

Tezan Sahu

DATA & APPLIED SCIENTIST

Microsoft, India

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Work Experience

Data & Applied Scientist

Hyderabad

MICROSOFT

Jul 2021 - Present

- As a part of the Bing Autosuggest team, improve the diversity, coverage & quality of autosuggestions across 200+ countries in 100+ languages
- Leverage various data science & A/B experimentation techniques to innovate & evaluate solutions for enhancing suggestion relevance in Bing

Google Summer of Code 2020 Student Developer [Work Report]

Remote

PECAN PROJECT

Jun - Aug 2020

- Conceptualized & developed **rpecanapi**, an R package to leverage PECAn's services without the overheads of connecting to the database
- Revamped & dockerized the **PECAn RESTful API** to consist of all the endpoints which allow users to interact remotely with PECAn servers

Data & Applied Science Intern

Remote

MICROSOFT

May - Jul 2020

- As a part of the Core Relevance team at Bing, developed a framework to automate the analysis of ranking techniques based on DCG Metrics
- Improved query reproducibility rate by 10 % and slashed the time taken to debug ranking techniques from a week to only a few hours
- Selected to present the project at Microsoft's Machine Learning & Data Science (MLADS) Synapse 2020 Conference (41% acceptance rate)

Smart Contract & DevOps Intern

Remote

WALLET SOCKET INC.

Dec 2019

- Successfully completed the development testing of smart contracts for Pay0K, a crypto payment processor that integrates a variety of merchants
- Configured Istio proxies to build a service mesh for the microservices deployed on Kubernetes to communicate by abstracting the network

Blockchain Engineering Intern

Bengaluru

WANDX SOLUTIONS PVT. LTD.

May - Jul 2019

- Fabricated a new Security Token standard around ERC721 tokens using IPFS for storing proofs, along with proof verification strategies
- Engineered smart contracts for implementing confidential transactions of fiat-backed stable coins using AZTEC protocol for WalletSocket Inc.
- Devised a solution for WandX Desktop Application by aggregating multiple cryptocurrency exchanges to display best trades to the user

Backend Developer

Mumbai

ENCORO SOLUTIONS PVT. LTD.

Jan - Mar 2019

- Formalized and implemented the mathematical model to figure out key nodes in an organization as part of Social Network Analysis
- Analysed and evaluated the model to suggest the incorporation of various new parameters to improve the model

Blockchain Research Intern

Bengaluru

DUNYA LABS (INDIA) PVT. LTD.

Dec 2018

- Examined block data worth several days to formulate and test metrics for the middleware being developed on the EOS Blockchain
- Explored the working and applications of Zero-Knowledge Proof Systems such as SNARKs, STARKs and Bulletproofs on various blockchains
- Brainstormed about middlewares and services that could be built on top of upcoming blockchains such as Dfinity and Polkadot

Education

IIT Bombay

CPI: 9.90

B.TECH. IN MECHANICAL ENGINEERING WITH MINOR IN COMPUTER SCIENCE AND ENGINEERING

2017 - 21

Jaipur School

96.2%

INTERMEDIATE/+2

2017

St. Mary's ICSE School

99.2%

MATRICULATION (ALL INDIA RANK - 1)

2015

Key Projects

Lookup or Exploratory: What is Your Search Intent? [Paper]

Research Project

UNDER THE GUIDANCE OF DR. MANOJ AGARWAL (MICROSOFT)

Jun 2020 - May 2021

- Fine-tuned a transformer-based model to classify specificity of search queries into *exploratory* or *lookup* using augmented triplet loss function
- Achieved an accuracy of 80.25% & an F1 Score of 0.8321 on queries from actual Bing logs without the usage of session-related information
- Proposed a Semi-Greedy Iterative Training algorithm to improve the model accuracy to 87% using pseudo-ground truths
- Presented at Machine Learning & Data Science (Synapse) Conference 2020 | Published in Microsoft Journal for Applied Research (MSJAR) 2021

Travelling Salesman Problem: Parallel Implementations & Analysis [\[View\]](#)

ME, IIT Bombay

HIGH PERFORMANCE SCIENTIFIC COMPUTING COURSE PROJECT UNDER PROF. S. GOPALAKRISHNAN

Mar - May 2021

- Investigated & compared various paradigms of parallelization by implementing Brute Force TSP solution using OpenMP, MPI & CUDA (for GPUs)
- Contrasted OpenMP & MPI implementations using parallelization efficiency & Karp-Flatt Metric | Verified the extent of speedup for CUDA
- Quantitatively deduced the imperative need to choose an efficient algorithm to solve a problem instead of parallelizing an inefficient algorithm

WAVS: Web App Vulnerability Scanner [\[View\]](#)

CSE, IIT Bombay

FOUNDATIONS OF NETWORK SECURITY AND CRYPTOGRAPHY COURSE PROJECT

Feb - Apr 2021

- Developed a tool to perform inline vulnerability scan for a website given its URL & display the detailed results in the form of a dashboard
- Modularized the server code to analyse the status of SSL/TLS certificates, XSS, open redirection & potential phishing issues on the website
- Created a proxy to intercept & modify requests from the browser and also inject the scan results into the templated dashboard

McDefect Solutions: AI-Powered Manufacturing Quality Inspection [\[Demo\]](#) [\[View\]](#)

ME, IIT Bombay

ENGINEERING DATA MINING & APPLICATIONS COURSE PROJECT UNDER PROF. ASIM TEWARI

Oct - Dec 2020

- Customized AI-powered defect detection & classification solutions for manufacturing industries to improve the production efficiency
- Trained a RetinaNet-based Object Detection Model & VGG-based models for defect detection using transfer learning to achieve 98% accuracy
- Created the website, demo portal & RESTful API server for deployment, along with enabling auto-documentation for the project

zkCompound: Privacy-Preserving Compound Lending on Ethereum [\[View\]](#)

Hackathon Project

HACK IN/OUT 6.0, BENGALURU

Oct 2019

- Innovated a novel solution using zero-knowledge to achieve complete verifiable privacy while performing compound lending & borrowing
- Overhauled the Compound Finance Protocol smart contracts to integrate the zero-knowledge proofs verification offered by AZTEC Protocol
- Designed an aesthetically pleasing front-end for the application to make end-user experience as intuitive & seamless as possible

TEXTURify: Cross-Platform Application for Image Quilting [\[View\]](#)

CSE, IIT Bombay

DIGITAL IMAGE PROCESSING COURSE PROJECT UNDER PROF. AJIT RAJWADE

Sep - Oct 2019

- Obtained convincing results by implementing the Image Quilting techniques for Image Texture Synthesis & Transfer [based on this work]
- Fabricated a cross-platform application around the implementation using Ionic & FastAPI to transfer desired textures onto target images

Excalibur: Ethereum-Based Voting Solution [\[Demo\]](#) [\[Presentation\]](#)

Hackathon Project

MICROSOFT CODEFUNDO++, IIT BOMBAY

Aug 2019

- Conceptualized an end-to-end Decentralized Voting Solution to organize secure, reliable and transparent elections using Azure Blockchain
- Applied the concepts of cryptography to ensure anonymity of voters on a public blockchain during the election, yet making the votes verifiable
- Constructed the front-end for the decentralized application using Angular | Implemented the service to encrypt and decrypt votes using Python

Waffle-CLI: An Explorer for Ethereum [\[View\]](#)

Hackathon Project

BEYOND BLOCKCHAIN HACKATHON, GITCOIN

Jul 2019

- Developed a CLI tool, similar to Ethereum block explorer, curated for developers to monitor smart contracts, transactions & events
- Enabled custom filtering of transactions and events based on function signatures and local timestamps, along with ENS Domain resolution

Other Projects

KMR: Digital Repository for Document Storage CorpComp, TechFest 2020	[View]	Feb-Mar 2021
Athena: Playground for Visualizing Computer Graphics Curves Hobby Project	[View]	Feb 2021
Smart UI: Generating JSON & HTML from Wireframes Smart UI Hackathon, TechFest 2020	[View]	Jan 2021
HumanChain: Volunteering & Donation Platform during COVID-19 COVID-19 Global Hackathon 1.0	[Demo]	Mar-Apr 2020
Berkeley Clock Synchronization Algorithm Principles of Concurrent & Parallel Programming Course Project	[View]	Sep-Oct 2019
LendZ: Zero Knowledge Loans on Ethereum ETHIndia Hackathon 2.0	[Code]	Aug 2019
Pay-No-Load: A Plugin for the Aleth.io Ethereum Lite-Explorer Beyond Blockchain Hackathon	[View]	Jul 2019
Attendance System using Face Recognition Institute Technical Summer Project	[Video]	May-Jul 2018

Achievements

SCHOLASTIC

May 2021	Academically Outstanding Student Award, Mechanical Engineering Department Awards 2021	IIT Bombay
2019-21	Institute Rank 2, Indian Institute of Technology Bombay	IIT Bombay
2018-21	Department Rank 1, Mechanical Engineering Department	IIT Bombay
2017-21	AP (Advanced Performer) Grade in 4 courses, Awarded to top 1% students in a course	IIT Bombay
2020-21	O.P. Jindal Engineering and Management Scholarships (OPJEMS) Scholarship, O. P. Jindal Group	India
2015	All India Rank 1, ICSE Board Examination, among 0.16 million students	India

TECHNICAL

Q2 2021-22	Award for Excellence - Innovation , Search Technology Center India (STCI), Microsoft	Hyderabad
Mar 2021	1st Place , Smart UI Hackathon, TechFest 2020	Online
Aug 2020	Institute Technical Color , Institute Student Technical Awards 2019-20	IIT Bombay
Feb 2020	Winner , I_Hack Blockchain Track, E-Summit 2020	IIT Bombay
Aug 2019	1st Place , Microsoft CodeFunDo++ Institute-Wide Hackathon	IIT Bombay
Aug 2019	Winner , ETHIndia Hackathon 2.0 [Also won API Prizes of AZTEC Protocol, Lendroid & Matic Network]	Bengaluru
Jul 2019	1st Place , Aleth.io Lite Explorer Freestyle Track, Gitcoin Beyond Blockchain Hackathon	Online
Jul 2019	2nd Place , Aleth.io API Freestyle Track, Gitcoin Beyond Blockchain Hackathon	Online
2018-19	Special Mention , Hostel 3 Technical Awards	IIT Bombay
Aug 2018	Top Hack Prize , Lendroid track, ETHIndia Hackathon	Bengaluru

Positions of Responsibility

Institute System Administrator

IIT Bombay

HOSTEL AFFAIRS COUNCIL

Jun 2020 - May 2021

- Lead a 12-member SysAd team as the interface between IIT Bombay Computer Center and students across the institute
- Responsible for maintenance and upkeep of servers in the student data center, ensuring their smooth functioning & minimal downtime
- Developed & maintained the Application Management System (AMS) to digitize the process of filling, signing & approving institute-related forms

Overall Coordinator, Developers' Community

IIT Bombay

INSTITUTE TECHNICAL COUNCIL

Jun 2020 - May 2021

- Spearheaded the community of software developers at IIT Bombay with a 3-tier student technical team to accomplish several projects
- Brainstormed & contributed towards developing the Resume Verification Portal, Games Portal, Tech Projects & Funds Management Portal

Convener

IIT Bombay

THE WEB AND CODING CLUB, INSTITUTE TECHNICAL COUNCIL

Apr 2018 - Mar 2019

- Organized and spoke at sessions on Web Scraping, Game development, Version Control, Open Source and Blockchain Essentials
- Contributed towards developing and maintaining the website for Inter IIT Tech Meet 2018, held at IIT Bombay
- Conceptualized and co-founded the Blockchain@IITB Circle to promote and encourage blockchain research and development in the campus

Web and Marketing Coordinator

IIT Bombay

THE ENTREPRENEURSHIP CELL

Mar 2018 - Feb 2019

- Managed the organizing team for I_Hack, E-Summit 2019, reaching out to 50+ companies and 500+ hackers | Supervised all on-ground execution
- Contacted 200+ companies to explore new synergies for Eureka! 2018 and E-summit 2019, ensuring completion of all promised deliverables
- Mentored 20 freshmen in case study solving, business model canvas filling and pitch deck making during EnB Buzz at IIT Bombay

Certifications

Jul 2020	DevOps Culture & Mindset [View]	University of California, Davis Coursera
Apr 2020	Reinforcement Learning Explained [View]	Microsoft edX
Apr 2020	Natural Language Processing [View]	Microsoft edX
Jul 2018	Blockchain Fundamentals Training [View]	Blockchain Semantics
May 2018	Machine Learning Specialization [View]	University of Washington Coursera
Apr 2018	Certified Marketing Analytics Practitioner	Henry Harvin Education

Extracurricular Activity

Cultural Activities

- Started a [YouTube Channel](#), with covers & lyric videos for songs, reaching ~ 2000 views
- Conducted 3 solo painting exhibitions featuring 101, 135 and 68 paintings
- Excelled in Elementary and Intermediate Drawing Grade Examinations with an A Grade
- Secured International Best Prize at UNICEF's Japan International Painting Competition 2014
- Completed 3rd Year in Hindustani Classical Vocals

Sports

- Successfully completed one year of Squash under National Sports Organization (NSO)
- Represented the school in Inter-District Hockey and Table Tennis tournaments

Miscellaneous

- Mentored 25+ students across ITSP (2020), Summer of Science (2019 & 2020), Seasons of Code (2020 & 2021)
- Designed a manually controlled car for XLR8 Competition, capable of negotiating obstacles on a designated track
- Finalist of the personality contest at Cascade 2014, one of the biggest inter-school fests in Mumbai