

Gaurav Singh

Varsity Lakes, Australia · hi@gvsh.cc · [ORCID](#) · [GitHub](#) · [Google Scholar](#) · [LinkedIn](#)

Machine-learning researcher and software developer. I came to machine learning by an unusual route: engineering, then design school, then a decade of teaching programming and human-computer interaction to designers. What ties it together is a care for the choices made before any model runs: how a physical thing becomes data, and what that data lets a model see. First-author papers in the International Journal of Protective Structures (2024) and IOP Machine Learning (2026); Master's research applied generative models to large-scale environmental time-series data.

Research interests

How representation choices shape what models can learn; making models work where data is sparse and incomplete; mathematical modelling of physical and economic systems; visual-mathematical literacy.

Education

2023-2025	Master of Information Technology Griffith University, Gold Coast, Australia; GPA 6.31/7 Thesis: "Enhancing Climate Forecasting with Advanced Generative Models for Synthetic AQI Data", supervised by Dr. Elizabeth Chang.
2013-2015	Advanced Diploma, Innovation & Experience Design Srishti Institute of Art, Design and Technology, Bangalore, India
2008-2012	B.Tech, Computer Science & Engineering JNTU Anantapur, India; First Class with Distinction

Experience

2025-present	Software developer, Payments fintech, Australia I build payment infrastructure businesses rely on daily: recurring billing, direct debit, and hosted payment pages.
2008-present	Founder and researcher, Mathsclapes, India My own studio, going since 2008, where the maths work lives: open-source libraries and design tools that keep mathematics accessible rather than locked behind a degree.
2018-2022	Design copilot, Topcoder, Remote I ran design challenges for Fortune 500 clients and steered crowds of designers through them, after years of competing on the platform myself.
2017-2022	Faculty member and researcher, Srishti Manipal Institute, Bangalore, India I headed the M.Des in Design Computation and founded the Experimental Maths Lab, a room for recreational mathematics inside a design school. Most of the teaching I am proud of happened here.

Also: M56 (2015-2026), Griffith University (2022-2023), Art in Transit / Srishti (2016), Independent designer (2008-2015), S.Labs (2014); details on [my website](#).

Publications

A Framework for Visual-Mathematical Literacy in Applied Machine Learning: Why Representation Choices Shape What Models Can Learn. G. Singh, R. S. Dhari. IOP Machine Learning, 2026. [doi:10.1088/3049-4761/ae7df3](https://doi.org/10.1088/3049-4761/ae7df3)

Techno-economic pathways modeling and nonlinear optimized SEEA-ROI longitudinal dynamic simulation for decarbonising Australian heavy transportation systems. G. Singh, E. Chang, Y. Karaca. Fractals, 2026. [doi:10.1142/S0218348X26400633](https://doi.org/10.1142/S0218348X26400633)

Automated detection of deformation mechanisms in re-entrant honeycomb auxetics using machine learning. G. Singh, R. S. Dhari, Z. Javanbakht. International Journal of Protective Structures, 2024. [doi:10.1177/20414196241281069](https://doi.org/10.1177/20414196241281069)

ReRide: A Bike Area Network for Embodied Self-monitoring during Motorbike Commute. N. Bagalkot, G. Singh, V. Rath, T. Sokoler, A. Shukla. Proceedings of the Thirteenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI '19), 443-450, 2019. [doi:10.1145/3294109.3300986](https://doi.org/10.1145/3294109.3300986)

ReRide. N. Bagalkot, T. Sokoler, R. Shaikh, G. Singh, A. E. Lillie, P. Dixit, A. Rai, V. Chakravarthy, A. Senthil. Human-Computer Interaction - INTERACT 2017. Lecture Notes in Computer Science, vol 10516. Springer, Cham, 2017. [doi:10.1007/978-3-319-68059-0_43](https://doi.org/10.1007/978-3-319-68059-0_43)

SnapTag: Leveraging Situated Memory to enhance self-efficacy for well-being. S. Baadkar, G. Singh, A. Saraf, N. Bagalkot. Proceedings of the India HCI 2014 Conference on Human-Computer Interaction, 136-141, 2014. [doi:10.1145/2676702.2676719](https://doi.org/10.1145/2676702.2676719)

Software

Iterflow: Composable Streaming Statistics for JavaScript. G. Singh. Mathsclapes, 2026. [doi:10.5281/zenodo.18610143](https://doi.org/10.5281/zenodo.18610143)

Teaching

30 courses and workshops over a decade (2013-2022), mostly at Srishti Manipal Institute in Bangalore: fractals drawn with code, algorithmic botany, physical computing, and interaction design; the full list is in [teaching](#).

Awards

2024	Griffith Award for Academic Excellence · Griffith University
2024	STEM Professional Gold Achievement · Griffith University
2023	Adobe Fund for Design · Design grant
2021	Adobe Fund for Design · Design grant
2017	Topcoder Open Design Champion · India Regionals
2012	Topcoder Open Studio Finals · 6th, Orlando
2011	Topcoder Open Studio Finals · 11th, Fort Lauderdale

Service

2018	Demonstrations track co-chair, IndiaHCI 2018 · Bangalore, India
2017	Cumulus Conference, organising team · Bangalore, India

Supervision

2020	Discovering Algorithmic Literacy through Explainable AI · D. Dixit, S. Singh
2020	Financial indicators that motivate impact investment · A. Avadhana, N. Patny, S. Mishra
2013	Location and arrival prediction · Shobha R., Pavani A., Kalpana, JNTU Anantapur

Skills

Machine learning: supervised learning, feature engineering, model evaluation and cross-validation, time-series forecasting; scikit-learn, PyTorch, TensorFlow/Keras.

Deep learning: neural networks for computer vision, sequence modelling, and generative modelling.

Statistics & simulation: probability and statistical inference, exploratory data analysis, uncertainty quantification, nonlinear optimisation, techno-economic and longitudinal modelling.

LLMs & agents: LLM APIs and integration, structured extraction from documents, agentic workflows, evaluation.

Data & MLOps: Python (NumPy, Pandas), SQL; Matplotlib; Git, CI/CD; Docker, AWS.

Referees

Referees available on request.