



## EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2023	B.TECH	IIT Kharagpur	9.44 / 10
2019	AISSCE	DAV Public School, Bistupur, Jamshedpur	96.2%
2017	AISSE	DAV Public School, Bistupur, Jamshedpur	10 / 10

## AWARDS AND ACHIEVEMENTS

- **Department Rank - 2** out of 110 students in the Department of Chemical Engineering (Rank - 1 among B.Tech students)
- **Runners' Up** in 'Robosoccer 2019': Designed a relay circuit network for bot navigation and to ensure smooth control during the match
- **All India Rank - 509** in KVPY (SA - 2017) | **All India Rank - 3481** in JEE (Advanced) - 2019 | **City Rank - 2** in AISSCE - 2019 (science stream)

## PROJECTS

- PyVoice Assistant Bot | Python, Speech Recognition, Text to Speech, PyAutoGui, NumPy, PyWhatKit** Jun' 21 - Jul' 21
- Implemented a voice command system application using Python **text to speech** library to parse user's voice input and perform tasks
  - Integrated **Gsearch, Wikipedia, OpenNews, OpenWeather** APIs, and PyWhatKit to enable location, product, fact-check, entity search, location-based real-time weather updates, news headlines, and Youtube autoplay respectively, with user-based customisation
  - Applied speech to message feed system to **automate** user **reply** on messaging applications using **PyWhatKit, NumPy, PyAutoGUI**
  - Integrated online meeting screen capture with webcam affixed and voice record feature to **minimize setup time** for background processes in a meet and cut down process delay thus, reducing user-system interaction and providing a **hands-free** experience
- Erosion Simulation for Procedural Generation | C#, Unity, Fluid Simulation, GPU parallelization** Apr' 21 - Jun' 21
- Analysed a research paper on **real-time fluid simulation** to replicate the motion of water on Earth's surface and resulting erosion rates
  - Employed **GPU based parallelization** using **Compute Shaders**, of the algorithm for processing the simulation at interactive frame rates
  - Implemented **mesh and texture generation algorithms** in **C#** and simulation results successfully reproduced natural relief features
- Essential Biodiesel Properties for use in Railway Diesel Locomotives | Course Project | Prof. Sonali Sengupta** Mar' 21 - Apr' 21
- Analysed the benefits of **Biodiesel** fuel over petroleum derived fuel owing to its carbon neutrality, renewability, and fuel efficiency
  - Focused on the substitution of biodiesel as a **locomotive** fuel, engine operation and fuel maintenance costs, and economic feasibility
  - Tabulated the comparison based on engine changes required, **cetane number**, long-term engine operation costs, and **GHG** emission data
- Working of a Diesel Power Plant | Course Project | Prof. Sonali Sengupta** Apr' 21 - May' 21
- Studied the functioning of a diesel power station, the operation of a diesel engine, and its feasibility over conventional power sources
  - Analysed the theoretical process of a **Carnot** engine, measured the performance of a diesel powered engine, and explored the air-intake system, fuel injection components, fuel-supply system, and the commercial viability of the power plant
- Impact of Public Expenditure on Economic Growth in Indian Context | Course Project | Prof. Bimal Kumar Sahoo** Feb' 21 - Mar' 21
- Studied the predominant objectives of public **expenditure** policy for the promotion of sustained and equitable economic **growth**
  - Analysed the reports on public expenditure by **Sardoni C.**, and studied the state of economic activity and measures to boost growth
  - Using a simple analytical framework, established a functional relation between public spending and behaviour of the ratio of **debt** to **GDP**

## COURSEWORK INFORMATION

**Mathematics and Computing:** Programming and Data Structures (Theory + Lab) | Probability | Data Structure and Algorithms\* | Numerical Solution of Partial Differential Equations | Transform Calculus | Python Specialisation\* | Mathematics (I + II)

**Core:** Chemical Process Calculations | Chemical Engineering Thermodynamics | Fluid Mechanics | Heat Transfer [\*MOOCs]

## POSITIONS OF RESPONSIBILITY

- Head of Management | Computer Graphics Lab** Sep' 19 - Present
- Managed a team of over **40** members in the society and presided over the induction process of junior developers in the team
  - Supervised the functioning of the society regarding the projects and initiatives it undertakes and mentoring the current team participating in the **Game Development World Championship 2021** (largest game developer-focused competition in the world)
  - Performed a key role in the **formalization** of the society under students' gymkhana and have undertaken an **outsourcing project** with a startup aiming to impart fitness awareness in the youth based on user **gesture**-controlled web application
  - Collaborated with the students' gymkhana to conduct a week-long **Open IIT** game and graphics development **workshop** with the team
- Member, Quiz Team | Lal Bahadur Shastri Hall of Residence** Aug' 19 - Oct' 20
- Won **Bronze** medal at the Kshitij 2020 Biz-Tech quiz, and participated in Spring Fest 2020 Biz-Tech quiz, and Open IIT 2019 freshers' quiz
  - Regular participant in the sessions organised by the Quiz Club, and was imparted the responsibility to **conduct** weekly hall quiz sessions

## SKILLS AND EXPERTISE

**Programming Languages:** Proficient in C | C++ Familiar with: Python | C# (for Unity)

**Development Tools and Libraries:** OpenCV | NumPy | PyAutoGUI | Pandas | Unity | HTML | CSS

**Utilities:** MySQL | LTSpice | Latex | Solidworks | Linux | Git | MS Office | Adobe Photoshop | Adobe Illustrator | DaVinci Resolve

## EXTRA CURRICULAR ACTIVITIES

- Volunteered for the **National Service Scheme (NSS)** and helped organize free medical camps, spread awareness regarding substance abuse, CoVid-19 precautions, conducted a cloth donation drive, and participated in the plantation drive
- Member of the Design Team **Kshitij 2020**, working with the team designed the event schedule posters using Adobe Illustrator and Adobe Photoshop, props for the technical events, and helped set up the main design theme for the event with a footfall of over **20,000**
- Founded the science club of the school, '**Antagayah**' and took up initiatives to set up **Atal Tinkering Lab**, organized summer workshops, hackathons and conducted events at the inter-school level