Rishabh Jain

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EDUCATION

Indian Institute of Technology Ropar — **July 2019 - May 2023**
B.Tech with Honors in Computer Science and Engineering — *Major CGPA: 8.69*
and Concentration in Artificial Intelligence — *Concentration CGPA: 8.93*

WORK EXPERIENCE

Arista Networks — **July 2023- present**
Software Engineer — *Bengaluru, India*

- Contributing to development of **Arista Multi-Domain Segmentation Service** for Zero Trust Networking
- Introduced performance optimizations for deep-packet inspections in Arista Extensible Operating System and Berkeley Extensible Software Switch BESS
- Technologies: C, C++, Python, Perforce, Git

GE Healthcare — **May 2022- July 2022**
Edison AI Intern | *Certificate* — *Bengaluru, India*

- Contributed to an end-to-end **computer vision based autonomous patient monitoring** pipeline
- Deployed the new pipeline via dockerised APIs in **Edison Digital Health Platform**
- Technologies: PyTorch, Python, FastAPI, PostgreSQL, Docker

RESEARCH WORK AND PUBLICATIONS

Video Transformer Based Bodily Behaviour Recognition — **May 2023-Oct 2023**
Supervised by Dr. Abhinav Dhall — *Monash University, IIT Ropar*

- Co-authored "MAGIC-TBR: Multi-view Attention Fusion for Transformer based Bodily Behavior Recognition in Group Settings" **accepted at the ACM Multimedia 2023** conference | dl.acm.org
- Co-authored "Multi-View Attention Fusion for Explainable Body Language Behavior Recognition" [Surbhi Madan, **Rishabh Jain**, Ramanathan Subramanian, Abhinav Dhall] currently **in review at IEEE TAFFC**
- Technologies: Python, PyTorch, OpenMMLab

Spatio-Temporal Hotspot Detection in Microsoft Azure | BTech Capstone — **Aug 2022-Nov 2023**
Supervised by Dr. Venkata M. V. Gunturi and Microsoft | *Thesis document* — *IIT Ropar, Microsoft*

- Formulated a statistical framework to identify spatio-temporal hotspots in **Microsoft Azure** from ASN data
- Co-first author of "Periodic Spatio-Temporal Colored Hotspot Detection in Azure Traffic Data" [Rakesh Rajeev*, **Rishabh Jain***, Venkata M. V. Gunturi, Vishawam Datta, Kartik Ramesh, Ashank Anshuman, Samir Jain, Manish Gupta] currently **in review at ACIIDS 2025**
- Technologies: Java, Python, PostgreSQL, PostGIS

Epilepto WearOS Application — **Jan 2022-April 2022**
Supervised by Dr. Ashish Sahani | *Certificate* — *Epilepto Systems Lab, IIT Ropar*

- Contributed to the development of a novel **Android WearOS app** to monitor epileptic patients
- Co-authored "A General System for Dataset Generation from Smartwatch Sensors for Biomedical Research" detailing a novel data transmission algorithm in android data layer **accepted at COMSYS-2022** | Springer
- Technologies: Java, Android SDK, Python

TECHNICAL SKILLS

Languages: Verilog HDL, RISC-V, C, C++, Python, Java, PostgreSQL

Tools: Git, Perforce, Bash, Docker, Gazebo, Solidworks

Libraries: Flask, Django, React.js, OpenCV, PyTorch, OpenAI Gym, ROS, PostGIS, Android SDK

RELEVANT COURSEWORK

CSE: Algorithms & Data Structures, Operating Systems, Software Engineering, Databases, Computer Networks, Digitial Logic Design, Programming Paradigms and Pragmatics, Computer Architecture, Theory of Computation
Honors in AI: Fundamentals of Data Sciences, Artificial Neural Networks, Artificial Intelligence, Reinforcement Learning, Computer Vision, Advanced Computer Vision, Research Methodology
Math: Calculus, Discrete Math, Linear Algebra, Probability & Statistics, Differential Equations, Optimization Techniques

KEY PROJECTS

Client Selection in Deep Federated Recommender Systems | BTech Honors Project **Oct 2022-March 2023**
Supervised by Dr. Shweta Jain | document *Game Theory Lab, IIT Ropar*

- Developed client subset selection strategies to optimise costs while training **deep federated recommender systems** on MovieLens datasets
- Evaluated the strategies over collaborative filtering based deep recommender systems

RFDN Variants: Efficient Image Super-Resolution | NTIRE CVPR Challenge **Feb 2023-May 2023**
Supervised by Dr. Abhinav Dhall | document *LASII Lab, IIT Ropar*

- Developed improved deep learning based **image super-resolution models** based on the provided RFDN baseline
- Achieved a superior PSNR on the DIV2K dataset

Dynamic Planning in Dyna-Q for Faster Training **Sept 2022 - Nov 2022**
Supervised by Dr. Shashi Shekhar Jha | document *IIT Ropar*

- Introduced **dynamic scheduling of planning steps** in **DYNA-Q** & **Deep DYNA-Q** reinforcement learning algorithms.
- Studied trade-off of model performance and training cost on **OpenAI Gym** environments.

Full-stack Faculty Application Management Portal, IIT Ropar **Jan 2022-May 2022**
Supervised by Dr. Puneet Goyal *IIT Ropar*

- Implemented a **full stack web app** with user authentication and multi-stage application propagation **as a part of IIT Ropar's website** using Flash and React.js
- Ensured data security by implementing server based Google OAuth along with reliable database CRUD operations

Academic Information Management System **Sept 2021 - Nov 2021**
Supervised by Dr. Venkata M. V. Gunturi | github *IIT Ropar*

- Implemented an Academic Information Management System to store, manage and process academic data; entirely in **PostgreSQL and PL/pgSQL**.
- Implemented user permissions along with stored procedures to perform operations on academic data. Placed significant attention to code readability and query optimisation.

RISC-V CPU Simulator **Jan 2021 - May 2021**
Supervised by Dr. T.V. Kalyan | github *IIT Ropar*

- Implemented a RISC-V 32I ISA CPU simulator with a user-friendly GUI in Python and PyQt5.
- Implemented instruction parsing, branch prediction, instruction pipelining, multi-level cache.

ABU-ROBOCON Robotics Competition, WardBot **Oct 2019 - May 2020**
Supervised by Dr. Neeraj Goel, Dr Ekta Singla *Student Affairs, IIT Ropar*

- Part of a team developing an **automated rugby robot** and reached the nationals stage. Contributed to CAD modelling, micro-controller programming and robot vision.
- Adapted the robot to develop the WardBot , designs for which were submitted to Govt. of India during Covid-19

SCHOLASTIC ACHIEVEMENTS

- Secured **2nd place** in the Bodily Behaviour Recognition track of **ACM MM 2023** Grand Challenges. Certificate
- Participated in the prestigious coding competition **ICPC Asia Amritapuri Regionals 2020** after qualifying **ICPC Amritapuri Preliminary 2020**, ranking 366 out of 8000+ teams. Certificates .
- Recipient of **Institute Merit Scholarship from IIT Ropar thrice** for academic excellence.
- Participated in **ABU-ROBOCON Robotics Competition 2020**, qualifying for the national round of **DD-ROBOCON 2020** held in an online mode at IIT Delhi.

POSITIONS OF RESPONSIBILITY

Mentor and Representative, Robotics Club IIT Ropar **Sept 2020-Oct 2022**

- Conducted club mentorship sessions and projects, managed club funding and participation in competitions. *Certificates*
- Conducted seminars on **machine learning and robotics**, managed events in IIT Ropar's techno-cultural fest Advitiya
- Participated in **ABU-ROBOCON Robotics Competition 2020**, qualifying for the national round of **DD-ROBOCON 2020** held at IIT Delhi