

Sarthak Agarwal

Third Year Undergraduate
Department of Biological Science and Bioengineering

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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2021 - Present	B.Tech	Indian Institute of Technology Kanpur	7.0/10
2021	CBSE(XII)	St. Joseph Convent School, Jaipur	90.2%
2019	CBSE(X)	St. Joseph Convent School, Jaipur	91.6%

Scholastic Achievements

- Secured **All India Rank 6314** in **Joint Entrance Examination Advanced 2021** among the 1.5 lakh shortlisted candidates
- Secured **All India Rank 7542** in **Joint Entrance Examination Mains 2021** among the 11.47 lakh candidates

Mentorship Experience

- Game Anti Cheat Client** | *Science and Technology Council, IIT Kanpur* (May'23 - Jul'23)
- Mentored a team **5+ members** to develop a **anti-cheat system** within the **Unity engine** to maintain fair game experience
 - Engineered algorithms and logic for **real-time detection and flagging** of suspicious behavior, guaranteeing equitable gameplay
 - Familiarized with advanced security measures, **encryption**, and **data validation** to prevent unauthorized modifications

Key Projects

- Cryptography: Eavesdropping 101** | *Stamatics, IIT Kanpur* (May'23 - Jul'23)
- Demonstrated proficiency in **cryptography principles**, algorithms along with an exploration of **hashing algorithms**
 - Gained proficiency in cryptographic algorithms, such as **DES, AES, and RSA**, for secure data encryption and decryption
 - Incorporated robust **hash functions, including MD5 and SHA**, to safeguard data integrity and produce digital signatures
 - Implemented **Vigenère, substitution, and permutation cipher algorithms** to encrypt and decrypt data trasmission

- Eco Hex** 🎮 | *Takneek'22 | Self project* (Apr'23)
- Developed a game based on strategy and tactics in Unity engine and implemented **AI-based opponent** for **Android** devices
 - Designed and implemented the **Minimax algorithm** in **C# language** that governs the computer opponent in the game
 - Utilized **board evaluation heuristics** to assign scores to different game states and determine the optimal moves for the AI
 - Presented the final build of the game and secured **1st position** in the game development problem statement for pool Kshatriya

- Ray Tracing Renderer** 🎮 | Mentor: Prof. Soumya Dutta | Course Project (Oct'23 - Nov'23)
- Engineered a 3D renderer using JavaScript and **WebGL API**, leveraging graphics and rendering techniques for visual effects
 - Developed components like **Ray tracing techniques**, multi-pass framebuffer, and shaders, optimizing performance and visuals
 - Implemented advance techniques for computing lighting effects, **shadows and reflections** through objects and surfaces

- Ignition Evade** | *Indian Game Development Conference | Inter IIT Tech Meet 12.0* (Dec'23)
- Designed an narrative game using Unity, integrating cutting-edge **Generative AI** technology for an enhanced gaming experience
 - Remodeled AI for an optimized workflow, elevating visuals and **reducing processing time by 60%**, thus improving efficiency
 - Received Bronze medal and **special invite from IGDC**, acknowledging excellence and inviting it for a national-level presentation

Technical Skills

- Programming Languages:** C, C++, C#, Python, JavaScript
- Frameworks/Utilities:** Git, WebGL, OpenGL
- Tools:** Unity, Unreal Engine 5, L^AT_EX

Positions of Responsibility

- Coordinator** | *Game Development Club, IIT Kanpur* (Apr'23 - Present)

Leadership	<ul style="list-style-type: none">Spearheaded a 3-tier team of 30+ members to organize events, including workshops, sessions, for communityCoordinated with Core Team to conduct Summer Projects for 100+ students such as Anti Cheat and AICollaborated with artists, designers, and sound engineers to create cohesive and immersive gaming experiences
Initiative	<ul style="list-style-type: none">Conducted interactive session on game development, attended by 100+ audience from campus communityConducted Winter Camp for students on topics like Computer Graphics and Procedural ProgrammingOrganised 2 week workshop for Fresher Batch, guiding them through fundamentals of game development
Impact	<ul style="list-style-type: none">Received funding of INR 1 lakh from Vizuara on industrial collaboration focused on developing gamesBoosted active contributors by 1.6 times, cultivating a dynamic and collaborative atmosphere within the club

- Secretary** | *Esports Society, IIT Kanpur* (Jun'22 - Apr'23)
- Worked with a team of **20+ members** to conduct events and tournaments promoting esports as a sport in campus and society
 - Successfully managed **PAN-IIT esports tournament, ValoRush'22**, with **50+ teams** participated from **20+ IITs**
 - Collaborated with **Chemin Esports** and **FEAI** to co-organize the **Strikers Showdown** tournament with **100+** participants

Relevant Courses

Introduction to Machine Learning*	Introduction to Computer Graphics	Applied Probability and Statistics
Fundamentals of Computing	Design for Augmented and Virtual Reality*	Real Analysis and Calculus
Principles of Biotechnology	Neurobiology	Molecular Cell Biology