RISHI SHARMA

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

(+91) 955 97 60700 • rishi.iitmandi@gmail.com • rishi-s8 • rishi-s8.github.io • rishi-s8

EDUCATION

RWTH Aachen University *October 2019 - February 2020*
Computer Science, RWTH Exchange Worldwide Overall Grade: 1.0

Indian Institute of Technology Mandi *August 2017 - June 2021*
Bachelor of Technology (Final Year) Overall CGPA: 9.33/10
Computer Science and Engineering Class Rank: 1/146

TECHNICAL STRENGTHS

Computer Languages	C/C++, Python, Go, Java
Parallel Programming	OpenMP, MPI, OpenACC, CUDA
Machine Learning	PyTorch, Tensorflow, Keras, Scikit-Learn
Web Technologies	Flask, React, JavaScript, PHP
Tools & Familiar Technologies	Git, Bash, Soot, JavaCC, MySQL, Apache Spark

WORK EXPERIENCE

D. E. SHAW INDIA PRIVATE LIMITED April 2020 - May 2020
Associate Developer Intern

· Refactored *Resize and Reorder* functionalities of the React-JS based *fixed-data-table-2* project into a more customizable and maintainable Plugins module and obviated the use of Redux.
· Received offer for *Member Technical* full-time position after graduation on the basis of excellent performance during the internship.

IT SECURITY GROUP, RWTH AACHEN November 2019 - February 2020
Research Assistant (HiWi) *Prof. Dr. Ulrike Meyer*

· **Iterative Adversarial Training for removing Blind Spots in DNN**
· Investigated the performance of adversarial attacks and adversary transfer on Deep Neural Networks for DGA generated domain names by emulating and inverting the non-differentiable embedding layer.
· Implemented iterative adversarial training to improve the robustness of the classifier using adversaries generated from the gradient-based attacks.

THEORY OF HYBRID SYSTEMS, RWTH AACHEN November 2019 - February 2020
Research Assistant (HiWi) *Prof. Dr. Erika Ábrahám*

· **Freight Train Scheduling with Satisfiability Checking**
· Formulated the scheduling of a freight train in the German railway network as a satisfiability problem in propositional logic and implemented the solution using Z3 Solver.
· Optimized the various steps of the problem formulation to reduce the problem blow-up from quadratic to linear and improved the feasibility of the approach in real-life railway network.

PUBLICATIONS

Sharma R. et al. (2020) *An Online Low-Cost System for Air Quality Monitoring, Prediction, and Warning.* In: Hung D., D'Souza M. (eds) Distributed Computing and Internet Technology. ICDCIT 2020. *Lecture Notes in Computer Science, vol 11969. Springer, Cham.*

PROJECTS

DISTRIBUTED GAMING FRAMEWORK April 2020 - December 2020
Kafka, Go *Dr. Arti Kashyap, IIT Mandi*

· Designed a framework for offloading intensive computations to the server in multiplayer games using Kafka Server as a bridge in order to improve the performance on low-end machines.
· Researched methods to improve the efficiency and reduce the effect of network as a bottleneck.

SPARKY-AD December 2019 - March 2020
Apache Spark & Algorithmic Differentiation *Dr. Arti Kashyap, IIT Mandi*

· Developed a python library to compute derivatives of multivariate functions using Algorithmic Differentiation and Big Data framework to mitigate the Curse of Dimensionality.
· Tangent Mode Differentiation is distributed across nodes using Apache Spark and the API allows Jacobian Computation without requiring changes in the pre-written functions.

THE EINSTEINPY PROJECT April 2019 onwards
Python *Open Source*

· Designed the Coordinates Module with 3 systems with comprehensive tests as part of the EinsteinPy Python package for General Relativity and Gravitational Physics.
· Mentored a student in Google Summer of Code 2020 to improve the EinsteinPy package.

RELEVANT COURSES

Advanced Data Structures and Algorithms
Paradigms of Programming[1]
Information and Database Systems
Mathematical Foundations of Computer Science
Operating System and Networks
Computational Differentiation
High Performance Computing
Machine Learning
Satisfiability Checking
Compiler Design

POSITIONS OF RESPONSIBILITY

Teaching Assistant September 2020 - December 2020
Data Science III *Dr. Dileep A. D., IIT Mandi*

· Duties included assisting with assignments and evaluating weekly labs remotely in the online semester.

Teaching Assistant February 2020 - August 2020
Information and Database Systems *Dr. Sriram Kailasam, IIT Mandi*

· Assisted the course instructor with tutorials and evaluations of the assignments.

Heuristics - Machine Learning and AI Club August 2019 - August 2020
Founder Coordinator *IIT Mandi*

· Set up the new club and the related culture by organizing contests and sessions on Machine Learning.
· Widened the horizon of the club to incorporate High Performance Computing & Big Data.

ACHIEVEMENTS AND EXTRA-CURRICULARS

- Foundation Day Outstanding Academic Performance Award for 1*st* & 2*nd* year.
- Ranked 86/3464 in Codeforces Div. 3 #490 and Rated 2021 on Codechef.
- Winner of Capture The Flag in intra-college tech-fest Utkarsh 2019 and Second runner up in 2017.
- Regular participant in Hikes and Treks organized by the Hiking and Trekking Club - IIT Mandi.

[1]To be completed by February 2021.