
# Rittwik Sood

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## Education

**National Institute of Technology Hamirpur, India** *2014-2018*
B.Tech in Electronics and Communication Engineering **( 9.72/10 )**

- Stood **Rank 1** amongst 3500+ students
- **PRESIDENT OF INDIA Gold Medal** NIT Hamirpur (for highest CGPI, Rank 1 in the institute) 2014-2018
- **DIRECTOR'S Gold Medal to the Best All Rounder** student among UG and PG NIT Hamirpur 2018.

Relevant Courses: Wireless Communication | Spread Spectrum | Communication and Information Theory
Digital Communication Systems | Data Communication

## Research Experience

**Qualcomm Inc.** *2018-Now / Hyderabad, India*
*Senior Software Engineer, Modem RF NR5G*

4+ years in **Modem NR5G RF team**. Primary task includes reading and analysing 3GPP spec documents and programming HW RF components like Antennas, PAs, LNAs, ASMs. Works on Physical layer programming of RF front end components including Digital and Analog components

Created critical features and assisted in their SW framework, few being ENDC (LTE + NR5G), NRDC (FR1+FR2, NR Dual Connectivity) and MPE (Maximum Polarisation Exposure in mmw). Worked with varoius OEMs on 40+ product lines. Assisted teams across geographies(USA, CHN, Israel, EMEA) in day-to-day critical activities and Modem Bring ups. Got 2 promotions in last 3 years. Was awarded with Orion-Insta and Qualstar Awards in the company for excellent performance and work-ethic (Highest Awards).

NRDC framework created by me from scratch, was presented as a highlight by Qualcomm CEO in Mobile World Congress (MWC) 2021 Barcelona. It was **one of the five features** presented by Qualcomm. It increased the data rate and the highest download speed of 10GBps was achieved for the first time
Currently working on *V2X systems,mmw technology, SUL bands.*

**IBT, Karlsruhe Institute of Technology, Germany** *2017-Summer / Karlsruhe, Germany*
*DAAD-WISE Research scholar 2017*

"*Instantaneous phase estimation, filtering and analysis of bio-signals including ECG signals, EEG signals to predict heart and brain diseases well in time*". In a period of 3 months, formulated a novel method to predict heart diseases timely, amalgamating benefits of conventional algorithms like Hilbert transform and Short-time Fourier transform. Performed mathematical analysis and took a comparative study of the novel method against the conventional methods available using Signal Processing algorithms. Mentored by Prof. Olaf Dossel and Dr. Nicolas Pilia. [Project details]

**Indian Institute of Technology Delhi** *2016- Summer / Delhi, India*
*INDIAN ACADEMY OF SCIENCES - Summer Research Fellow (SRF) 2016*

Project titled '*Tourist Assistance System*' to help geo-locate the tourists and assist them in remote areas which are devoid of Mobile communication [IEEE]. Proposed a bluetooth enabled system with a Mobile App interface to locate the last available coordinates of the user and through data-analysis, try to find the most probable radius, where the user may be found. Worked under Prof. Subrat Kar in Bharti School of Telecommunication, wing of Electrical Engineering Department, IIT Delhi. Was awarded with 'The Best Intern Project' award in the internship.

**NIT Hamirpur** *2014-2018*
*Undergraduate Student*

**Major Project**: Best Major Project Award, ECE 2018 batch.
(*Thesis title*:) Identification of Brain Tumour by segmentation, and compression of brain MRI images for lossy transmission using ML algorithms. Awarded amongst 31 projects by external and internal faculty.

**Minor project**: 2nd best Minor Project Award, ECE 2017.
(*Thesis title*): 'IoT Enabled emergency prioritised Smart Wearable' under Dr. Ashok Kumar, HOD ECED NITH.[IEEE]

**Real Time Smart Honking System** 2015-2016: Created a prototype for a disincentive measure to control unnecessary honking on roads. It also included priority signals for emergency vehicles. Conducted a study on Delhi roads as well which found the system to reduce the effective noie by 65%. Filed a patent, came all India 2nd in ARM Design contest 2015. [IEEE]

**Minor project:**
Pre-final year 2017:(*Thesis title*) SISO and MIMO System Model Reduction using heuristic algorithms. [IJEEI 2022]

## Achievements

### DAAD-WISE Scholarship 2017
Given to top 100 meritorious students across India (Amongst 14,000 applicants). Accorded by the German government and the EU to undertake research internship in Germany. Selected for research internship at Institut für Biomedizinische Technik (IBT), Karlsruhe Institute of Technology, Karlsruhe, Germany.

### IAS-INSA-IISc Summer Research Fellowship 2016
Selected amongst Top 200 students across India to undertake research internship in premier institutes in India. Accorded by the Indian National Science Academy, Indian Academy of Sciences and the Indian Institute of Science (IISc) Bangalore. Selected for internship at the Indian Institute of Delhi (IIT Delhi), Electrical Engineering Department (Only 4 students across India).

### SJVN Merit Scholarship 2014-2018
Accorded to 35 students who have topped in Senior Secondary education examination across 5 Indian states. Awarded a four year scholarship to fund undergraduate studies.

### Patents
- 'REAL TIME SMART HONKING SYSTEM' published (201711042577 - IN)
- 1 US patent (in field of MIMO processing in antennas) in process of application.

### ALL INDIA 2nd Rank, ARM Design Contest 2015
Came 2nd ALL OVER INDIA at ADCOM ARM DESIGN CONTEST 2015 for the project titled 'Real-time Smart Honking System'conducted by ACCS (Advanced Computing & Communication Society), IISc Bangalore and ARM University held at IIIT BANGALORE. Competed with 350+ teams nationwide.

### Most Popular Project, KPIT Design Contest 2017, Pune
Led a team of 3 people in the competition and were voted as 'Most Popular Project' in KPIT Design Contest. Presented our project to Education Minister of India. 35 Projects were selected amongst 5000 projects.

## Responsibilities held and Accolades

**Founder and First President, Innovative Research Incubation Club (IRIC)** *2015-2018*
Founded official Incubation center of NITH. Got sponsored by the GOI (Govt. of India) and DST (Deptt. of Science & Tech). 3 of the projects got Chief Minister Startup Fund within first 6 month of the conception of IRIC.

**Founder and First Student Chair, IEEE Student Branch NIT-Hamirpur** *2017-2018*
Held one National Conference in college along with hackathons and guest lectures.

**Student Representative, Departmental Under-Graduate Committee, ECE Deptt NITH** *2016-2018*
Represented my batch of ECE 2014. Resolved student problems and raised critical issues for the welfare of students. 1 student is selected per year in the commitee.

**Convenor, Dramatics Club NITH** *2014-2018*
Led College Dramatics Club at various platform across the country in myriad of performances across the nation.

**DAV Public School Hamirpur (H.P.)** *(10/10)* *2007-2014*
Head Boy (Hansraj House). Winner (Himachal Pradesh state) Indian Science Congress, Science Quiz (2011). Convenor Debsoc Society. Represented school at various plays. Nature and Eco Club President.

## Proficiencies

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| **Languages & Tools** | C \| C++ \| Python \| Matlab \| Verilog \| Perforce \| GIT |
| **Publishing tools** | Latex \| Word |
| **Basic Proficiency** | Qualcomm Tools \| ORCAD Tools (PSpice, Tspice) \| Tanner Tools \| gEDA PCB Design \| Cadence Tools |