

# Pratham Sahu

Third Year Undergraduate

Department of Computer Science and Engineering, IIT Kanpur

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## Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2021 - Present	B.Tech	Indian Institute of Technology Kanpur	9.21/10
2021	Karnataka State Board(XII)	St Jerome's PU College, Bangalore	98.3%
2019	ICSE(X)	Vibgyor High, Bangalore	96.4%

## Scholastic Achievements

- Secured **All India Rank 131** in **JEE Advanced 2021**, conducted by IIT Kharagpur, among 1,50,000 shortlisted candidates
- Secured an **All India Rank of 87** in **JEE Mains 2021**, conducted by **NTA** among 1.1 million candidates
- Secured **AIR 44** in **Indian National Physics Olympiad(INPhO)**, in **2021** and made it to **National Selection Camp(IPhO)**
- Secured **AIR 31** **Indian National Astronomy Olympiad(IAO)**, in **2021** and made it to **National Selection Camp(IOAA)**
- Secured **AIR 19** **Indian National Chemistry Olympiad(INChO)**, in **2021** and made it to **National Selection Camp(ICHO)**
- Recipient of the **Directors Scholarship, IIT Kanpur** in the year 2022 for having an exceptional JEE Advanced rank
- Awarded **KVPY SA 2019** fellowship, securing an **All India Rank 340** conducted by Indian Institute of Science, Bangalore
- Awarded **KVPY SX 2020** fellowship, securing an **All India Rank 148** conducted by Indian Institute of Science, Bangalore
- Received the **Academic Excellence Award** for exceptional academic performance in 2021-22 and 2022-2023 academic session
- Recipient of the **National Talent Search Examination(NTSE) Scholarship** conducted by **NCERT** in 2019

## Internships and Key Projects

- Yonsei Vision and Learning Laboratory, Seoul, South Korea** | *Prof. Jonghyun Choi* (May '23 - Sep '23)  
**Intern Research Assistant**
  - Engaged in research on developing efficient deep neural architectures and effective **continual machine learning** algorithms
  - Performed extensive survey on **sampling, improving time and efficiency with limited accuracy loss** of ML algorithms
  - Assessed on developing efficient **coresets for streaming data** to mitigate forgetting in incremental deep learning setups
  - Worked on **incremental classification** to come up with a novel technique to evolve existing methods in **episodic-replay**
- MSenseAI, Bengaluru** | **Platform Software Engineering Intern** (Jul '22 - Aug '22)
  - Implemented open source IoT Platform **ThingsBoard** to add functionalities to suit specific needs of the product
  - Successfully implemented open source JS library **Annotorious** to implement picture annotating on the platform
- ISC Student Cluster Competition**  
*Ongoing — Prof. Preeti Malakar & Prof. Swarnendu Biswas* (Aug '23 - current)
  - Leading a team of 6 third year students in the world's largest student High Performance Computing Competition.
  - Worked on running applications and analysing their performance on large supercomputing clusters.
  - Became the **First Indian Team**, to get selected to participate in the competition.
- Modelling Performance Variability in HPC Clusters**  
*Ongoing Prof. Preeti Malakar* (Aug '23 - Nov '23)
  - Working on understanding **effect of hardware events and I/O on performance variability** in HPC Clusters.
  - Building a scheduling algorithm to avoid variability in application runs by leveraging this data.
- PuppyLove2.0 | Programming Club** (Jan '23 - Apr '23)
  - Built a cryptographically secure dating application for the campus community which ensured zero-server side knowledge
  - Deployed the application using Kubernetes along with security measures to ward off large scale DOS attacks on the server.
  - Achieved successful registration of 2800 campus residents and around 300 matches being made by our application
- CampusPay | CS253 Course Project** | *Prof. Indranil Saha* (Jan '23 - Apr '23)
  - Developed the code-base for a website to handle finances and dues for ease of campus community and vendors.
  - Utilised **Django** framework to create the website's backend, **ReactJS** for the website's frontend and **SQLite** for database
- CSE-Bubble | CS220 Course Project** | *Prof. Urbi Chatterjee* (Jan '23 - Apr '23)
  - Implemented a **Verilog hardware description** of a simple **32-bit Processor** featuring ISA, ALU and a memory unit
  - Designed the instruction layout for **R-, I- and J-type** instructions and their respective encoding methodologies
  - Successfully built a **single-cycle instruction execution unit**, reinforcing the comprehensive processor design
- Scalable Parallel Feature Extraction and Tracking for Large Time-varying 3D Volume Data**  
**CS677 Course Project** | *Prof. Preeti Malakar & Prof. Soumya Dutta* (Aug '23 - Nov '23)
  - Implemented a **Verilog hardware description** of a simple **32-bit Processor** featuring ISA, ALU and a memory unit
  - Designed the instruction layout for **R-, I- and J-type** instructions and their respective encoding methodologies
  - Successfully built a **single-cycle instruction execution unit**, reinforcing the comprehensive processor design

Relevant Courses

\*- *Online*

Data Structures and Algorithms	Discrete Mathematics	Computer Organisation
Probability	Introduction to Machine Learning	Software Development and Operations
Mathematical Logic	Fundamentals of Computing	Machine Learning Specialization*☞
Operating Systems	Large data analysis and visualisation(A*)	Theory of Computation
CUDA programming	Analysis and Design of Algorithms	Backend fundamentals*

Miscellaneous

- Took the course on GPU programming and accelerators for C++ under the National Supercomputing Mission(*invite-only*).
- Mentored projects on **Computer Vision, Machine Learning and Blockchain** in my junior year at IITK

Technical Skills

- **Programming Languages:** C, C++, Python, Java, Javascript, Solidity, RUST, CUDA, DPC++
- **Software and Libraries:** Numpy, Pandas, MatplotLib, MERN stack, Git, NextJS, PyTorch, Django, Kubernetes
- **Exposure:** Bash, VerilogHDL, MIPS, XHR, AJAX, MQTT, Linux Kernel Programming, GCP

Positions of Responsibility

- **Coordinator, Programming Club IITK** (Mar '23 onwards)
- **Secretary, Programming Club IITK** (Sep '22 - Mar '23)
  - Managed one of the most active clubs of IIT Kanpur which delves into the multiple domains of programming
  - Worked on open source projects aimed at targetting the campus community such as **StudentSearch**☞ and **PuppyLove**☞
  - Facilitated coding workshops, training sessions to promote programming culture and events like ICPC and GSoC
- **Student Guide, Counselling Service IIT Kanpur** (Sep '22 - May '23)
  - Mentored a group of 6 freshmen academically and emotionally to get acclimatized to the new college environment