



Abhinav Vaishya

Education

- July 2018 - June 2023 **Bachelor of Technology (Honours) and Master of Science by Research, Computer Science and Engineering**, International Institute of Information Technology, Hyderabad (IIIT-H).
Advisor: [Dr. Prasad Krishnan](#)
Thesis Title: Low Complexity Cache-Aided Communication Schemes for Distributed Data Storage and Distributed Computing
Specialization: Algorithms and Theory [[Certificate](#)]

Research Experience

- July 2023 - Present **Project Associate**, Indian Institute of Science, Bangalore (IISc).
◦ Quantum Error Correction
◦ Advisor: [Dr. P Vijay Kumar](#)
- June 2022 - Present **Research Intern**, Technical University of Munich (Remote).
◦ Codes for Distributed Storage
◦ Coding Theory for Blockchains (Literature Review)
◦ Advisor: [Dr. Rawad Bitar](#)
- May 2021 - June 2023 **Research Assistant**, IIIT-H.
◦ Coded Caching using Locally Repairable Codes (Few results drafted)
◦ Coded Caching via Subspace Designs (Submitted to IEEE JSAIT, 2023)
◦ Coded Data Rebalancing for Distributed Storage Systems with Cyclic Storage (Accepted at IEEE ITW, 2022)
◦ Advisor: [Dr. Prasad Krishnan](#)
- August 2020 - April 2021 **Undergraduate Researcher**, IIIT-H.
◦ Coded Data Rebalancing for Distributed Storage Systems
◦ Advisor: [Dr. Prasad Krishnan](#)
- May 2019 - June 2020 **Undergraduate Researcher**, IIIT-H.
◦ A software framework for annotation of manuscript document images (Showcased at a workshop, ICDAR, 2019)
◦ Advisor: [Dr. Ravi Kiran Sarvadevabhatla](#)

Work Experience

- January 2023 - May 2023 **Teaching Assistant**, IIIT-H.
○ Information-Theoretic Methods in Computer Science, Spring '23
○ Introduction to Coding Theory, Spring '22
○ Linear Algebra, Spring '21
- June 2019 - October 2019 **Problem Setter**, Hackerrank.
○ Prepared various original programming and algorithmic problems along with strong testcases
- August 2018 - December 2018 **Web Developer**, VLEAD, IIIT-H.
○ A web application for interactive online learning modules

Publications

1. Shailja Agrawal, K V Sushena Sree, Prasad Krishnan, **Abhinav Vaishya**, Srikar Kale, "Cache-Aided Communication Schemes via Combinatorial Designs and their q -analogs", submitted to IEEE Journal on Selected Areas in Information Theory (JSAIT), 2023. [[Arxiv](#)]
2. Athreya Chandramouli*, **Abhinav Vaishya***, Prasad Krishnan, "Coded Data Rebalancing for Distributed Data Storage Systems with Cyclic Storage", IEEE Information Theory Workshop, 2022. [[Conference](#)][[Arxiv](#)][[Slides](#)]

* indicates equal contribution

Course Projects (Selected)

- Spring 2021 **Encoding, Decoding, and List Decoding of Reed Solomon Codes (Language: Python 3)**
○ Implemented the encoding and decoding procedures of Reed Solomon Codes. Sympy was used in the implementations. This project was a part of the course Topics in Coding Theory.
- Spring 2020 **Distributed Algorithms**
○ Implemented many graph based and sorting algorithms, a simple single server architecture (supports multiple clients), for distributed systems using OpenMP(C++), MPI(C++), Cuda(C++/Python), and RMI(Java). This project was a part of the course Distributed Systems.
- Spring 2020 **Applications of Linear Programming (Language: Python 3)**
○ Used Linear Programming for solving various real life problems such as - Jigsaw Puzzle, Sudoku, Convex Hull, and Largest Circle in a Polygon. This project was a part of the course Optimization Methods.

Spring 2019 **Proxy Server (Language: Python 3)**

- Implemented a client-server model using socket programming along with a proxy server. Blacklisting and caching were also implemented. This project was a part of the course Computer Networks.

Monsoon 2018 **Interactive User Defined Shell (Language: C)**

- Implemented a terminal based shell using C. It supports piping, I/O redirection, signal handling, background and foreground process management, etc. This project was a part of the course Operating Systems.

Relevant Courses

Algorithms and Theory Algorithms, Complexity and Advanced Algorithms, Computation Complexity Theory, Principles of Information Security, Introduction to Coding Theory, Topics in Coding Theory, Information-Theoretic Methods in Computer Science, Advanced Mathematical Structures.

Skills

Languages C, C++, Python, MATLAB, Java, Javascript, SQL, Erlang, TeX
Libraries numpy, scipy, sympy, MPI

Miscellaneous

- Ranked 88th in ACM-ICPC Online Round 2019-20. (Honorable Mention) [[Certificate](#)]
- Selected for the Onsite Round of ACM-ICPC Asia Regionals, Amritapuri 2019-20.
- Certificate for Problem Solving (Advanced) by Hackerrank. It covers topics like Data Structures such as Trees, Graph Traversal, using Dynamic Programming and Specialized Algorithms, among others. [[Certificate](#)]