Sanjukta Krishnagopal

Curriculum Vitae

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Education and Training

2022–current **UC Presidential Postdoctoral Fellow****, *Joint position: UC Berkeley - Berkeley AI Research Lab and UCLA, Mathematics* .
Co-advisors: **Jennifer Chayes *and* Christian Borgs**, Dean, College of Computing, Data Science, and Society, UC Berkeley *and* Professor in the Berkeley AI Research Group (BAIR) *and* **Mason Porter**, Professor, Department of Mathematics, UCLA

2020–2022 **Machine Learning Researcher**, *University College London, UK and Google DeepMind*.

2016–2020 **Doctor of Philosophy in Physics**, *University of Maryland, College Park, USA.*, Primary advisor: **Michelle Girvan**, Professor, Department of Physics.
Computation and Mathematics in Biological Networks (COMBINE) Fellowship

2011–2016 **Integrated Bachelor's and Master's (First Class Hons.) in Physics**, *Birla Institute of Technology and Science, Pilani*.
Master's thesis: Technische Universitat Berlin. Thesis Advisor: **Eckehard Schoell**, Professor Emeritus

Publications (chronological)

2023 **Sarah Sotoudeh, Mason Porter*,Sanjukta Krishnagopal***, *Studying patterns of influence in Congress, and its role in bill-passing*.
In preparation

2023 **Malvina Bozhidarova, Jonathn Chang, Jim Liu, Chongyao Ma, Aishah Siddiqka, Andrea Bertozzi, Jeffrey Brantingham, Junyuan Lee, Sanjukta Krishnagopal**, *Hate Speech and Hate Crimes: A Data-driven Study of Evolving Social Media Discourse around Marginalized Groups*.
Accepted IEEE BigData 2023.

2023 **Sanjukta Krishnagopal, Mason Porter**, *A neighborhood bounded-confidence model of opinion dynamics on dynamic networks*.
In preparation

**The UC Presidents office provides $\$85k$/year for 5 years and a waiver of open-search for the position as a part of the fellowship hiring incentive to any UC department that hires a UC Presidential Postdoc. See https://ppfp.ucop.edu/info/fellowship-recipients/hiring-incentive.html PPFP fellowships are evaluated by ladder rank faculty in the fellow's discipline at the UC schools they are selected in.

2023 **Sanjukta Krishnagopal, Ginestra Bianconi**, *Topology and dynamics of higher-order multiplex networks*.
Accepted: Chaos, Solitons, and Fractals. arxiv 2308.14189

2023 **Samantha Dies, Sanjukta Krishnagopal, David Liu, Maximilian Nickel, Tina Eliassi-Rad**, *Unraveling the Effect of Structural Bias in Co-authorship Networks on Faculty Placement*.
Accepted CCS 2023. arxiv.

2023 **Sanjukta Krishnagopal, Luana Ruiz**, *Graph Neural Tangent Kernel: Convergence on large graphs*.
International Conference on Machine Learning (ICML) 2023 202:17827-17841

2023 **Lucille Calmon, Sanjukta Krishnagopal, Ginestra Bianconi**, *Local Dirac Synchronization on Networks*.
Chaos 33(3):033117. doi: 10.1063/5.0132468

2022 **Sanjukta Krishnagopal**, *The collective vs individual nature of mountaineering: a simplicial approach*.
Invited - Appl Netw Sci 7, 62 (2022). https://doi.org/10.1007/s41109-022-00503-w

2022 **Sanjukta Krishnagopal, Jacob Bedrossian**, *Preserving data manifold structure in latent space for exploration through network-geodesics* .
IEEE Transactions on Neural Networks and Learning Systems (IJCNN): arXiv:2010.01037

2022 **Sanjukta Krishnagopal, Keith Lohse, Robynne Braun**, *Stroke recovery phenotyping through network trajectory approaches and graph neural networks*.
Brain Informatics 9, 13 (2022). https://doi.org/10.1186/s40708-022-00160-w

2021 **Sanjukta Krishnagopal, Ginestra Bianconi**, *Spectral Detection of Simplicial Communities via Hodge Laplacians*.
Physical Review E 2021.104.6.064303

2021 **Sanjukta Krishnagopal**, *Success at high peaks: a multiscale approach combining individual and expedition-wide factors* .
Complex Networks and Their Applications X. 10.1007/978-3-030-93409-5

2021 **Eren Sezener, Agnieszka Grabska-Barwinska, Dimitar Kostadinov, Maxime Beau, Sanjukta Krishnagopal, David Budden, Marcus Hutter, Joel Veness, Matthew Botvinick, Claudia Clopath, Michael Hausser, Peter Latham**, *A rapid and efficient learning rule for biological neural circuits* .
Submitted: bioRxiv 2021.03.10.434756

2020 **Sanjukta Krishnagopal**, *Multi-layer Trajectory Clustering: a Network Algorithm for Disease Sub-typing*.
Biomedical Physics & Engineering Express

2020 **Sanjukta Krishnagopal, Edward Ott, Michelle Girvan and Brian Hunt**, *Separation of Chaotic Signals using Machine Learning*.
Chaos: An Interdisciplinary Journal of Nonlinear Science 30.2 (2020): 023123

2019 **Sanjukta Krishnagopal, Rainer Von Coelln, Lisa Shulman and Michelle Girvan**, *Predicting Subtypes in Evolving Diseases through Trajectory Clustering via Bipartite Networks*.
PloS one 15.6: e0233296

2019 **Sanjukta Krishnagopal, Garrett Katz, James Reggia, Michelle Girvan**, *Encoding Dynamical Information in Reservoir Computers using Directional Fibers*.
Conference Proceeding of International Joint Conference on Neural Networks (IJCNN) - 2019, Budapest, Hungary

2018 **Sanjukta Krishnagopal, Yiannis Aloimonis and Michelle Girvan**, *Similarity Learning and Generalization with Limited Data: A Reservoir Computing Approach*.
Complexity, vol. 2018, Article ID 6953836

2018 **Alex Hanson*, Koutilya PNVR*, Sanjukta Krishnagopal, Larry Davis**, *Bidirectional Convolutional LSTM for the Detection of Violent Activity in Videos*.
Proceedings of the European Conference on Computer Vision (ECCV) 2018, Germany

2017 **Sanjukta Krishnagopal, Judith Lehnert, Winnie Poel, Anna Zakharova and Eckehard Schoell**, *Synchronization patterns: from network motifs to hierarchical networks*.
Phil. Trans. R. Soc. A 375.2088 : 20160216

2015 **Sanjukta Krishnagopal, Sakshi Pratap and Bijil Prakash**, *Image Encryption and Steganography Using Chaotic Maps with Double Key Protection*.
Advances in Intelligent Systems and Computing. $336.67 - 78.10.1007/978 - 81 - 322 - 2220 - 0\_6$

Selected Talks - Invited

Sept 2023 **University of Michigan**, *Math+Applied Math*.

July 2023 **EPFL**, *Math*.

April 2023 **Apple Research**.

Mar 2023 **UCSB**, *Computer Science*.

Mar 2023 **UCSD**, *Cognitive Science*.

Mar 2023 **UCLA**, *Statistics*.

Feb 2023 ***Invited: Keynote speaker*** , *AAAI 2023, Washington DC*.

Jan 2023 **UC Berkeley**, *Department of Statistics*.

Oct 2022 **Simon's Institute for the Theory of Computing**, *UC Berkeley*.

Oct 2022 **Conference on Complex systems 2022, Mallorca**, *Artificial intelligence in complex systems satellite*.

March 2022 **University of Toronto**, *Department of Physics and Chemistry*.

March 2022 **ETH Zurich**, *Department of systems design*.

Feb 2022 **Harvard University**, *Department of Biostatatistics*.

Jan 2022 **Max Plank Institute for Math in the Sciences**, *Leipzig*.

Jan 2022 **Cambridge University**, *Department of Psychology*.

Nov 2021 **International Brain Lab Symposium**, *Columbia University*.

March 2020 **Gatsby Computational Neuroscience Unit**, *University College London.*.

January 2020 **University of Melbourne**, *Computer Science Department*.

Nov 2019 **Northeastern University**, *Network Science Institute.*.

Selected Talks - Contributed

Sept 2023 **Conference on Complex Systems**, *Brazil*.

Feb 2022 **NetSciX 2022**, *Portugal*.

July 2021 **Networks 2021**, *Online*.

Feb 2021 **Cosyne 2021**, *Online*. ***(5% acceptance, 1200 attendees at the talk)***.

Dec 2020 **COXIC (joint Oxford/Imperial) seminar**, *Oxford Department of Mathematics*.

July 2019 **International Joint Conference on Neural Networks (IJCNN) - 2019**, *Budapest*.

July 2019 **International Physics of Living Systems (IPoLS) 2019**, *Munich*.

May 2019 **SIAM Dynamical Systems 2019**, *Snowbird*.

June 2018 **NetSci-2018**, *Paris*.

Sep 2018 **European Conference for Computer Vision (ECCV)- 2018**, *Germany*.

March 2016 **Deutsche Physikalische Gesellschaft (DPG) - 2016, Regensburg**, *Germany*.

Awards and Honors

Summer 2023 Recipient of 'Women in Computational Topology' at EPFL Switzerland

Spring 2023 Recipient of the 'Rising Stars in Computational and Data Sciences' at UT Austin

Fall 2022	Visiting fellow at Simons Institute for the Theory of Computing, UC Berkeley
2022	TU Delft Technology Fellowship, Netherlands
2022	UC Presidential Postdoctoral Fellowship - 4% awarded rate
2016-2019	Computation and Mathematics for Biological Networks **(COMBINE)** fellowship.
2018	Thomas Mason Interdisciplinary Research Award.
2018	COMBINE, ICSSA, and Hereaus Travel Fellowships.
2014	Tata Institute for Fundamental Research Summer Fellowship, TIFR Mumbai, India.
2011-2016	Innovation in Science Pursuit for Inspired Research (INSPIRE) Award awarded to the top 1% in India by the Government of India.

Teaching

Fall 2023	Introduction to Networks, Upper div undergrad, UCLA Department of Mathematics
Fall 2023	Machine Learning, Upper div undergrad, UCLA Department of Mathematics
Spring 2023	Introduction to Networks, Upper div undergrad, UCLA Department of Mathematics
Winter 2022	Machine Learning, Upper div undergrad, UCLA Department of Mathematics
Summer 2021	Deep Learning instructor in Reinforcement Learning, Neuromatch Academy, **Awarded 'most flexible instructor'**.
Spring 2017	Teaching Assistant, Mechanics, Waves and Special Relativity, University of Maryand.
Spring 2017	Teaching Assistant, Computer Lab, University of Maryand.
Fall 2014	Teaching Assistant, Probability and Statistics, Birla Institute of Technology and Science.
Summer 2018	Teaching Assistant at Girls Talk Math program for underrepresented middle school girls in math.

Professional Service and Activities

Review Editor	Networks in Dynamical Systems, Frontiers in Network Physiology Editorial Board
Panel Member	Postdoctoral Scholar Advisory Council, UCLA
Referee	ICLR, Scientific Reports - Nature, The European Physical Journal, NPJ Parkinson's Disease, Phys Rev E, Journal of Machine Learning Research.
Workshop Organizer	Latex and science writing, University of Maryland, 2019
Member	SIAM, International Society of Neural Networks, International Brain Lab organization
Outreach secretary	Women in Network Science professional organization, 2020-2022
Athena-Swan DEI panel	University College London
Judge	Poster presentation at Combine symposium.
Fundraiser	Department of sponsorship and marketing, BITS Pilani, India

Grants (submitted)

6 PIs 2023	NSF DMS proposal: 'social interaction dynamics in infectious disease spreading'.
Solo PI 2022	CASI - Career Awards at Scientific Interface (Burroughs Wellcome fund) $500k$ - invited for round 2 but not funded

Mentorship and Research advisees

Winter+Spring 2023	Sarah Sotoudeh, political network science, UCLA undergrad
Spring+Fall 2023	Samantha Dies, Graph neural networks and structural bias in hiring, Northeastern University PhD student
Spring+Summer 2023	Haoran Jia and Jennifer Mei, tensor decomposition methods on convolutional weights, UCLA undergrad
Summer 2023	REU with 6 undergrads from different universities on knowledge graphs for investigating the relationship of gun violence with hate speech

Outreach

REU project mentor	UCLA, 2023
Women in Math	UCLA, 2023
Outreach secretary	Voices of Women in Network Science.
Volunteer	Girls Talk Math summer workshop, University of Maryland, 2018
Graduate Mentor	Women in Physics University of Maryland 2017,2018
Fundraiser	Big Brother Big Sister Baltimore, 2018
Teacher	Teach for India (TFI), 2012

Softwares

Programming Languages	Python, C, Matlab
Tools	Pytorch, Tensorflow, NetworkX, Keras, Git, Autodesk Maya
Writing	Latex