



# Snehadeep Gayen | CS21B078

B. Tech Computer Science and Engineering

Minor in Mathematics

Indian Institute of Technology, Madras



## EDUCATION

<b>B. Tech CSE</b>   CGPA 9.94/10 <i>Indian Institute of Technology Madras</i>	📅 Jul '21 - Present 📍 Chennai, TN
<b>HSC Class 12<sup>th</sup></b>   98.17% <i>Pace Junior Science College</i>	📅 Apr '20 - Apr '21 📍 Mumbai, MH
<b>ICSE Class 10<sup>th</sup></b>   98.80% <i>Lilavatibai Podar High School</i>	📅 Apr '18 - Apr '19 📍 Mumbai, MH

## EXPERIENCE

**Software Internship at Optiver Amsterdam** 📅 May'24 - Jul'24

- Worked in the Quant Research & Data Team of Optiver Delta1
- Added functionality to create TCP/IP filters from session configuration files for packet parsers and optimised them for performance.
- Added functionality to convert timestamps across timezones, accounting for Daylight Saving Time changes
- Analysed SQL queries and designed a new OneTick database with Schema to replace a saturated PostGres time series database.

**Team Avishkar Hyperloop, CFI** 📅 Oct '22 - Present

- Part of Embedded Software Team of the **Main Control Unit** and **Navigation Unit** of our Hyperloop Pod.
- Used **RTOS, threading** and communication protocols like MQTT, CAN, etc. to collect and store data from over 20 sensors at **low latency, handling errors** appropriately.
- Participated in the prestigious **European Hyperloop Week - Scotland 2023**, among over 25 teams globally to represent the country.

**WiFi Sensing for IoT using Machine Learning** 📅 Jan'24 - May'24

*Undergraduate Research Project under Prof. Ayon Chakraborty*

- Created an end-to-end IoT pipeline for real-time Human Activity Recognition using WiFi CSI (Channel State Information) Sensing and Machine Learning on the Server
- Analysed the effect of compression on CSI data and its tradeoffs on the Network Bandwidth, Energy Consumption & Sensing Accuracy.
- Submitted the work in AIoT workshop organised in Athens, Greece.

**Custom Protocol Headers for Network Support** 📅 Ongoing

*Undergraduate Research Project under Prof. Krishna Moorthy Sivalingam*

- Ideation of a custom protocol header to improve network telemetry or security using P4 switch data plane programming language.
- Deployment & Testing on Intel Tofino switches

**Tutor & Contributor, NPTEL** 📅 March '23 - Present

- Created **YouTube tutorials** for previous years' GATE CS questions
- These tutorials aim to support applicants who may have limited access to resources

## SOFTWARE SKILLS

- **Languages:** C++, C, HDL (Verilog), OCaml, Python, Java, Prolog, SQL, x86, MIPS and 8085 ASM, HTML & CSS, R
- **Tools:** TI CCS, Git, ~~LaTeX~~ AutoCAD, GDB
- **Libraries:** TI RTOS, NumPy, PyLops, Matplotlib

## EXTRACURRICULAR ACTIVITIES

- **Sports:** Awarded 13 medals in various Track & Field events and Best Athlete U14 in High School, Taekwondo Red Dan II Belt, NSO Athlete at IITM
- Mentored freshmen, personally and academically, under **Saathi, IIT Madras**

## SCHOLASTIC ACHIEVEMENTS

- Awarded Sri V Ramachandran Prize for **Highest CGPA** in Semesters 3 & 4 of B.Tech and Dual Degree in Computer Science
- Secured **AIR 5** in JEE Mains '19 out of 1 million students
- Secured **AIR 161** in JEE Advanced '19
- Secured **AIR 10** in Indian Statistical Institute Exam
- Secured **AIR 21** in INChO and attended Orientation Camp for International Chemistry Olympiad
- Awarded KVPY Fellowship '21 with **AIR 338**
- Winner of Mimamsa '22 at IISER Pune | 4<sup>th</sup> place in Chemenigma '22 at IISC Bangalore | Won Silver Medal in Homi Bhabha Science Competition (conducted in Maharashtra)

## PROJECTS

**Java Compiler Design** 📄 *Java, C*

*CS3300 Course Project - Prof. Krishna Nandivada* 📅 Jan-May '23

- Designed a MIPS compiler for a subset of Java with Lexical Analyser, Parsing, Type Checking, IR Generation, Register Allocation, Stack Handling, and MIPS code generation

**OS Scheduler and Memory Management Unit Design** 📄 *Java*

*CS3500 Course Project - Prof. Prashant LA* 📅 Jan-May '23

- Implemented a Memory Management Unit with LRU Page replacement Policy
- Implemented a Multi-Level Feedback Queue Scheduler for processes

**LAN Chat Server & Music Streaming** 📄 *C*

*CS3205 Course Project - Prof. Ayon Chakraborty* 📅 Jan-May '23

- Implemented a LAN Chat Server from scratch using C Socket API
- Implemented a Music Streaming Server and Client using C Socket API and Unix ALSA Library

**Prolog & Functional Programming Interpreter** 📄 *OCaml, Prolog*

*CS3100 Course Project - Prof. Kartik Nagar* 📅 Jan-May '23

- Implemented a Prolog interpreter in OCaml
- Implemented a basic functional programming language using Logic Programming in Prolog

**CPU Design** 📄📄 *Verilog*

*CS2610 Course Project - Prof. C. Chandra Sekhar* 📅 Jan-May '23

*CS2310 Course Project - Prof. Ayon Chakraborty* 📅 Jul-Nov '22

- Implemented a CPU with **Register file** and **ALU** with instructions to perform Arithmetic and Logical operations on both 8-bit integers and 12-bit floating-point numbers
- Built a combinational 8-bit CPU with structural gate-level Verilog

**Closeness Centrality Algorithm** 📄 *C++*

*Project under Prof. Manikandan Narayanan* 📅 May-Jun '23

- Implemented the CENDY algorithm, an on-line algorithm for updating Average Path Length and Closeness Centrality in a Dynamic Graph, based on this paper. 📄

## COURSES & LABS

**Computer Science**

- Hi
- Hi

**Mathematics**

- Hi
- Hi

**Economics**

- Hi
- Hi