

Experience

- Sep 2020– **Accenture Operations**, DATA SCIENTIST ASSOCIATE PRINCIPAL
Member of the Data and Applied Intelligence team, involved in designing machine learning models and providing statistically significant insights as per client requirements.
- Working on predicting cost and carbon footprint associated with travel.
 - Working on a project to quantify performance of contracts at different hierarchical levels, and present actionable insights for them.
 - Developed unsupervised and supervised machine learning models for anomalous invoice detection and tagging of duplicate invoices for multiple clients.
 - Worked on a unified framework for deploying flexible data science pipelines on different platforms.
- Mar 2019– **Accenture Operations**, DATA SCIENTIST SPECIALIST
Sep 2020
- Developed methods for summarizing data and optimizing the number of chargeback cases faced by client based on historical data.
 - Designed and deployed machine learning models for inferring project types from text data associated with historical projects.
- Jan 2016– **Carnegie Mellon University**, POSTDOCTORAL RESEARCH ASSOCIATE
Dec 2018
- Worked with Jian Ma in the School of Computer Science on developing and implementing mathematical and statistical models for inferring and analyzing changes in cancer genome structure and associated functions.
- May 2015– **University of Illinois at Urbana-Champaign**, POSTDOCTORAL RESEARCH ASSOCIATE
Dec 2015
- Worked with Jian Ma in the College of Engineering on developing and implementing models for inferring and analyzing changes in genome structure and associated function, in the context of ancestral genomics.

Skills

Research expertise, Machine learning, statistical inference models, convex and combinatorial optimization, graph algorithms, data representation

Programming expertise

Highly experienced

- Python
- C++
- L^AT_EX

Extensively used

- Shell script
- MATLAB

Familiar

- Perl
- R

Toolkit: Numpy/Scipy, Scikit-Learn, Keras, TensorFlow, XGBoost, Elasticsearch, Numba, Gurobi, Matplotlib, Git, Docker.

Education

- 2015 **Simon Fraser University**, *Burnaby, BC, Canada*, DOCTOR OF PHILOSOPHY IN MATHEMATICS
Supervisor Cédric Chauve
Thesis title *Variants of the Consecutive Ones Property: Algorithms, Computational Complexity and Applications in Genomics.*
- 2009 **Indian Institute of Technology Roorkee**, *Roorkee, Uttarakhand, India*, BACHELOR OF TECHNOLOGY IN METALLURGICAL AND MATERIALS ENGINEERING

Published software

- 2016 **MultiRes**, *developed in collaboration with Jian Ma*
MultiRes is a heuristic convex optimization method for improved consensus ancestral reconstruction.
- 2015 **DeClone**, *developed in collaboration with Cédric Chauve, Yann Ponty and João Zanetti*
DeClone is an integrated method for sampling solutions to a phylogenetic problem, and for parameter inference.

- 2013 **FPSAC**, developed in collaboration with Cédric Chauve and Eric Tannier
FPSAC is a pipeline for scaffolding ancestral genomes using extant genomic data.
- 2012 **ANGES**, developed in collaboration with Cédric Chauve, Brad Jones and Eric Tannier
ANGES is a suite of combinatorial and spectral algorithms for ancestral genome reconstruction.

Selected Publications

Google Scholar profile

- 2021 Tao, Y., **Rajaraman, A.**, Cui, X., Cui, Z., Chen, H. et al. Assessing the contribution of tumor mutational phenotypes to cancer progression risk. *PLOS Computational Biology*, 17(3):1–29, 03 2021.
- 2018 **Rajaraman, A.** and Ma, J. Toward recovering allele-specific cancer genome graphs. *Journal of Computational Biology, originally published in the proceedings of RECOMB 2017*, 25(7):624–636,
- 2016 **Rajaraman, A.**, Zanetti, J.P.P., Maňuch, J., and Chauve, C. Algorithms and complexity results for genome mapping problems. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, PP(99):1–1, 2016. ISSN 1545-5963.
- 2015 Neafsey, D.E., Waterhouse, R.M., and others (including **Rajaraman, A.**). Highly evolvable malaria vectors: The genomes of 16 anopheles mosquitoes. *Science*, 347(6217), 2015.
- 2013 **Rajaraman, A.**, Tannier, E., and Chauve, C. FPSAC: Fast Phylogenetic Scaffolding of Ancient Contigs. *Bioinformatics*, 29(23):2987–2994, 2013.
- Rajaraman, A.**, Tannier, E., and Chauve, C. The genome of the medieval Black Death agent, 2013.
- Chauve, C., Patterson, M., and **Rajaraman, A.** Hypergraph covering problems motivated by genome assembly questions. In *Combinatorial Algorithms - 24th International Workshop, IWOCA 2013, Rouen, France, July 10-12, 2013, Revised Selected Papers*, pages 428–432. 2013.
- 2012 Jones, B.R., **Rajaraman, A.**, Tannier, E., and Chauve, C. ANGES: Reconstructing ANcestral GENomeS maps. *Bioinformatics*, 28(18):2388–2390, 2012.

Patents

- 2023 Desai, V., Prakash, R., and **Rajaraman, A.**. Artificial intelligence (AI) based document processing and validation. Patent no. 20230154222 applied for, 2023.

Academic Honours

- Michael Stevenson Graduate Scholarship (2014–2015)
- SFU President’s PhD Scholarship (Spring 2014)
- PIMS International Graduate Training Centre Fellowship in Mathematical Biology (2012–2014)
- Faculty of Science Graduate Fellowship (Summers 2010, 2012–2014)
- Travel and Minor Research Award (Fall 2011, 2012)

References

On request