KARTIK SHARMA

ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	B.Tech in Computer Science & Engineering	Indian Institute of Technology, Delhi	9.627
2020	Class XII, CBSE	Bhavan Vidyalaya Panchkula	98.8%
2018	Class X, CBSE	Spring Dale Senior School	95.4%

SCHOLASTIC ACHIEVEMENTS

- **Foreign Exchange:** Ranked **3rd** among 1200 students to **represent IITD** in the prestigious foreign exchange program *'22*
- **IITD Academic Merit:** Awarded certificate for exemplary academic performance and being in **top 7%** of the department *'21*
- **JEE:** Secured distinction by achieving **AIR 87** in JEE Advanced and **AIR 42** in JEE Mains among 1.2 million students *'20*
- **JEE Mains:** Ranked **1st** in JEE Mains in the Chandigarh **Tricity** region; scored **100** percentile in **maths** and **physics** '20
- **Science Olympiads:** Awarded merit certificate for being in **top 1%** of the nation in **NSEP**(physics) and **NSEC**(chemistry) *'20*
- **IOAA OCS camp:** Attended OCSC at **HBCSE TIFR**, Mumbai for team selection to **represent India** at **IOAA** in **Hungary** *'19*
- **Astronomy Olympiad:** Among the **top 30** students **twice** in the Indian National Astronomy Olympiad held by **HBCSE** *'19 '20*
- **KVPY Scholar:** Conferred **Kishore Vaigyanik Protsahan Yojana Fellowship** with **AIR 226** in SA stream by IISc Bangalore *'19*
- **CBSE Merit:** For being in the national **top 0.1%** in both class X and XII; ranked **1st** in board exams in **Tricity** region *'18 '20*
- **NTSE Scholar:** Awarded **National Talent Search Fellowship** for being in **top 800** among 1 million students by NCERT *'18*

INTERNSHIPS

- **Shunya IoT AI Research Pvt. Ltd** | IoTIoT.in: *Gemstone Anomaly Detection and Grading* *June '22 - July '22*
  - Applied **neural networks** and classification algorithms to **grade gemstones** based on their clarity, color, and detected defects
  - Researched and analyzed **PCA** dimensional reduction and normalization techniques on **non-linear multivariate datasets**
  - Represented the **HSV** color model in **YCbCr** to avoid **hue circularity** and achieved max **91%** accuracy among 11 labels

PROJECTS

- **2-Player Maze Game (Reliving):** *Guide: Prof. Rijurekha Sen* *March '22 - May '22*
  - Designed a 2 player maze game on IITD's map using **SDL2** in C++; used **TCP sockets** to play it over a network in real-time
  - Implemented **random** enemy projectiles, powerups, attacks, defenses, and competitive **dynamic tasks** using **OOP**
- **Electrocardiogram Signal Analysis:** *Guide: Prof. Abhishek Dixit* *February '22 - March '22*
  - **Signal analysis** of quasi-periodic voltage signal of heart to determine heart rate and detect abnormalities using **MATLAB**
- **Multicycle ARM Processor Design:** *Guide: Prof. Anshul Kumar* *January '22 - March '22*
  - Simulated and synthesized a multicycle processor in **VHDL** for the **ARM** instruction set with master **FSM** for each instruction
  - Implemented cycle-based controller for slave components like ALU, memory, decoder, and AHB-Lite for data communication
- **Automatic Speech Recognition (ASR)** *Guide: Prof. Rijurekha Sen* *January '22 - February '22*
  - Implemented a **DNN inference** using **conv1D** and **relu** activation for classifying across 12 different audio keyword
  - Built a **dynamic library** API which returns the top 3 keywords with the highest **softmax** probability from 1-second audio clip
- **CryptoPay System (DScoin)** *Guide: Prof Venkata K. Koppula* *October '21 - December '21*
  - Built an **autonomous** digital payment system based on **blockchain** that ensures the authenticity of each transaction
  - Assigned roles for buyer, seller and created a moderator for **mining** the transaction blocks and **updating blockchain**
  - Used **Merkle Trees**, **CRFs**, **digital signatures** to check for counterfeit coins, double spending and malicious moderators
- **Academic BlockChain Document (ABCD):** *Guide: Prof Venkata K. Koppula* *September '21 - October '21*
  - Used **blockchain** technology and **cryptographic hash**(CRF) to record data certificates in a secure linked chain manner
  - Enables transparent, tamper proof and paperless usage of certificates; Used **hash trees** to store evidence of certificate
- **Restro Locater:** *Guide: Prof. Amitabha Bagchi* *August '21 - September '21*
  - Deployed **KD Tree** data structure with features like restaurant coordinates, price, rating etc. as k-dimensional node points
  - **Optimized time complexity** to locate restaurants based on the input features by implementing **multidimensional search**

TECHNICAL SKILLS

- **Programming Languages:** C++, C, Python, Java, SML, Prolog, R, HTML, CSS, Markdown, VHDL, ML-Lex, ML-Yacc
- **Frameworks and Packages:** MATLAB, Git, LATEX, NumPy, SciPy, Matplotlib, Pandas, Tensorflow, Keras, OpenCV

EXTRA CURRICULAR ACTIVITIES

- **Executive** at Physics and Astronomy Club, IITD; working with **satellite design** and **observational astronomy** division
- **Academic Mentor:** Mentored undergraduate freshers for the course **introduction to computer science** (COL100)
- **Chess: 2nd runner up** at state chess tournament; **represented Punjab** at **National** level chess tournament at Nagpur
- **Table Tennis Captain:** Led Karakoram hostel table tennis team at General Championship (**GC**) and **SportTech**
- **Vidya India:** Volunteered to teach under-privileged students at **Vidya NGO** and **Govt. schools** in Punjab as a part of **NSS**

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