

Erfan Sayyari

Contact Information	Department of Electrical and Computer Engineering UC, San Diego 9500 Gilman Dr, La Jolla, CA 92093	Phone: 301 747 5505 email: esayyari@ucsd.edu google scholar: goo.gl/sk5hJY
Education	UC San Diego , La Jolla, CA Sep. 2013 – June 2019 (expected) <ul style="list-style-type: none">• <i>Ph.D candidate</i> in Electrical and Computer Engineering Department GPA: 3.83• Advisor: Prof. Siavash Mirarab• Thesis Topic: New methods to estimate and assess phylogenetic trees from genome-wide data. Sharif University of Technology , Tehran, Iran Sep. 2008 – July 2013 <ul style="list-style-type: none">• <i>Bachelor of Science</i> in Department of Electrical Engineering	
Skills	Computational Biology, Phylogenomics, Metagenomics, Variant Calling, Machine Learning, Algorithms, Statistics, Optimization, Deep Learning	
Programming Languages and Tools	<ul style="list-style-type: none">• Programming languages: C/C++, Bash, Python (Pandas, NumPy, SciPy, scikit-learn, TensorFlow, Keras, Dendropy, Qiime2), R, MATLAB, L^AT_EX• Applications/Tools: Vi/Vim, Eclipse, PyCharm, Git, Markdown, Docker, InkScape• Operating Systems: Linux, Mac OSX, Windows.	
Research Experience	<ul style="list-style-type: none">• Research Assistant, UC, San Diego, CA June 2015 – present<ul style="list-style-type: none">– Advisor: Siavash Mirarab• Member of Center for Microbiome Innovation, UC San Diego, CA Jan. 2018–present• Member of Artificial Intelligence for Healthy Living Center (AIHL), UC San Diego, CA Jan. 2018–present<ul style="list-style-type: none">– part of the IBM Cognitive Horizons Network	
Selected Software	<ul style="list-style-type: none">• ASTRAL (https://github.com/smirarab/ASTRAL) I routinely contribute to ASTRAL, a tool that is well known for estimating species trees from gene trees. More particularly, I implemented a statistical method to assess the reliability of inferred species trees from gene trees (local posterior probability) in ASTRAL.• DISTIQUE (https://github.com/esayyari/DISTIQUE) Coalescent-based species tree estimation algorithm from gene trees• DiscoVista (https://github.com/esayyari/DiscoVista) Command-line software package for visualizing phylogenetic discordance.• Gene tree estimation pipeline (https://github.com/esayyari/bootstrap) Bash command-line pipeline of automatic inferring and bootstrapping gene trees	
Selected Course Projects	<ul style="list-style-type: none">• Gesture/Sign Recognition (in C/C++ and MATLAB) - A cross modal algorithm to do gesture/sign recognition based on depth and motion information using linear dynamic systems trained by PCA and CCA.• Conditional Random Fields for Punctuation Prediction (Python) Implementing a Conditional Random Fields model for prediction punctuation tags for English language text. Two different techniques are used for training the model: Gibbs sampling and Collins Perceptron.	

- **Latent Dirichlet Allocation for Document Topic Discovery** (Python) Using Latent Dirichlet Allocation (LDA) to discover the underlying topics of a set of documents in an un-supervised scheme based on frequency of words in documents.
- **Recursive Auto Encoder (RAE)** Method of Learning Meanings for Sentences Reconstructing a recursive auto encoder neural network for recognizing sentence level sentiment using a dynamic representation for sentences.

Publication

1. Rabiee, M., **Sayyari, E.** and Mirarab, S., 2018. Multi-allele species reconstruction using ASTRAL. *Molecular phylogenetics and evolution*.
2. Zhang, C., Rabiee, M., **Sayyari, E.** and Mirarab, S., 2018. ASTRAL-III: polynomial time species tree reconstruction from partially resolved gene trees. *BMC bioinformatics*, 19(6), p.153.
3. **Sayyari, E.** and Mirarab, S., 2018. Testing for Polytomies in Phylogenetic Species Trees Using Quartet Frequencies. *Genes*, 9(3), p.132.
4. **Sayyari, E.**, Whitfield, J. and Mirarab, S., DiscoVista: Interpretable visualizations of gene tree discordance, *Molecular Phylogenetics and Evolution*, Volume 122, 2018, Pages 110-115
5. **Sayyari, E.**, James Whitfield, and Siavash Mirarab. Fragmentary gene sequences negatively impact gene tree and species tree reconstruction. *Molecular Biology and Evolution* (in press) (2017).
6. Zhang, C., **Sayyari, E.** and Mirarab, S., 2017, October. ASTRAL-III: Increased Scalability and Impacts of Contracting Low Support Branches. In *RECOMB International Workshop on Comparative Genomics* (pp. 53-75). Springer, Cham.
7. Mai, U., **Sayyari, E.** and Mirarab, S., 2017. 11Minimum variance rooting of phylogenetic trees and implications for species tree reconstruction. *PloS one*, 12(8), p.e0182238. (Best paper award at GLBIO 2017)
8. **Sayyari, E.** and Mirarab, S., 2016. Anchoring quartet-based phylogenetic distances and applications to species tree reconstruction. *BMC genomics*, 17(10), p.783.
9. **Sayyari, E.** and Mirarab, S., 2016. Fast coalescent-based computation of local branch support from quartet frequencies. *Molecular biology and evolution*, 33(7), pp.1654-1668.
10. Weibel, N., Hwang, S.O., Rick, S., **Sayyari, E.**, Lenzen, D. and Hollan, J., 2016, January. Hands that Speak: An Integrated Approach to Studying Complex Human Communicative Body Movements. In *System Sciences (HICSS)*, 2016 49th Hawaii International Conference on (pp. 610-619). IEEE
11. **Sayyari, E.**, Farzi, M., Estakhrooeieh, R.R., Samiee, F. and Shamsollahi, M.B., 2012, July. Migraine analysis through EEG signals with classification approach. In *Information Science, Signal Processing and their Applications (ISSPA)*, 2012 11th International Conference on (pp. 859-863). IEEE.

Teaching Experience

UC San Diego, La Jolla, California USA **Spring, 2014 - present**

- **Undergraduate courses:** Engineering Probability and Stats, Circuits and Systems, Probability and Random Processes
- **Graduate courses:** Algorithms for biological data analysis, Random Processes

Workshops and Tutorials

Summer 2016

- Phylogenomics Symposium and Software School on ASTRAL, PASTA, and ASTRID

Other Experience Cluster maintenance, UC San Diego

Fall 2016 - present

- Includes updating and maintenance of lab cluster, and training students