

# Soham Mukherjee

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## EXPERIENCE

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### Cadence Design Systems

Lead Software Engineer

- Scientific computing

San Jose, CA, USA

Feb 2024 - Present

### IBM Research

Research Intern

- Graph generation with geometrical and topological constraints

Yorktown Heights, NY, USA

May 2022 - Aug 2022

### Physna Inc.

Engineering Intern

- Predicting 3D CAD models from 2D images

Columbus, OH, USA

May 2021 - Aug 2021

### Georg-August Universität Göttingen

Summer Intern

- Evaluation of Waspmote Cryptography

Göttingen, Germany

May 2016 - Jul 2016

## EDUCATION

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### Purdue University

PhD in CS, Advisor: Tamal K .Dey

- Thesis: “Unveiling Patterns with Shapes: Harnessing Computational Topology for Advancements in Machine Learning”

West Lafayette, IN, USA

Aug 2020 –Feb 2024

### The Ohio State University

MS in CSE, GPA: 3.94/4.00

- Transferred to Purdue with Prof. Tamal K Dey

Columbus, OH, USA

Aug 2017 –Jul 2020

### Jadavpur University

B.E. in ECE, GPA: 9.51/10.00

- Thesis: “FPGA Implementation of Stochastic Circuit”

Kolkata, India

Aug 2013 –Jul 2017

## TALKS

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- 7th Workshop on Geometry and Machine Learning (SoCG) Jun 15, 2023  
*The University of Texas at Dallas, Dallas, TX*
- 2nd Annual TAG in Machine Learning (ICML) Jul 28, 2023  
*Hawaii Convention Center, Honolulu, HI*
- Topological Data Analysis and Machine Learning (ICIAM) Aug 21, 2023  
*Waseda University, Tokyo, JP*

## TEACHING

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- **Teaching Assistant** at Purdue University Fall 2022, Spring 2023  
*Foundations of CS (CS18200)*
- **Teaching Assistant** at The Ohio State University Fall 2018, Spring 2019  
*Java Basics (CSE 1223)*
- **Teaching Assistant** at The Ohio State University Fall 2019  
*Computer Architecture (CSE 3421)*

## PUBLICATIONS

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- [1] M. Hajij, G. Zamzmi, T. Papamarkou, N. Miolane, A. Guzmán-Sáenz, K. N. Ramamurthy, T. Birdal, T. K. Dey, S. Mukherjee, S. N. Samaga, N. Livesay, R. Walters, P. Rosen, and M. T. Schaub, *Topological Deep Learning: Going Beyond Graph Data*, 2023. arXiv: 2206.00606 [cs.LG].
- [2] C. Xin, S. Mukherjee, S. N. Samaga, and T. K. Dey, “GRIL: A 2-parameter persistence based vectorization for machine learning”, in *Proceedings of the 2nd Annual Workshop on Topology, Algebra, and Geometry in Machine Learning (TAG-ML) at the 40th International Conference on Machine Learning*, PMLR, 2023.
- [3] T. K. Dey, S. Mandal, and S. Mukherjee, “Gene expression data classification using topology and machine learning models”, *BMC Bioinformatics*, vol. 22, no. 10, p. 627, May 2022, ISSN: 1471-2105.
- [4] S. Mukherjee, D. Wethington, T. K. Dey, and J. Das, “Determining clinically relevant features in cytometry data using persistent homology”, *PLOS Computational Biology*, vol. 18, no. 3, pp. 1–22, Mar. 2022.
- [5] S. Zhang, S. Mukherjee, and T. K. Dey, “GEFL: Extended Filtration Learning for Graph Classification”, in *Proceedings of the First Learning on Graphs Conference*, ser. Proceedings of Machine Learning Research, vol. 198, PMLR, Sep. 2022, 16:1–16:26.
- [6] S. Mukherjee, “Denoising with discrete Morse theory”, *The Visual Computer*, Jul. 2021, ISSN: 1432-2315.
- [7] S. Bose, S. Mukherjee, S. Kundu, U. Biswas, and M. K. Naskar, “AVR Microcontroller Based Conference Presentation Timer”, in *Proceedings of the First International Conference on Intelligent Computing and Communication*, Springer Singapore, 2017, pp. 407–412.

## SCHOLARSHIPS AND AWARDS

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- NSF Student Award 2023
- OSU CSE Departmental Fellowship 2017
- University Bronze Medal 2017
- DAAD Scholarship 2016