RISHI SHARMA

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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
Parallel Programming	OpenMP, MPI, OpenACC, CUDA
Machine Learning	PyTorch, Tensorflow, Keras, Scikit-Learn
Web Technologies	Flask, React, JavaScript, PHP
Tools & Familiar Technologies	Git, Bash, 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. 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. 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
Kafka, Go

April 2020 - Present

Open Source

· Designing 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.
· Researching methods to improve the efficiency and reduce the effect of network as a bottleneck.

SPARKY-AD
Apache Spark & Algorithmic Differentiation

February 2019 - March 2020

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
Python

April 2019 onwards

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

POSITION OF RESPONSIBILITY

Teaching Assistant
Data Science III

September 2020 - Present

IIT Mandi

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

Teaching Assistant
Information and Database Systems

February 2020 - August 2020

IIT Mandi

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

Heuristics - Machine Learning and AI Club
Founder Coordinator

August 2019 - August 2020

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-CURRICULAR

- 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.

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[1]To be completed by December 2020.