

Gaurav Singh

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Research profile

Applied machine-learning researcher working across visual-mathematical literacy, computer vision, generative modelling, and nonlinear simulation. My background combines computer science, design, and a decade of university teaching. I also maintain Mathscapes as an independent mathematical practice.

Research interests

Applied machine learning, mathematical modelling, computer vision, time-series and generative models, statistical inference, human-computer interaction, and algorithmic 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 <u>Srishti Institute of Art, Design and Technology, Bangalore, India</u>
2008-2012	B.Tech, Computer Science & Engineering JNTU Anantapur, India; First Class with Distinction

Publications

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

Techno-Economic Pathways Modeling and Nonlinear Optimized SEEA-ROI Longitudinal Dynamic Simulation for Decarbonizing Australian Heavy Transportation Systems. G. Singh, E. Chang, Y. Karaca. Fractals, 2026. <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, 2025. <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. TEI 2019, 443-450, 2019. <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. INTERACT 2017, LNCS 10516, 2017. 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. India HCI 2014, 136-141, 2014. <https://doi.org/10.1145/2676702.2676719>

Academic experience

2017-2022	Faculty Member and Researcher, <u>Srishti Manipal Institute</u> , Bangalore, India Over five years, headed the Master of Design in Design Computation, founded the Experimental Maths Lab, and taught programming, algorithms, machine learning, physical computing, and interaction design.
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Teaching and academic leadership

Designed and taught 30 courses and workshops over a decade (2013-2022), mostly at Srishti Manipal Institute in Bangalore, spanning creative coding, algorithmic botany, physical computing, machine learning, interaction design, and human-computer interaction.

Technical methods

Python, scikit-learn, computer vision, time-series and generative modelling, statistical inference, nonlinear optimisation, experimental design, and data visualisation.

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

Academic service and 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
2018	Demonstrations track co-chair, IndiaHCI 2018	Bangalore, India
2017	Cumulus Conference, organising team	Bangalore, India
2013	Location and arrival prediction	Shobha R., Pavani A., Kalpana, JNTU Anantapur

Links

Web version: <https://gaurav-singh.info/cv/academic/>

Website: <https://gaurav-singh.info/>

Google Scholar: <https://scholar.google.com/citations?user=JibwQiQAAAAJ>

ORCID: <https://orcid.org/0000-0003-1651-6602>

Srishti Manipal Institute: <https://srishtimanipalinstitute.in/>

References available on request.