

# Abhinav Gupta

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PhD candidate aspiring to launch a career in solving complex real-world problems for industry-leading businesses

## Education

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### Massachusetts Institute of Technology

*PhD in Mechanical Engineering and Computation (GPA: 4.9/5)*

Cambridge, MA  
Jan 2017 – May 2022

- Thesis: Scientific Machine Learning for Ocean Applications | Minor: Technology and Policy

### Indian Institute of Technology Kanpur

*Master's (GPA: 10/10) & Bachelor's (GPA: 9.9/10) in Mechanical Engineering*

Kanpur, India  
Jul 2011 – Jun 2016

- Department Rank - 1 | General Proficiency Medal; Banco Foundation Award; OP Bajaj Memorial Award
- Master's Thesis: Bayesian Inference of Obstacle Systems and Coupled Biogeochemical-Physical Model

## Experience

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### Multidisciplinary Simulation, Estimation, Assimilation Systems (MSEAS) Lab, MIT

*Research Assistant*

*Undergraduate Visiting Student (S.N. Bose Scholar)*

Cambridge, MA  
Jan 2017 – Present  
Summer 2014 & 15

#### Research Profile:

- Advancing algorithms on the intersection of uncertainty quantification, Bayesian modeling and inference, deep learning, and scientific computing for high-dimensional and multidisciplinary problems – Scientific Machine Learning (SciML)
- Developed a delay-differential-equations-based deep learning framework to learn missing parts of dynamical system models; applications include refining coarse models, simplification of complex real-world models, and more
- Developed a partial-differential-equations-based Bayesian machine learning framework for model discovery; has applications in learning ocean ecosystem models, sustainable fisheries management, brain tumor modeling and more
- Published 2 first author and 9 co-author papers in peer-reviewed literature; 1 first author preprint
- 15 Research presentations: Including AGU Meetings (Dec'19; Feb'18); IEEE Oceans (Oct'19); IISc Bangalore (Jul'19); Indian Space Res. Org. (Jul'19); SIAM Meetings (Mar'19; May'21) | *SIAM Student Travel Award* | MIT-CCSE'21 Best Poster

**Programing Skills:** Python, TensorFlow, MATLAB

#### Allied Contributions:

- Developing collaboration protocols to facilitate multi-university-research project across 5 universities
- Mentored 3 undergraduate and 3 high-school interns on research projects
- Helped generate ideas and contributed to the writing of in-total 5 research grants

## Fellowships

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### MathWorks Mechanical Engineering Fellowship

2020 – 21

- Awarded to 3 out of 500 graduate students for exceptional academic performance

### MIT-Tata Center for Technology & Design Fellow

2018 – 20

- Studied interplay of technology, entrepreneurship, and policy; and deepened perspectives on severely resource-constrained communities by interviewing Indian fishermen, non-profits, and government institutions

## Leadership

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**Graduate Student Council Representative** (2019-20) - Represented interests of Mechanical Engineering graduate students at institute-wide graduate student council

**Cultural Chair, Sangam** (2017-18) – Served the Indian community by organizing cultural events; led 8-member team to conduct 3-day orientation for incoming Indian students

Social Chair, Graduate Association of Mechanical Engineers, MIT (2019-20) • Hall Councilor, SP Grad Housing (2018-20)

- Secretary, Aeromodelling Club, IIT Kanpur (2012-13) • Student Guide, Counselling Service, IIT Kanpur (2012-13)

## Hobbies

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Hosting traditional Indian cuisine dinner nights • Exploring history and culture of different countries by collecting coins