selection in autonomic software using reinforcement learning. In *Proceedings of ICAS*, 175–181. IEEE, 2008.

69. Siavash Mirarab and Ladan Tahvildari. A prioritization approach for software test cases based on bayesian networks. In *Proceedings of FASE*, 276–290, 2007.
70. Siavash Mirarab, Alaa Hassouna, and Ladan Tahvildari. Using bayesian belief networks to predict change propagation in software systems. In *Proceedings of ICPC*, 177–188. IEEE, 2007.
71. Mehdi Amoui, Siavash Mirarab, Sepand Ansari, and Caro Lucas. A genetic algorithm approach to design evolution using design pattern transformation. *Journal of Information Technology and Intelligent Computing*, 1(2):235–244, 2006.

SELECTED
SOFTWARE
(PUBLICLY
AVAILABLE)

ASTRAL (<https://github.com/smirarab/ASTRAL>)
Coalescent-based species tree estimation from gene trees

PASTA (<https://github.com/smirarab/pasta>)
Multiple sequence alignment of ultra-large datasets (up to a million sequences)

SEPP,TIPP,UPP (<https://github.com/smirarab/sepp>)
Phylogenetic placement and taxonomic identification of metagenomic reads

TreeShrink (<https://github.com/uym2/TreeShrink>)
Finding and removing spuriously long branches

DiscoVista (<https://github.com/esayyari/DiscoVista>)
Visualizing phylogenetic discordances

FAVITES (<https://github.com/niemasd/FAVITES>)
Simulating HIV evolution

APPLES (<https://github.com/balabanmetin/apples>)
Phylogenetic placement using distances

TreeCluster (<https://github.com/niemasd/TreeCluster>)
Clustering leaves of a phylogeny in linear time with gurantees

See <http://ecweb.ucsd.edu/~smirarab/software.html> for more.

PROFESSIONAL
EXPERIENCE

International Business Machines (IBM), Vancouver, British Columbia, Canada
IT Specialist **Sept. 2008 – Dec. 2010**

TEACHING

Course Instructor (University of California, San Diego):

Graduate: Statistical learning in bioinformatics.	2016
Graduate: Computational evolutionary biology.	2017 – 2019
Introduction to Computer Engineering	2016 – 2019

OLDER:

Software Testing and Quality Assurance (TA), University of Waterloo.	Winter 2007
Scientific & Technical Communication (TA), University of Tehran.	Fall 2005
Ann Arbor, Michigan, Phylogenomics Symposium and Software School	2015
UT Austin, Summer school on Phylogenomics and Metagenomics	Summer 2014

Evolution meetings (NC), Software School on ASTRAL and PASTA **Summer 2014**
 UT Austin, Workshop on Phylogeny and Alignment Estimation **Winter 2013**

HIGHLIGHTS AND INVITED TALKS	See http://ecweb.ucsd.edu/~smirarab/presentations.html for a complete list	
	QCB Colloquium, USC, Biological Sciences, Los Angeles, CA	2019
	Computational Genomics Summer Institute, Los Angeles, CA	2017, 2018, 2019
	Workshop on Microbiomics, Metagenomics, and Metabolomics, Buffalo, NY	2019
	Genome 10K & Vertebrate Genome Project, New York, NY	2019
	Avian Meetings, Beijing, China, San Diego, CA (with PAG)	2016, 2018, 2019
	Evolution meeting, Austin, TX, Portland, OR, Montpellier, France	2016, 2017, 2018
	ENABLE workshop, National Chung Hsing University, Taiwan	2018
	Institute for Pure & Applied Math, Workshops on MSA and HPC	2015, 2018
	ISMB, Invited Tutorial on comparative regulatory genomics, Chicago, IL	2018
	Simons Found., Workshop on Statistical Challenges in Microbiome, Boston, MA	2017
	University of Copenhagen, Seminar Series, Copenhagen, Denmark	2017
	Schloss Dagstuhl – Leibniz Center for Informatics, 16351, Dagstuhl, Germany	2016
	RECOMB, Highlights session, Warsaw, Poland	2015
	INFORMS, Big Biological Data, Philadelphia, PA	2015
	MolPhy-3, Moscow, Russia	2012
PROFESSIONAL SERVICES	Leadership: Vertebrate Genome Project (VGP), Council member.	2019
	UCSD: Curriculum Development Committee. “Engineering in Public Health”.	2019
	Conference organization: (IEEE BIBM) (2019), REOMB (2020)	2007-2019
	Program Committee: ISBM, ECCB, RECOMB-CG	2015, 2017–2019
	Paper Review: See https://publons.com/researcher/697671/siavash-mirarab for a list. Includes papers in: Nature Ecology and Evolution, Nature Communications, Systematic Biology, PLOS Genetics, Journal of the American Statistical Association, Journal of ACM, IEEE Transaction on Computational Biology and Bioinformatics, Theoretical Population Genetics, Bioinformatics, BMC Bioinformatics, Genome Biology and Evolution, GigaScience	2007-2019
	Grant Panels: NSF	2018