

Arham Chopra

SENIOR UNDERGRADUATE · COMPUTER SCIENCE AND ENGINEERING

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"I have no special talents. I am only passionately curious."

Education

Indian Institute of Technology Kanpur

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING; **CPI : 9.7/10**

Kanpur, India

Aug. 2014 - May 2018

Emmanuel Mission School Talwandi

MATRICULATION IN SCIENCE STREAM; **PERCENTAGE : 95.4/100**

Kota, India

May 2012 - May 2014

Honors & Awards

2015	Academic Excellence , Recipient of Letter of Appreciation by UG office	IIT Kanpur
2014	All India Rank 114 , IIT JEE Advanced among 150 thousand candidates nationwide	India
2014	All India Rank 588 , IIT JEE Mains among 1.4 million candidates nationwide	India
2014	All India Rank 177 , Kishore Vaigyanik Protsahan Yojana Fellowship	India
2014	All India Rank 81 , National Science Talent Search Examination among 1 million candidates	Kota, India
2014	Statewise top 1% , National Standard Examination Physics in Rajasthan	Kota, India
2014	Internation Rank 15 , 1 st Level of National Science Olympiad	Kota, India

Experience

Nutanix

Bangalore, India

MEMBER OF TECHNICAL STAFF INTERN

May 2017 - Jul. 2017

- Designed a config based python framework to automate the benchmarking of metrics like CPU and memory usage, throughput rate for Apache Kafka through JMX beans and confluent-kafka-python module
- Built a library module to interact with Kafka in terms of message communication through different modes using the confluent-kafka-python module. Also supported management functionality like CRUD operations over topics, safe removal operations over nodes and topics partition rearrangement operations over a cluster
- Implemented bulk and stream APIs for reading data from Kafka via different modes using websockets
- Received a pre-placement offer at the end of the internship period

Elanic

Bangalore, India

DEVELOPER INTERN

May. 2016 - Jul. 2016

- Built a node.js module to support atomic transactions in MongoDB including features like savepoint, commit, rollback by extending Mongoose. Used Redis, as in-memory database, to implement functionality of redo logs in Oracle, ensuring atomicity and isolation. Supported some validation checks for partial consistency
- Built a Restify.js based back-end for Barcode app and designed a website for Elanic Premiere League

Indian Institute of Technical Kanpur

Kanpur, India

TEACHING ASSISTANT

Aug. 2017 - Nov. 2017

- Teaching assistant for the course Data Structures and Algorithms under Prof. Sumit Ganguly
- Involved in assisting the professor in creating and evaluating assignments, exams for a class of 230 students

Projects

Decentralized File Storage System

IIT Kanpur

COMPUTER NETWORKS, PROF. DHEERAJ SANGHI

Oct. 2017 - Nov. 2017

- Designed a decentralized storage system that uses client supplied space to store information in a distributed fashion
- Designed an application layer protocol for communication with clients via upload, download, and copy requests
- Implemented replication (via copy functionality) during upload to increase availability of data and prevent data loss
- Added support for addition new client, and authentication for access control of files for the different clients

Small Variance Asymptotics

IIT Kanpur

PROBABILISTIC MACHINE LEARNING, PROF. PIYUSH RAI

Aug. 2017 - Nov. 2017

- Studied a subset of **non parametric bayesian techniques** which are based on **dirichlet process** and its variants.
- Also studied different sampling-based inference techniques used in extracting data from them like Gibbs Sampling and real-life interpretations like the Chinese Restaurant Process, and the Indian Buffet Process.
- Studied **small variance asymptotics**, used achieve the inference speed of parametric techniques while retaining features from the non-parametric domains. Implemented some of these techniques in python on toy datasets

Almost-C-Compiler

IIT Kanpur

COMPILER DESIGN, PROF. AMEY KARKARE

Jan. 2017 - May 2017

- Implemented minimal features of a **C Compiler** targeting **MIPS Architecture** using python framework **PLY**. Tested the correctness of generated code for programs like quicksort, ackermann, mergesort, etc.
- Added support for some non-trivial features like **type-checking, type-casting, global and multidimensional arrays, pointers and standard I/O** with terminal

Finding Security Flaws in Zoobar Webserver

IIT Kanpur

COMPUTER SYSTEMS SECURITY, PROF. SANDEEP SHUKLA

Jan. 2017 - May 2017

- Explored the security flaws like control hijacking, privilege separation for Zoobar Web server in a series of assignments
- Performed simple attacks like buffer overflow, XSS, CSRF, SQL-injection to gain control over the system
- Implemented mitigation techniques like stack canaries, server-side sandboxing, privilege and access control

RailQuery

IIT Kanpur

PRINCIPLES OF DATABASE SYSTEMS, PROF. MEDHA ATRE

Jan. 2017 - May 2017

- Implemented miniature version of Rail Enquiry using the Neo4j Database with static data obtained from railway API.
- Designed an **ANNE stack** based rail enquiry website, using MVC framework, to answer queries like train between stations, train routes, all directly reachable stations, connecting trains using proper DB structure and indices

Delving into UNIX with NachOS

IIT Kanpur

OPERATING SYSTEMS, PROF. MAINAK CHAUDHARI

Aug 2016 - Dec 2016

- Implemented some parts of the **Standard System Call Library** like fork, join, exec, sleep, exit, etc. in NachOS
- Implemented and evaluated performance of process scheduling algorithms (UNIX, RR, FCFS, etc) in varying workload
- Implemented the Virtual Memory and different dynamic page allocation strategies of the UNIX Operating System such as LRU, LRU Clock, FIFO, etc. and evaluating the performance of each on varying workload environments

Voice Command Recognition

IIT Kanpur

SUMMER PROJECT, ROBOTICS CLUB

Jun. 2015 - Jul. 2015

- Implemented miniature version of Rail Enquiry using the Neo4j Database with static data obtained from railway API.
- Designed an **ANNE stack** based

Other Projects

Visual Recognition, Stock Market Prediction, Meetup Scheduler, Introduction to Cryptography,

Skills

Programming Languages	C, C++, Python, Node.js, Scala, Bash
Applications & Utilities	Git, Vim, Matlab, Octave, \LaTeX , Postman, Robomongo, Wireshark
Frameworks & Databases	Restify.js, Express.js, Pytorch, Django, Kafka, MongoDB, Redis, MySQL, SQLite, Neo4j

Courses

* Functional Programming	* Modern Cryptography	* Computer Architecture
A Computer Security Systems	A Computer Networks	A Operating Systems
A Randomized Algorithms	A Compilers	A Probabilistic Machine Learning
A* Design & Analysis of Algorithms	A Databases	A Theory of Computation
A Machine Learning Techniques	B Visual Recognition	A* Data Structure & Algorithms

Extracurricular Activity

- 1st prize in **Autodesk Fusion 360 Challenge** in Uttar Pradesh
- 2nd position overall as well as in **Embedded** event in 4th **Inter-IIT Tech Meet** representing **IIT Kanpur**
- 2nd and 4th position as well as in 51st and 52nd **Inter-IIT Aquatics Meet** representing **IIT Kanpur** respectively
- Senior Marketing Executive in **Techkriti'16** and Company Coordinator for **Student Placement Office** in 2016-2017