Aayush **Kumar**

SENIOR UNDERGRADUATE - INDIAN INSTITUTE OF TECHNOLOGY KANPUR

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Education

Exp. 2024	**Bachelor of Technology**, Computer Science and Engineering, IIT Kanpur, India	*CPI: 9.83/10*
Feb-Jun 2023	**Semester Exchange**, Computer Science, EPFL, Lausanne, Switzerland	*Grade: 5.4/6*
May 2020	**Grade XII (CBSE)**, National Public School HSR, Bangalore	*Percentage: 97.8%*
May 2018	**Grade X (CBSE)**, National Public School HSR, Bangalore	*Percentage: 95.4%*

Research Interests

I am primarily interested in **Human-Computer Interaction**. Specifically, I am interested in exploring **Human-AI interaction** and **inclusivity** along with the **learning sciences**.

Publications: Papers

End-user programming is WEIRD: how, why and what to do about it — *Full-Text Link*

IEEE SYMPOSIUM ON VISUAL LANGUAGES AND HUMAN-CENTRIC COMPUTING (VL/HCC) — *2023*

- **Presented the paper** at VL/HCC 2023.
- **Wrote code for** and **helped to write** the paper **highlighting the disproportionately high number of HCI publications from 'WEIRD'** (Western, Educated, Industrialised, Rich, Democratic) **regions**

Evaluating Trust in Generative AI among students

ACM TECHNICAL SYMPOSIUM ON COMPUTER SCIENCE EDUCATION (SIGCSE), ACCEPTED — *2024*

- Part of a collaboration of a **team across CMU, UH, and IITK** on understanding CS students' trust in Generative AI across the US and India.

Publications: Posters

End-user programming is WEIRD — *Full-Text Link*

IEEE SYMPOSIUM ON VISUAL LANGUAGES AND HUMAN-CENTRIC COMPUTING (VL/HCC) — *2023*

- Presented this poster at VL/HCC 2023.

Towards Characterizing Trust in Generative Artificial Intelligence among Students — *Full-Text Link*

ACM CONFERENCE ON INTERNATIONAL COMPUTING EDUCATION RESEARCH (ICER) — *2023*

- Part of the research with the multi-institutional team.

Skills

Research Skills	Experiment Design, Survey Design, Qualitative Interviewing, Academic Writing, Data Analysis and Visualisation, Literature Survey, Machine Learning
Programming Languages	C/C++, Python, R, HTML, CSS, JavaScript, Ruby, TensorFlow, WebGL (GLSL), Java, Visual Basic, Verilog
Utilities	Jupyter/Google Colab, MySQL, Qualtrics, Git, Bash, LaTeX
Design/Visualisation Tools	Figma, Canva, Bootstrap, iMovie

Teaching Experience

Tutor, ESC111: Fundamentals of Computing — *IIT Kanpur*

CSE DEPARTMENT, IITK — *July. 2023 - Nov. 2023*

- Designed CS1-level **coding questions** as well as **theoretical quiz questions** on C syntax and logic.
- Conducted **regular tutorials every week** for freshmen and taught basic C syntax, methods and data structures.

Teaching Volunteer — *IIT Kanpur*

PRAYAS IITK — *Aug. 2022 - Jan. 2023*

- Volunteered to **teach mathematics to underprivileged children of grade 12** at our campus student-run organisation.
- Created **assignments** and developed **course management skills** through teaching students.

Key Projects

Intersectionality in Oversampling on Social Attributes

ML4ED LAB EPFL — *Feb - June, 2023*

- Built on a recently published paper to **analyse the impact of intersectionality on behavioural predictive models in education**.
- Evaluated **effects of oversampling on intersectional social groups** through **data analysis and visualisations**.

SoulFull: A Companion App for Binge Eating
Prototype (Figma)
Course Project (team size = 3)
Feb - June, 2023
- Designed an app that **supports people struggling with binge eating**, understanding user pain points to develop **unique design insights**.
- Conducted **qualitative user interviews** to create a high-fidelity **interactive prototype on Figma** and a demonstrative **video prototype**.

Parallel Optimised View Synthesis
PrateekSogra/CS677
Course Project (team size = 4)
Feb - June, 2023
- Researched and applied **zero-order methods** to **locally maximise entropy** of 2D images (visualisations) of a 3D dataset
- **Developed ideas, wrote code, and created a presentation** for methods to efficiently **parallelise the visualisations**

CoOpt: Comparing Optimisers
Aeyush10/CoOptPaper
Course Project (team size = 3)
Feb - June, 2023
- Co-wrote a research paper that **compared different ML optimisers on image classification and regression tasks.**
- Worked on **code for the Newton, Secant and damped Secant optimisers**, and compared performance of **Adam, SGD, Lion, and Sophia**.

Scholastic Achievements

Year	Achievement	Location
2021	**Dr. Prateek Mishra Memorial Scholarship Awardee**, for achieving 10.0 GPA in freshman year, IIT Kanpur	*India*
2020, 2021	**Academic Excellence Awards**, for achieving a GPA in the top 10 percentile, IIT Kanpur	*India*
2020	**All India Rank 976**, Joint Entrance Examination - Advanced - among 150,000 candidates	*India*
2020	**All India Rank 4128**, Joint Entrance Examination - Mains - among 870,000 candidates	*India*

Relevant Coursework

Design and Visualisation	Interaction Design*, Software Development and Operations*, Introduction to Computer Graphics*, Large Data Analysis and Visualisation*
Machine Learning	Introduction to Machine Learning*, Optimisation for Machine Learning*
Cognition	Introduction to Cognitive Science*, Social Cognition*
Computer Engineering	Fundamentals of Computing*, Computer Organization*, Operating Systems, Introduction to Electronics*, Introduction to Database Systems*
Mathematics and Logic	Data Structures and Algorithms*, Advanced Algorithms, Probability for Computer Science*, Linear Algebra and Partial Differential Equations*, Theory of Computation*
	Received A grade (or US equivalent of A grade) in courses marked with *

Other Projects

A Whole New World: Infinite Procedurally Generated Terrain
Aeyush10/CS341_Graphics_Project
Course Project (team size = 3)
Feb - June, 2023
- Designed and created a **randomly generated visualisation of mountainous terrain that extends infinitely** utilising WebGL.
- Implemented **dynamic reflections and aesthetic camera movement patterns** in Javsascript to enhance user experience.

DigiCampus
Aeyush10/CS253
Course Project (team size = 10)
Jan-Apr, 2022
- Worked with a team on **creation of a web application to simplify entry-exit logistics** for students and faculty across college campus.
- **Designed intuitive and easy-to-navigate webpages** for the final website using **Bootstrap and Jacscript**.

SUTRA Jupyter Implementation
Aeyush10/SUTRA
Summer Project
May - Sep, 2022
- Worked on designing a web application for the **SUTRA COVID predictive model** with **Dr. Manindra Agarwal**.
- Helped in translating the SUTRA Mathematical Model from **Excel to Jupyter code with user inputs and parameters**.

Bandersnatch: A C++ CUI Game
Aeyush10/Bandersnatch
Self Project
Jan-May, 2021
- An interactive game made in **C++** with a **narrative that branches out** based on user performance in **implemented mini-games**.
- Built unique mechanisms for **graphics from CUI basics** for games such as mazes and slot machines.

Leadership Experience

Editor, Video
IIT Kanpur
Vox Populi IITK (Student Journalism Body)
Jun. 2022 - May 2023
- Developed and implemented skills in **writing, interviewing and video production** and taught these skills to junior members.
- **Worked with a team** to raise awareness on the important issues faced by our college campus, and **created structured and attractive publications** towards this cause.

Secretary, Writing
IIT Kanpur
English Literary Society IITK
Jun. 2021 - May 2022
- **Led and contributed to several informational pieces** on relevant news, while also writing **original fictional pieces**.
- Oversaw events for freshmen by **creating and managing interactive events** as well as **supervising execution** of these events