

AARUSHI SEHGAL

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Education

Bachelor of Technology, Computer Science and Engineering

National Institute of Technology, Hamirpur, INDIA

Relevant Courses: Artificial Neural Networks and Fuzzy Logic, DBMS, C, C++,
Operating system, Computer Architecture, Information Security, System Software

GPA: **9.35**

3rd in a class of 95 students
Aug 2016- May 2020

Experience

Summer Research Intern, BMR Lab, University of British Columbia (UBC), CANADA

May 2019 - August 2019

Worked on Fecal Micro-biome Transplant (FMT) data analysis and on Functional Annotation of Cannabis Genome for long term genetic modification of Cannabis plant using data extraction, pre-processing, filtering, data analysis, bioinformatics algorithms and huge amount of statistical analysis, graphical analysis and machine learning using Random Forest and K means clustering.

Summer Research Intern, Indian Institute of Sciences (IISc), Bangalore, INDIA

May 2018 - July 2018

Worked on exploring and decoding the **KPC genes** responsible for Multi Drug-resistance (**MDR**) in many pathogenic strains of bacteria using data and text mining, pre-processing, cleaning, data analysis and machine learning. Worked on analyzing and predicting the structure of query protein through **Protein Homology Modeling** and protein-drug interactions through **Docking**.

Summer Intern, Inter University Accelerator Center, New Delhi, India

May 2017 - July 2017

Made an **Ethernet based server** for remotely controlling a **P.I.D. Controller device** for advance studies on ions and their nature and performed **network analysis** using network analysis **Wireshark**. Used **LabVIEW** for making high pass and low pass filters, designing **integrators and differentiators** and making filter for one of the projects.

Projects

Machine Learning and Data Analysis:

- Currently working on a project in the field of **Artificial Intelligence** and **Machine Learning** involving **Natural Language Processing** using **python** and **tenser flow** for optimizing the hardware division and multiplication operation.
- Working on extending the project of **Decoding KPC Genes** for drawing further conclusions and applying those to a large biological dataset and finding further factors deciding drug resistance levels under Prof. **Debnath Pal** at **IISc**.
- Mentored a team during hackathon 2018 to design a **text to voice converter application** for **blind people** using open cv and python libraries.
- Working remotely on data analysis for opioid overuse leading to microbial dysbiosis and factors involved under Dr. Sepideh Pakpour working at **UBC, Canada** and researcher at **MIT**.

C++ , data structures and game programming:

- Designed a **C++ using GUI** based Game Campus Run and A **Website** for the same with my team using **Bootstrap** in a inter college hackathon for all branches and years and won the 2nd place

Python Programming and Robotics:

- Designed a Robot for the competition **A.B.U. Robocon 2k17** and presented it at Pune.
- Designed an obstacle detecting and path tracing robot with re-routing features, controlled using Android Application, using Raspberry pie, python coding and android studio.
- Developing an android app to help native people recognize indigenous plants and their uses.

Achievements and Honors

- NTSE qualified and KYPY first stage qualified.
- IPHO and IAAO prelim round qualified.
- Achieved 95% in board in class 12th and Won the SJVN scholarship.
- Invited as a mentor for INSPIRE program 2017 at Srinagar for class 11 and 12th students.
- Was selected for and awarded with **Indian Academy of Science (IAS)** summer research intern fellowship 2018 and got the opportunity to be a **Summer Research Fellow (SRF)** at **IISc Bangalore** under the same.
- Got selected for participation in Indian Academy of Science Midyear meeting 2018 at Infosys Mysore.
- Got Awarded with and selected for highly **prestigious MITACS GRP summer research internship scholarship**, for undergoing research at **UBC, Canada**
- Got merit in Himutkarsh paper conducted by Himachal government in class 10th.
- Won gold medal in NIMO organized by SOF in class 10th and achieved second rank at state level, first rank at school level and 100 rank at National level
- Ranked as child of extraordinary talent in the All India Talent Search Examination conducted by govt. of India with grade A.
- Placed at 20th rank in north India and 460 at international level in International Math Olympiad in class 10th.
- Placed at 28th rank at state level and international rank of 5000 in International Science Olympiad in class 10th.

Technical Skills

Languages:

C++ , C, Python, JavaScript, Ruby, Bootstrap, HTML,CSS,SQL, Octave

Area Skills:

Machine Learning, Neural Networks, Bioinformatics and bioinformatics related tools and techniques, Data structure and algorithms.

Tools: LabVIEW, Qt, MATLAB

Papers and publications:

- Presented a paper in **National conference regarding rural housing improvement and development at CSIR, Delhi** and suggested the solution of “**Harnessing rainfall energy through piezoelectric plate to generate electricity**”
- Presented a paper on “**Ethernet Control and Automation: A New Trend**” in International conference **ICET-EITM-2017** at NIT Hamirpur, H.P.
- Paper got selected for **GEE 2017 conference** in South Korea where I suggested a solution on ‘**Marine Waste Disposal**’.
- Presented Paper on “**Analyzing CHBL Protein: Key to Drug Resistance**” at **International Conference on Mathematics in Space and Applied Sciences**.
- Hugely contributed in paper on “**Contract Theory Based Medium Access Contention Resolution in TDMA Cognitive Radio Networks**” that has been published in IEEE system transactions.
- Published paper “**A Contract Theory Approach-Based Scheme to Encourage Secondary Users for Cooperative Sensing in Cognitive Radio Networks**” as co-author in IEEE system transactions.
- Paper titled “**Key role of Gut microbiome in predicting fecal microbiota transplantation outcomes**” has been communicated to one of the top journals in the area.

Technical Positions of Responsibility

- Current **Core Club Secretary** of our **Technical fest NIMBUS 2020**.
- **Institute Level Activity Coordinator** and **Event coordinator** for NIMBUS (2018-2019).
- Former Member of **Robotics Society** at NIT Hamirpur.
- **Technical coordinator** at **ISTE (Indian Society of Technical Education)** organized various **technical workshops** ranging from “Making a remote-controlled bot” to “HTML, CSS introduction”.
- Member of **core organizing** and **managing team** and **Team leader of Mechanical Department** events for **ISTE technical fest “Prodyogiki 2k17”**.
- Leader of various teams that participated in **IIT Kanpur Techfest “Techkriti 2k18”** and responsible for making **quad copter and maneuvering bot**.
- **Coordinator** and **Executive Member** of **CSEC (Computer Science and Engineering Community)** and **GLUG (Graphics Linux User Group)** and have organized editions of coding contest “**Heuristics**” and programming meets as a part of it.
- Organizer of “**Software Freedom Day**” **2k17** and **2k18**, Extensive Internship talk and Linux Installation feast as part of CSEC and GLUG
- Former Member of **Public Relations Club** and **Innovation Eco-System Society**.
- Member of **IEEE Student Chapter** NIT Hamirpur.
- Have been a volunteer at the **Prayas** society of our college which teaches poor children in the locality and provides them with food and cloth
- Volunteer at **Uneako** a startup aimed at making environment friendly stationeries and bags.