

RISHI SHARMA

B-13 Beas Kund Hostel ◊ IIT Mandi - North Campus , H.P. 175005

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EDUCATION

RWTH University Aachen

Computer Science

October 2019 - Present

RWTH Exchange Worldwide

Indian Institute of Technology Mandi

Bachelor of Technology (III Year)

Computer Science and Engineering

August 2017 - Present

Overall CGPA: 9.21/10

TECHNICAL STRENGTHS

Computer Languages

C/C++, Python

Machine Learning

PyTorch, Tensorflow, Keras, Scikit-Learn

Web Technologies

Flask, JavaScript, PHP, HTML, CSS

Tools

Git, Vim, Bash, Jupyter Notebooks, Pandas

Familiar Technologies

MySQL, OpenCV, Hadoop, Apache Spark

WORK EXPERIENCE

IT SECURITY GROUP

Student Research Assistant

November 2019 - Present

Prof. Ulrike Meyer

- **Iterative Adversarial Training for removing Blind Spots in DNN**
- Developing "Hardened" and "Robust" Deep Neural Network for detecting infections with Domain Generation Algorithms through Iterative Adversarial Training.
- Investigating methods to test the robustness of the adversarially trained model using 5 fold cross-validation and Leave-one-group-out cross-validation.

THEORY OF HYBRID SYSTEMS

Student Research Assistant

November 2019 - Present

Prof. Erika Abraham

- **Freight Train Scheduling with Satisfiability Checking**
- Formulating and optimizing the scheduling of freight train in the railway system as a Satisfiability problem and investigating methods to solve the problem.
- Evaluating the performance of numerous implementations and SAT Solvers.

PROJECTS

POLLUTION MONITOR AND PREDICTOR

Machine Learning, Flask, Internet of Things

March 2019 - August 2019

Dr. Varun Dutt

- **Publication:** Accepted for Springer Lecture Notes in Computer Science at 16th ICDCIT. Due to appear in Volume 11969 of the Springer Lecture Notes in Computer Science series.
- **Fundings:** Project IITM/DST-HP/VD/240, funded by Department of Environment, Science & Technology, Government of Himachal Pradesh, for setting up systems across the state.
- **Objective:** Prototyped a low-cost, IoT-based real-time solution for air quality monitoring, prediction and warning. Designed and deployed a full-stack web application for the system.
- **Machine Learning:** Investigated the performance of an Ensemble Model of Multi-Layer Perceptron and Long-Short Term Memory for a 12 variable multi-variate time series on air quality and weather data and reached RMSE 0.05 on test data.

EINSTEINPY: COORDINATES MODULE

Python

April 2019
Open Source

- **Member:** One of the eight members of the EinsteinPy Organization.
- **Objective:** Designed the Coordinates Module with 3 systems with comprehensive tests.

CIF VALIDATOR WITH REST API

Materials Cloud

May 2019 - July 2019
Dr. Arti Kashyap

- **Collaboration:** Collaborated with Material Science Group, EPFL, Switzerland.
- **Experience:** Coordinated with a team of 3 to design this real-world, open source tool, to be integrated with materialscloud.org tools, with thorough documentation.
- **Objective:** Developed a tool for validating CIF Files using a REST API.
- **Technology:** Used Flask on a Barebone Docker Container, validated using PyCODCIF.

OBJECT LOCALIZATION

AutoEncoder + Regressor in Keras

February 2019
Flipkart GRiD Te[a]ch The Machines

- **IOU and Rank:** With IOU 83.46%, secured top position among 7 teams of the college.
- **Objective:** Designed and trained a Deep Neural Network from scratch comprising of AutoEncoder and Regressor, to produce bounding boxes, over 13,000 images provided by Flipkart.

ACADEMIC ACHIEVEMENTS

- Branch Rank 1 for semesters I(SGPA: 9.34/10) & II(SGPA: 9.18/10).
- Ranked in the All-India Top 1% (amongst 11,86,000 candidates) in JEE - Main 2017.
- All India Rank 3 in National Anveshika Experimental Skills Test (NAEST) 2016
- Secured 470/500 marks in AISSCE 2017 & CGPA 10/10 in AISSE 2015.

RELEVANT COURSES

Advanced Data Structures and Algorithms	Computational Differentiation ¹
Computer Organization	High Performance Computing ¹
Information and Database Systems	Machine Learning ¹
Mathematical Foundations of Computer Science	Satisfiability Checking ¹

POSITION OF RESPONSIBILITY

Heuristics - Machine Learning and AI Club

Founder Coordinator

August 2019 - Present
IIT Mandi

- **Responsibility:** Heading the Core Team of 8 people to set up the new club and the related culture by organizing contests and sessions on Machine Learning.
- **Goals:** Widening the horizon of the club to incorporate fields such as High Performance Computing, Big Data and Data Science and managing the first, month-long Campus Machine Learning Challenge by HackerEarth India at IIT Mandi in September 2019.

EXTRA-CURRICULAR

- Problem Setter and Tester in Codeforces Good Bye Summers 2k19.
- Active participant in Competitive Programming Contests.
- Ranked 86/3464 in Codeforces Div. 3 #490 and Rated 2021 on Codechef.
- Winner of Capture The Flag event in Utkarsh-2019 and Second runner up in Utkarsh-2017.
- Regular participant in Hikes and Treks organized by the Hiking and Trekking Club - IIT Mandi.

¹To be completed by February 2020.