

KIRAN KRISHNAMACHARI

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About Me

I am a Research Scientist with a PhD in Artificial Intelligence and Machine Learning from National University of Singapore. During my PhD, I had the privilege to work with [Dr. Foo Chuan Sheng](#), [Prof. Anders Skanderup](#) and [Prof. See-Kiong Ng](#).

I have experience in developing robust deep learning methods across a range of applications including computer vision, time-series and cancer genomics. My research work has been featured in multiple news and media outlets such as GenomeWeb, The Straits Times, Channel News Asia and AsianScientist.

I am fluent in the Python programming language, PyTorch and Keras deep learning libraries and other common data analytical tools used in AI research. Before entering research, I was a full-stack web developer in the digital media space. Prior to this, I completed a bachelor's degree in engineering and co-founded a startup in the e-commerce space.

Experience

Scientist

Present

Genome Institute of Singapore, A*STAR — Singapore

- I develop deep learning methods for cancer genomics with the goal to improve cancer diagnostics and treatment.

PhD Research Scholar

2019–2023

Institute for Infocomm Research, A*STAR — Singapore

- Developed robust AI, deep learning methods for computer vision, cancer genomics, time-series, acoustic classification. Published in Nature Communications, TMLR, ICLR.

Research Officer

2017–2018

Genome Institute of Singapore, A*STAR — Singapore

(Bioinformatics Specialist)

- Worked on machine learning for next-generation DNA sequencing data in cancer genomics
- Developed a novel deep learning method for variant calling on tumors

Lead Web Developer

2015–2017

Executive Networks Media Pte Ltd — Singapore

(Full-stack Web Development)

- Developed and maintained all aspects of regional enterprise IT news websites with over 100K unique monthly visitors
- Oversaw websites serving the ASEAN region including: CIO-Asia.com, ComputerWorld.com.sg, BankI-TAsia.com, ComputerWorld.com.my, ComputerWorld.co.ph, MIS-Asia.com, GCIO.ASIA

Co-Founder and Lead Developer

2013–2015

Hagglr Pte Ltd — Singapore

(E-commerce Startup)

- Developed and marketed a social e-commerce application that enabled consumers to purchase products with social groups at a discount.
- Established partnerships with local event operators and ticketing agencies.

Education

Doctor of Philosophy in Computer Science

2019–2023

School of Computing — National University of Singapore

- Thesis title: “Towards robust deep learning with real-world applications”

B.Eng in Industrial and Systems Engineering

2008–2012

Faculty of Engineering — National University of Singapore

(*Minor in Entrepreneurship*)

Achievements

Scholarships

- A*STAR Computing and Information Science (ACIS) Scholarship (2019–2023)

Publications

Articles

- K. Krishnamachari et al. (2026). “Improved tumor-only variant calling and mutation burden estimation with VarNet-T”. In: *Nature Communications* <https://www.nature.com/articles/s41467-026-71705-4>.
- K. Krishnamachari, H. Carrié, and A.J. Skanderup (2025). “Identification of somatic variants in cancer genomes from tissue and liquid biopsy samples”. In: *Springer Nature Cancer Bioinformatics*. https://link.springer.com/protocol/10.1007/978-1-0716-4566-6_16.
- K. Krishnamachari, D. Lu, A. Swift-Scott, A. Yeraliyev, K. Lee, W. Huang, S.N. Leng, and A.J. Skanderup (July 2022). “Accurate somatic variant detection using weakly supervised deep learning”. In: *Nature Communications*. doi: 10.1038/s41467-022-31765-8.
- K. Krishnamachari, See Kiong Ng, and Chuan-Sheng Foo (2023). “Mitigating Real-World Distribution Shifts in the Fourier Domain”. In: *Transactions on Machine Learning Research*. <https://openreview.net/forum?id=lu4oAq55iK>.
- K. Krishnamachari, See-Kiong Ng, and Chuan-Sheng Foo (2022). “Fourier Sensitivity and Regularization of Computer Vision Models”. In: *Transactions on Machine Learning Research*. <https://openreview.net/forum?id=VmTYgjYl0M>.
- K. Krishnamachari and A.J. Skanderup (2025). “FFPENet: Somatic variant calling in FFPE tumor sampels using deep transfer learning”. In: *ICLR 2025 workshop on AI for Nucleic Acids*.
- J. Alvarez, K. Krishnamachari and A.J. Skanderup (2025). “RNAalign: Alignment of tumor and cell Line transcriptomes using conditional VAEs”. In: *ICLR 2025 workshop on AI for Nucleic Acids*.
- K. Krishnamachari, Hanaé Carrié ... and A.J. Skanderup (2025). “Comprehensive benchmarking of methods for mutation calling in circulating tumor DNA”. In: *Nature Communications*. <https://www.nature.com/articles/s41467-025-67842-x>.
- K. Krishnamachari, See Kiong Ng, and Chuan-Sheng Foo (2024). “Uniformly Distributed Feature Representations for Fair and Robust Learning”. In: *Transactions on Machine Learning Research*. <https://openreview.net/forum?id=PgLbS5yp8n>.
- Kangkang, L., C.M. Nguyen, X. Xu, K. Krishnamachari, Y.J. Goh, and Chuan-Sheng Foo (2021). “Adversarially Robust Models using Unlabeled data by Regularizing Diversity”. In: *International Conference on Learning Representations*. <https://openreview.net/forum?id=JoCR4h903Ew>.

Posters

- K. Krishnamachari (2022). “Accurate somatic variant detection using weakly supervised deep learning”. 14th Frontiers in Cancer Science Conference.

Patents

- K. Krishnamachari and A.J. Skanderup (2023). “Cancer mutation prediction using deep learning”. Patent Pending.

Services

- **Reviewer** – Program Committee Member for AI for Nucleic Acids (AI4NA) workshop at ICLR 2025 (<https://ai4na-workshop.github.io/>)
- **Reviewer** – Transactions on Machine Learning (<https://jmlr.org/tmlr/>)
- **Assisted Peer Review** – Nature portfolio journals including *Nature Methods* (contributed to reviews as secondary reviewer)

Skills

AI/ML & Programming: PyTorch, Python, Keras, Tensorflow, Scikit-Learn, Numpy, Pandas, Deep Learning, Bioinformatics

Web Development: Full-stack web development, Django Web Framework, AWS, Web server administration, HTML, CSS, Javascript, REST API programming, database management e.g. PostgreSQL, Linux server administration.

Media Coverage

- **The Straits Times:** [AI developed to identify cancer mutations](#)
- **AsianScientist:** [Using AI to detect cancer mutations](#)
- **Channel News Asia:** [How cancer detection and treatment have advanced in Singapore](#)
- **GenomeWeb:** [Singapore's VarNet Algorithm Seeks to Improve Somatic Variant Calling With Deep Learning](#)
- **A*STAR Research:** [A deep dive into cancer's big data](#)