

# Naman Gupta

Sophomore Undergraduate

B.Tech - Computer Science and Engineering

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## EDUCATION

Degree	Institute/Board	CPI/Percentage	Year
B.Tech.	Indian Institute of Technology, Kanpur	9.7 / 10.0	2023 (Expected)
Senior Secondary	ISC	98.75%	2019
Secondary	ICSE	98.00%	2017

## EXPERIENCE

- **Solvio.ai** *Jun. 2020 - present*  
AI Research and Development Intern Remote
  - Being among the early members of the team, have developed Autograding Technologies from an initial stage.
  - Reviewed existing research and developed techniques and architectures in the domains of **Computer Vision**, integrating Graph Neural Networks and Natural Language Processing
  - Implemented and trained scalable models in PyTorch, generated synthetic data, deployed models into GPU Kubernetes Clusters, used Inference Optimization techniques in production.
  - **Patent** (Pending) - System and Method to Evaluate Plotted Graph of Mathematical Representation [India 202141011701, Filed March 2021]

## KEY PROJECTS

- **Bosch's Traffic Sign Recognition** [bit.ly/boschtsriitk](https://bit.ly/boschtsriitk) *Mar. 2021*  
*9th Inter IIT TechMeet, IIT Guwahati*
  - Developed a scalable and explainable Computer Vision model for Traffic Sign Recognition using an Incremental Learning approach, along with a UI for training, experimenting and evaluating the models.
  - Used techniques like Integrated Gradients and Anchor Superpixels for interpreting and explaining predictions.
  - Used VAE and StyleGAN2 (ADA) for generating data around missed predictions for improving the model.
  - Won the **Gold Medal** contributing to the **overall 1st position** of IIT Kanpur among 23 IITs.
- **Model Zoo** 🐙 [pclubiitk/model-zoo](https://pclubiitk.com/model-zoo) *May 2020 - Jul. 2020*  
*Summer Project* SnT IITK
  - Studied **Deep Learning**, read research papers and implemented them in PyTorch with a documented write-up summarising the paper, the implementation and usage details.
  - Explored the sub-domains of **Computer Vision** namely Generative Adversarial Networks, Semantic Segmentation, and Super Resolution.
- **Private Computation using Cryptographic Primitives** *May 2020 - Jun. 2020*  
*Programming Club* IITK
  - Studied about basic cryptographic primitives for secure **multi-party computation** – Garbled Circuits, Shamir's Secret Sharing etc.
  - Did a thorough research review of a new cryptographic primitive **Function Secret Sharing** introduced in 2015.
  - Used open source google/googletest and google/benchmark libraries for testing and benchmarking C++ code.
- **Campus Discuss** 🐙 [pclubiitk/Campus-Discuss-Backend](https://pclubiitk.com/Campus-Discuss-Backend) *Apr. 2020 - June 2020*  
*Programming Club* IITK
  - Developed the **Backend** of a discussion forum for students, completely from scratch.
  - Used **Django** for developing the database models, and django-rest framework for creating API endpoints.
  - Implemented Reddit like features, where users can follow streams, publish posts, write comments.
- **Probabilistic Machine Learning** *Jan. 2020 - Apr. 2020*  
*Association of Computing Activities* CSE, IITK
  - Studied **Bayesian Inference**, covering Expectation Maximization algorithms, Variational Inference and Gaussian Processes.
  - Implemented a Variational AutoEncoder combining Deep Learning and Probabilistic ML
- **gradeLess: Automatic Grading** 🐙 [namangup/gradeLess](https://namangup.com/gradeLess) *Sep. 2019 - Nov. 2019*  
*Prof. Piyush Rai* Course Project | ESC101
  - Developed a responsive Web Application using **Angular** and **Express.js** for grading objective type answers from scanned images in bulk
  - Used OpenCV for image processing, and machine learning algorithms for evaluating answers

## SCHOLASTIC ACHIEVEMENTS

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- Among the **top 6** out of 1000 students to be awarded the **Director's Scholarship** 2020
- Received the **Academic Excellence Award** for the year 2019-20 2020
- **All India Rank 123** in **JEE Advanced** , among **250,000** students 2019
- **All India Rank 17** in **JEE Main** , among **1 Million** students 2019
- Received **Kishore Vaigyanik Protsahan Yojna** Fellowship **twice** by the Govt. of India 2019, 2018
- Awarded **National Talent Search Examination** Scholarship by NCERT, Govt. of India 2017
- Awarded **Uttar Pradesh State Talent Search** Scholarship , **Govt. of UP** 2017

## OLYMPIADS

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- Among the **top 35** students invited to attend the selection camp of **IOAA**, International Olympiad on Astronomy and Astrophysics for two consecutive years 2019, 2018
- Selected among the **top 300** students for **INPhO**, Indian National Physics Olympiad 2019
- Selected among the **top 300** students for **INChO**, Indian National Chemistry Olympiad 2019
- Among the **top 167** students selected for **INOI**, Indian National Olympiad in Informatics 2019
- Ranked among the national **top 1%** in **NSEP**(National Standard Examination, Physics) and **NSEC**(National Standard Examination, Chemistry) 2018

## TECHNICAL SKILLS

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- **Programming:** C, C++, Python, Java, Julia
- **Machine Learning:** PyTorch, Tensorflow, Seldon Core
- **Development:** React, Angular, Docker, PostgreSQL
- **Miscellaneous:** Git,  $\LaTeX$ , AWS, GCP

## RELEVANT COURSEWORK

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Introduction to Computing (A*)	Real Analysis (A*)	Linear Algebra and ODE (A)
Discrete Mathematics (A)	Data Structures and Algorithms	Introduction to Psychology (A*)
Probability and Statistics <sup>o</sup>	Introduction to Cryptography <sup>o</sup>	Introduction to Quantum Computing <sup>o</sup>
Software Development <sup>o</sup>	Computer Organization <sup>o</sup>	Mathematical Logic <sup>o</sup>

A\*: Extraordinary A: Excellent o: Ongoing

## POSITIONS OF RESPONSIBILITY

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- **Secretary** Programming Club, IITK *Apr. 2020 - ongoing*  
– Responsible for organizing workshops, lectures and hackathons related to programming for students
- **Junior Executive** Techkriti Open School Championship, Techkriti'20 *Sep. 2019 - Dec. 2019*  
– Prepared and helped to organize a nation-wide examination for over ten thousand school students

## EXTRACURRICULAR

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- **Second Runner Up**, Mathemania a contest of Math problems among 400 teams organized by Stamatics IITK 2020
- Taught mathematics to grade 11 and 12 students during the pandemic for an educational startup 2020
- **Runner Up** Music, Entertainment, Literature and Arts Quiz (MELA) in Antaragni 2019
- Ranked 4th in Blackbox, an esoteric language programming contest as part of Takneek, IIT Kanpur 2019
- **Winner** of Crack the Code, Comfest – the largest student organised school level fest in India with participation from over 50 schools. 2018