

Pranjal Vachaspati

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PROFESSIONAL EXPERIENCE

Google Sept 2019 - Present
Software Engineer Cambridge, MA

- Developed encapsulation techniques to maintain the stability of a large, rapidly evolving, legacy Java/C++ hybrid codebase with thousands of developers serving billions of users
- Designed infrastructure for migrating large monolithic web-scale applications to distributed microservice architectures

University of Illinois at Urbana-Champaign Fall 2014-Sept 2019
Research Assistant for Professor Tandy Warnow Urbana, IL

- Designed and evaluated methods for phylogenetic species tree estimation in the presence of various sources of gene tree incongruence

MIT Center for Theoretical Physics Fall 2012 - Summer 2014
Research Assistant for Professor Will Detmold Cambridge, MA

- Developed lattice quantum chromodynamics simulations on CPUs and GPUs

Freelance & Internships

Software & Data Engineer

- Avatech Corp. (2014): Data processing methods to improve avalanche safety equipment
- Milliman, Inc. (2014): Machine learning techniques for insurance pricing and underwriting
- Oblong Industries (2012): Apps for gestural control of 3D spatial environments
- Additional work experience with blockchain technologies, embedded development, and more

EDUCATION

University of Illinois Aug 2014 - Sept 2019
PhD in Computer Science Urbana, IL

Developed fast, scalable, and accurate phylogenetic species tree estimation methods used for numerous biological analyses. Coursework focused on high-performance computing and algorithms.

MIT Graduated June 2014
B.S. in Physics Cambridge, MA

Computer Science: Numerical Simulation, Computer Vision, Machine Learning, Computer Architecture, Complexity Theory

Physics: Solid State Physics, Junior Lab, Quantum Mechanics, Stat. Mechanics & Thermodynamics, Special Relativity, Electricity and Magnetism

ADDITIONAL EXPERIENCE

Champaign County Board Aug 2018-Nov 2019
Elected board member Champaign County, IL

- Member of a 22-member elected board governing a county with over 200,000 residents and a \$130 million budget

Jeopardy! Champion 2016-2017
Culver City, CA

- Six-time champion and Tournament of Champions semi-finalist, with winnings of over \$140,000

SKILLS

Languages: Java, C++, C, Python, SQL, Javascript, CSS, HTML, Go, Mathematica, MATLAB, Haskell, Lex, Yacc, L^AT_EX, English, Hindi

Tools: Pandas, Jupyter, Emacs, Git, Linux/Bash, GCC, GDB, GNU Make, Eclipse

See reverse for publications and awards

PUBLICATIONS

10. P. Vachaspati and T. Warnow. “SVDquest: Improving SVDquartets species tree estimation using exact optimization within a constrained search space”. *Molecular Phylogenetics and Evolution*, 2018.
9. P. Vachaspati and T. Warnow. “Enhancing Searches for Optimal Trees Using SIESTA”. *RECOMB International Workshop on Comparative Genomics*, 2017
8. S. Christensen, E. Molloy, P. Vachaspati, and T. Warnow. “Optimal Completion of Incomplete Gene Trees in Polynomial Time”. *17th International Workshop on Algorithms for Bioinformatics (WABI) 2017*.
7. B.M. Boyd, J.M. Allen, N.P. Nguyen, P. Vachaspati, Z.S. Quicksall, T. Warnow, L. Mugisha, K.P. Johnson, and D.L. Reed. “Primates, Lice, and Bacteria: Speciation and Genome Evolution in the Symbionts of Hominid Lice”. *Molecular Biology and Evolution*, 2017.
6. J.M. Allen, B. Boyd, N.P. Nguyen, P. Vachaspati, T. Warnow, D.I. Huang, P.G. Grady, K.C. Bell, Q.C. Cronk, L. Mugisha, and B.R. Pittendrigh. “Phylogenomics from Whole Genome Sequences Using aTRAM”. *Systematic biology*, 2017. Vancouver
5. P. Vachaspati and T. Warnow. “FastRFS: Fast and accurate Robinson-Foulds Supertrees using constrained exact optimization”, *RECOMB-Comparative Genomics and Bioinformatics*, 2016.
4. P. Vachaspati and T. Warnow. “ASTRID: Accurate Species TRees from Internode Distances”, *RECOMB-Comparative Genomics and BMC Genomics*, 2015.
3. R. Davidson, P. Vachaspati, S. Mirarab, and T. Warnow. “Phylogenomic species tree estimation in the presence of incomplete lineage sorting and horizontal gene transfer”, *RECOMB-Comparative Genomics, and BMC Genomics*, 2015.
2. P. Vachaspati, W. Detmold (2014). “Fast Evaluation of Multi-Hadron Correlation Functions”. *LATTICE 2014*.
1. S. Li, P. Vachaspati, D. Sheng, N. Dural, M. V. Romalis. “Very large optical rotation generated by Rb vapor in a multi-pass cell”. *Phys. Rev. A* 84, 061403(R) (2011)

AWARDS AND RECOGNITION

Graduate Research Fellow <i>National Science Foundation</i>	2016-2021 Urbana, IL
Ira and Debra Cohen Fellow <i>UIUC College of Engineering</i>	2015-2016 Urbana, IL
Saburo Muroga Fellow <i>UIUC College of Engineering</i>	2015-2016 Urbana, IL
Roy J. Carver Fellow <i>UIUC College of Engineering</i>	2014-2015 Urbana, IL

Last Updated August 10, 2021.

Find the most recent version of this document at <http://pranj.al/Resume.pdf>