

CURRICULUM VITAE

YASAMIN TABATABAEE

CONTACT INFORMATION

Siebel School of Computing and Data Science
University of Illinois at Urbana-Champaign
Email: syt3@illinois.edu
Website: <https://ytabatabaee.github.io>

EDUCATION

- Ph.D. in Computer Science, University of Illinois at Urbana-Champaign, 8/2021-12/2025
Advisor: Tandy Warnow, GPA: 4.0/4.0
- M.S. in Computer Science, University of Illinois at Urbana-Champaign, 2023
Advisor: Tandy Warnow, GPA: 4.0/4.0
- B.S. in Computer Engineering, Sharif University of Technology, Tehran, Iran, 2021
GPA: 19.11/20.00 (3.98/4.0)

RESEARCH INTERESTS

Developing algorithms and statistical estimation methods for biological data analysis, with a focus on phylogenetic inference and community detection in large-scale networks, drawing on techniques from statistical inference, probabilistic analysis, machine learning, and graph-theoretic algorithms.

PUBLICATIONS

Note: * indicates equal contribution.

14. **Y. Tabatabaee**, C. Zhang, S. Arasti and S. Mirarab. (2025). Species tree branch length estimation despite incomplete lineage sorting, duplication, and loss. *Genome Biology and Evolution*, Volume 17, Issue 11 [[paper](#)][[code](#)][[data](#)]
13. **Y. Tabatabaee**, E. Wedell, M. Park and T. Warnow. (2025). FastEnsemble: Scalable ensemble clustering on large networks. *PLOS Complex Systems*, Vol. 2, No. 10: e0000069 [[paper](#)][[code](#)][[data](#)]
12. T. Warnow, **Y. Tabatabaee** and S.N.Evans. (2025). Advances in Estimating Level-1 Phylogenetic Networks from Unrooted SNPs. *Journal of Computational Biology*, Volume 32, Number 1, pages 3-27 [[paper](#)]
11. **Y. Tabatabaee**, E. Wedell, M. Park and T. Warnow. (2024). FastEnsemble: A new scalable ensemble clustering method. *International Conference on Complex Networks and Their Applications 2024*, pages 57-70 [[paper](#)][[code](#)][[data](#)]
10. M. Park*, **Y. Tabatabaee***, V. Ramavarapu*, B. Liu, V. Pailodi, R. Ramachandran, D. Korobskiy, F. Ayres, G. Chacko, and T. Warnow. (2024) Well-Connectedness and Community Detection. *PLOS Complex Systems*, Vol. 1, No. 3: e0000009 [[paper](#)][[code](#)][[data](#)]

9. T. Warnow, **Y. Tabatabaee** and S.N. Evans. (2024) Statistically Consistent Estimation of Rooted and Unrooted Level-1 Phylogenetic Networks from SNP data. *Proceedings of RECOMB Comparative Genomics (RECOMB-CG) 2024*, pages 3-23 [[paper](#)]
8. S. Arasti*, P. Tabaghi*, **Y. Tabatabaee** and S. Mirarab. (2024). Optimal Tree Metric Matching Enables Phylogenomic Branch Length Estimation. *International Conference on Research in Computational Molecular Biology (RECOMB 2024)*, pages 462-465 [[paper](#)][[code](#)][[data](#)]
7. **Y. Tabatabaee**, S. Roch and T. Warnow. (2023). QR-STAR: A polynomial-time statistically consistent method for rooting species trees under the coalescent. *Journal of Computational Biology*, Volume 30, Number 11, pages 1146-1181 (Special issue for extended RECOMB 2023 papers). [[paper](#)][[code](#)][[data](#)]
6. **Y. Tabatabaee**, C. Zhang, T. Warnow and S. Mirarab. (2023). Phylogenomic branch length estimation using quartets. *Bioinformatics*, Vol. 39, Issue Supplement 1, pages i185-i193, special issue for Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISMB/ECCB) 2023 [[paper](#)][[code](#)][[data](#)]
5. M. Park*, **Y. Tabatabaee***, V. Ramavarapu*, B. Liu, V. Pailodi, R. Ramachandran, D. Korobskiy, F. Ayres, G. Chacko, and T. Warnow. (2023) Identifying well connected communities in real-world and synthetic networks. *International Conference on Complex Networks and Their Applications 2023*, pages 3-14 [[paper](#)][[code](#)][[data](#)]
4. **Y. Tabatabaee**, S. Roch and T. Warnow. (2023). Statistically consistent rooting of species trees under the multispecies coalescent model. *International Conference on Research in Computational Molecular Biology (RECOMB 2023)*, pages 41-57 [[paper](#)][[code](#)][[data](#)]
3. J. Willson, **Y. Tabatabaee**, B. Liu, and T. Warnow. (2023). DISCO+QR: rooting species trees in the presence of GDL and ILS. *Bioinformatics Advances*, Volume 3, Issue 1, vbad015, special issue for ISCB-Latin America Conference on Bioinformatics (ISCB-LA) 2022 [[paper](#)][[data](#)]
2. **Y. Tabatabaee**, K. Sarkar, and T. Warnow (2022). Quintet Rooting: rooting species trees under the multi-species coalescent model. *Bioinformatics*, Vol. 38, Supplement 1, pages i109-i117, special issue for Intelligent Systems for Molecular Biology (ISMB) 2022 [[paper](#)][[code](#)][[data](#)]
1. D. Lin, **Y. Tabatabaee**, Y. Pote and D. Jevdjic. (2022). Managing reliability skew in DNA storage. *Proceedings of the 49th Annual International Symposium on Computer Architecture (ISCA 2022)*. pages 482–494. [[paper](#)]

Papers under review

- **Y. Tabatabaee**, S. Claramunt, and S. Mirarab. (2025). Coalescent-based branch length estimation improves dating of species trees. Under review at *Systematic Biology*. [[preprint](#)][[code and data](#)]
- S. Arasti, P. Tabaghi, **Y. Tabatabaee**, A. Meyer, and S. Mirarab. (2025). Branch length transforms using optimal tree metric matching. Under revision at *Systematic Biology* (extended version of RECOMB 2024 paper). [[preprint](#)][[code](#)][[data](#)]

Thesis

- **Y. Tabatabaee** (2025). Novel computational methods for discordance-aware phylogenomic analysis. PhD dissertation. University of Illinois Urbana-Champaign.
- **Y. Tabatabaee** (2023). Improving the accuracy of community detection methods using Connectivity Modifier. MS thesis. University of Illinois Urbana-Champaign [[thesis](#)][[code](#)][[data](#)]

HONORS, AWARDS & FELLOWSHIPS

- Dissertation Completion Fellowship, Graduate College, UIUC, 8/2024-8/2025
- Mavis Future Faculty Fellowship, Grainger College of Engineering, UIUC, 8/2024-8/2025
- Firdawsi Science Award, Graduate College, UIUC, 1/2025
- C.L. and Jane Liu Award, Department of Computer Science, UIUC, 3/2023
- *Travel Awards*: IMSI 2025 Travel Grant, RECOMB 2023 Travel Fellowship, UIUC Graduate College Conference Presentation Award 2023, ISMB 2022 Virtual Fellowship
- Silver Medal in 33rd Iranian National Mathematical Olympiad, Tehran, Iran, 9/2015
- Bronze Medal in 2nd Iranian National Geometry Olympiad (IGO), Tehran, Iran, 9/2015
- Bronze Medal in 3rd European Girls' Mathematical Olympiad (EGMO), Antalya, Turkey, 4/2014
- Member of the National Organization for Development of Exceptional Talents (NODET), Tehran, Iran, 9/2009–9/2016

RESEARCH EXPERIENCE

- Graduate Research Assistant and Fellow, Siebel School of Computing and Data Science, University of Illinois at Urbana-Champaign, 8/2021-12/2025, Supervisor: Tandy Warnow
- Visiting Research Scholar, Department of Electrical and Computer Engineering, University of California San Diego, 5/2024-8/2024, Supervisor: Siavash Mirarab
- Research Intern, School of Computing, Department of Computer Science, National University of Singapore, Singapore, 7/2019-9/2019
- Undergraduate Research Assistant, Sharif University of Technology, Department of Computer Engineering, Bioinformatics Research Laboratory, Tehran, Iran, 6/2018-9/2018

TEACHING EXPERIENCE

- **Teaching Assistant**, University of Illinois at Urbana-Champaign
 - * Fall 2025, CS 357: Numerical Methods [[webpage](#)], Instructor: Mariana Silva
 - * Fall 2022 and 2023, CS 581: Algorithmic Genomic Biology [[webpage](#)], Instructor: Tandy Warnow
- **Teaching Assistant**, Sharif University of Technology, Tehran, Iran
 - * Fall 2020, CE 719: Deep Learning (graduate course) [[course material](#)], Instructor: Mohammad Beigy
 - * Fall 2020, CE 717: Machine Learning, Instructor: Mahdieh Soleymani
 - * Spring 2020, CE 324: Modern Information Retrieval, Instructor: Mohammad Beigy
 - * Spring 2020, CE 354: Design of Algorithms (co-head TA) [[course material](#)], Instructor: Ali Sharifi Zarchi
 - * Fall 2019, CE 282: Linear Algebra, Instructor: Abolfazl Motahari
 - * Spring 2018, CE 254: Data Structures & Algorithms, [[course material](#)] Instructor: Ali Sharifi Zarchi
 - * Spring 2018, CE 115: Discrete Structures, Instructor: Mohammad-Ali Abam
 - * Fall 2017, CE 153: Fundamentals of Programming, Instructor: Mohammad Rivadeh
- **Mathematics Instructor**, Farzanegan High School, Tehran, Iran, 9/2016-6/2017
 - * Teaching Combinatorics and Geometry to students preparing for Iranian National Mathematical Olympiad

TALKS

- **CASTLES-Pro: A tool for species tree branch length estimation despite ILS and GDL** [[talk](#)][[slides](#)]
 - * Institute for Mathematical and Statistical Innovation (IMSI), University of Chicago, Contemporary Challenges in Large-Scale Sequence Alignments and Phylogenies, August 2025
- **Novel computational methods for discordance-aware phylogenomic analysis** [[slides](#)]
 - * Carnegie Mellon University, School of Computer Science, Computational Biology Seminar, May 2025
 - * University of California Berkeley, Department of Integrative Biology, Nielsen lab meeting, April 2025
 - * University of California Los Angeles, Department of Computer Science and Computational Medicine, Sankararaman lab meeting, December 2024
 - * Princeton University, Department of Computer Science, Raphael lab meeting, November 2024
 - * University of California San Diego, Department of Electrical and Computer Engineering, Mirarab lab meeting, July 2024
- **Phylogenomic branch length estimation using quartets** [[talk](#)][[slides](#)]
 - * 31st Conference on Intelligent Systems for Molecular Biology (ISMB), July 2023.
 - * 19th UIUC Coordinated Science Laboratory Student Conference (CSLSC), February 2024
- **Statistically consistent rooting of species trees under the multispecies coalescent model** [[talk](#)][[slides](#)]
 - * 27th Conference on Research in Computational Molecular Biology (RECOMB), April 2023.
- **Quintet Rooting: rooting species trees under the multi-species coalescent model** [[talk](#)][[slides](#)]
 - * 30th Conference on Intelligent Systems for Molecular Biology (ISMB), July 2022.
 - * UIUC Computational Biology and Bioinformatics Seminar, September 2022

SOFTWARE

I have led the development of the following open-source software:

- **CASTLES-Pro** [<https://github.com/ytabatabaee/CASTLES>]
Species tree branch length estimation under the multi-species coalescent model. Now implemented in the widely-used ASTER software package for species tree estimation (<https://github.com/chaoszhang/ASTER>).
- **QR-STAR** [<https://github.com/ytabatabaee/Quintet-Rooting>]
Polynomial-time statistically consistent rooting of species trees under the multi-species coalescent model.
- **FastEnsemble** [<https://github.com/ytabatabaee/fast-ensemble>]
Scalable ensemble (consensus) clustering on large networks most useful for networks with less well-separated communities.
- **EmulateRealNets** [<https://github.com/ytabatabaee/emulate-real-nets>]
Software for emulating properties of real networks using LFR graphs.

In addition, I have contributed to the design of the following open-source software:

- **TCMM** [<https://github.com/shayesteh99/TCMM>]
Software for outlier detection and branch length estimation on species trees.
- **Connectivity Modifier (CM)** [https://github.com/illinois-or-research-analytics/cm_pipeline]
Software that refines a clustering by iteratively removing weak connections and small clusters to ensure all clusters meet criteria for well-connectedness.

REVIEWING ACTIVITY

- **Journals:**
 - Journal of Mathematical Biology (2022)
 - Bioinformatics Advances (2024, 2025)
 - Cell Systems (2025)
- **Conferences:**
 - International Conference on Research in Computational Molecular Biology (RECOMB) 2024, 2026

ACADEMIC SERVICES

- **University of Illinois Urbana-Champaign**
 - * Mentor in *Mentoring Undergraduates in Science and Engineering* (MUSE) program, 2025
 - * Graduate Student Ambassador for PhD visit days, Siebel School of Computing and Data Science, 2025
- **Sharif University of Technology, Tehran, Iran**
 - * Member of Sharif Data Days 2020 Scientific Team (the first Iranian national data science competition)

REFERENCES

- Tandy Warnow (PhD advisor)
Grainger Distinguished Chair in Engineering
Siebel School of Computing and Data Science
University of Illinois at Urbana-Champaign
<https://tandy.cs.illinois.edu/>
warnow@illinois.edu
- Siavash Mirarab
Professor, Joan and Irwin Jacobs Chancellor's Endowed Faculty in Genome Engineering II
Department of Electrical and Computer Engineering
University of California San Diego
<http://eceweb.ucsd.edu/~smirarab/>
smirarabbaygi@ucsd.edu
- Sebastien Roch
Vilas Distinguished Achievement Professor
Department of Mathematics
University of Wisconsin-Madison
<https://people.math.wisc.edu/~roch/>
roch@math.wisc.edu

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