

SOHAM DASGUPTA



Education

California Institute of Technology (Caltech)

September 2022 – May 2026

B.S. Computer Science & Business Finance; GPA: 4.00/4.00

Pasadena, California

- **Coursework:** Data Structures, Algorithms, Machine Learning and Data Mining, Theory of Computation, Decidability and Tractability, Discrete Mathematics, Linear Algebra, Real Analysis, Complex Analysis, Object Oriented Design

Mallya Aditi International School

September 2020 – March 2022

A Level Diploma; GPA: 4.30/4.00

Bangalore, India

Experience

Stanford University

Summer 2023

Research Fellow

Stanford, CA

- Selected for an undergraduate fellowship at the Magnetic Resonance Systems Research Lab(MRSRL).
- Engineered a robust, large-scale deep learning model to facilitate accelerated MRI reconstruction using Greedy Consistency Learning and provide data-informed suggestions to MRI technicians.

NVIDIA AI Lab

September 2022 – December 2022

Research Intern

Pasadena, CA

- Worked with Prof. Anima Anandkumar and Prof. Kamyar Azizzadenesheli on using neural operators for Functional Ultrasound Imaging.
- Developed a novel algorithm using Partial Differential Equations to learn power Doppler reconstruction functions from sparse sequences of ultrasound data.

IBM Research Lab

May 2021 – February 2022

Software Developer

New Delhi, India

- Worked with EmancipAction - a foundation in Mumbai, India, that homes victims of human trafficking.
- Led a project towards building an AI-assisted framework, powered by IBM Watson, that allows young girls to converse with a mental health chatbot in Hindi, English and Kannada.

National University of Singapore

Dec 2020 – April 2022

Undergraduate Researcher

Remote

- Led the development of an innovative system using graph neural networks, aimed at identifying literature-derived drug and disease pairs in the healthcare domain, under the guidance of Professor Vaibhav Rajan.
- Spearheaded the design and implementation of algorithms for the system, achieving significant breakthroughs in predictive accuracy and reliability.
- Paper accepted to the Journal of Medical Internet Research(JMIR).

Indian Institute of Technology, Kharagpur

March 2020 – April 2021

Research Fellow

Remote

- Engineered and optimized an advanced Deep Neural Network for nuanced emotion detection in collaboration with Professor Niloy Ganguly, significantly enhancing detection precision.
- Co-authored an insightful research paper on the intricate analysis of public emotions during the COVID-19 pandemic, showcased at the prestigious 44th International ACM SIGIR Conference, July 2021.

Publications

- [1] **Dasgupta, Soham**, A. Jayagopal, A. L. Jun Hong, R. Mariappan, and V. Rajan, "Adverse drug event prediction using noisy literature-derived knowledge graphs: Algorithm development and validation," *JMIR Med Inform*, vol. 9, p. e32730, Oct 2021.
- [2] R. Mukherjee, **Dasgupta, Soham**, A. Naik, S. Poddar, and N. Ganguly, "Understanding the role of affect dimensions in detecting emotions from tweets: A multi-task approach," in *Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval*, SIGIR '21, (New York, NY, USA), p. 2303–2307, Association for Computing Machinery, 2021.

- [3] **Soham Dasgupta**, A. Piplai, P. Ranade, and A. Joshi, “Cybersecurity knowledge graph improvement with graph neural networks,” in *2021 IEEE International Conference on Big Data (Big Data), Orlando, FL, USA, December 15-18, 2021* (Y. Chen, H. Ludwig, Y. Tu, U. M. Fayyad, X. Zhu, X. Hu, S. Byna, X. Liu, J. Zhang, S. Pan, V. Papalexakis, J. Wang, A. Cuzzocrea, and C. Ordonez, eds.), pp. 3290–3297, IEEE, 2021.
- [4] **Soham Dasgupta**, A. Piplai, A. Kotal, and A. Joshi, “A Comparative Study of Deep Learning based Named Entity Recognition Algorithms for Cybersecurity,” in *IEEE International Conference on Big Data 2020*, IEEE, December 2020.
- [5] **Soham Dasgupta** and S. Alfeld, “Learning predictive models of entity-threat relationships in cybersecurity from distributed representations of knowledge graphs,” in *Pioneer Research Journal(Nominated)*, Pioneer Academics, August 2021.

Awards and Technical Skills

Languages: Python, Java, C++, HTML/CSS, JavaScript, SQL, LaTeX

Technologies/Frameworks: Flask, Apollo, Django, Websockets, Git, MongoDB, MySQL

Awards: USA Computing Olympiad (USACO) Gold Division; Euclid, Fermat and Hypatia Mathematics Contests Top 5%; Young Entrepreneur of the Year(2021); International Finalist – Genius Olympiad, Rochester Institute of Technology, USA.