# Bhavesh Asanabada

Researcher · Data Analyst · Software Developer · Open Source Contributor

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## Personal Profile

Data Analyst and Web Application Developer with 1.5 years of experience comprising Deep Learning, Computer Vision, and Machine Learning, and a remarkable history of developing MERN full-stack Web Applications. Strong willingness to exhibit my proficiency in Deep Learning and Machine Learning Algorithms in a professional environment.

## Skills

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| **Core skills** | **Programming Languages:** Embedded C, C++, Java, Python, JavaScript<br>**ML Algorithms:** Linear regression, Logistic regression, Decision tree, Random forest, XGBoost<br>**Deep learning Algorithms:** ANN, CNN, RNN<br>**Computer Vision:** Image Classification, Object Detection, Image Segmentation, OpenCV<br>**Internet of Things:** Firmware Design, Wire & Wireless Sensor Technology, Networking<br>Micro-controllers: Arduino UNO, Arduino NANO, NodeMCU, Raspberry Pi-3<br>**Cloud:** AWS, Firebase |
| **Tools & Frameworks** | MERN Stack, VueJS, Spring Boot (Backend), Django, Flask, Pandas, Numpy, Matplotlib, Scikit Learn |
| **Miscellaneous** | Docker, Jenkins, Agile Management, Linux, Shell (Bash/Zsh), LaTeX(Overleaf/R Markdown), Tableau, Microsoft Office, Git. |
| **Soft Skills** | Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation. |

## Work Experience

### Indiana University - Bloomington

*Indiana, USA*

Core Researcher

*Oct 2022 - Feb 2023*

- Engaged in tasks related to Distributed Systems. Provision and Seamless Management of High-Performance Computing Environment, including integrated compute infrastructure, tooling, and workload schedulers.
- I worked on the Science and Engineering Application Grid (SEAGrid) scientific gateway, serving 11M XD Service Units and supporting almost 25,000 jobs.
- Responsible for leveraging the performance of deployed scientific applications across a wide range of supercomputers, campus clusters, and cloud computing.
- Responsible for analyzing the Gaussian-16 Application with a high volume of data ingestion and fragmenting the output quantities.

### Google Summer of Code'22

*Remote*

Open Source Contributor for Apache Software Foundation

*May 2022 - Sep 2022*

- Designed and Implemented a Scientific Gateway Architecture with XSEDE Cyber-infrastructure for the project Apache Airavata, sponsored by the National Science Foundation(NSF) of America
- Built user-friendly scientific dashboards for visualizing real-time tabular and graphical data with a two-factor authentication service in VueJS
- Designed and implemented a real-time data pipeline to process semi-structured data by integrating thousands of records from different data sources using Apache Kafka
- Implemented a Google Remote Procedure Call (gRPC) API paradigm for Bi-directional message streaming in use of HTTP/2 for transport
- Implemented Protocol Buffers for serializing and de-serializing the data and communicating in binary
- Developed an application in the Django framework, serving as a middleware, to process the data transmission upon achieving the qualified ranking of the data classification algorithms and EDA
- Developed a Java Spring Boot application as a back-end service, used to extract data from three different HPC data sources configured in MySQL and MongoDB

### Wisecube

*Remote*

Data Analyst

*Sep 2020 - Nov 2021*

- Worked on the FIXimulator and Banzai tools for the sell-side and buy-side in Trading systems.
- Automated the data categorization based on the Instruments Ticker.
- Developed a syntax to customize the logon message and regenerated FIX messages in reference to FIX tags.
- Designed informative data visualization charts, and graphs in Tableau.
- Responsible for analyzing the trends, patterns, and outliners to exhibit meaningful insights.
- Responsible for data quality checks and validation procedures.
- Responsible for end-to-end data analysis, ensuring timely delivery.
- Collaborated with team members to ensure a shared understanding of data analysis goals.

**Microsoft** *Remote - Internship*

Software Engineer *May 2020 - Jun 2020*

- Acquired knowledge of Software Architecture, Structural Compositions, and Engineering Principles to solve complex problems.
- Acquired knowledge in Engineering methods and the business behind product lifecycle.
- Worked closely with Mentors, and a group of interns to evaluate requirements, estimate costs, create, and implement features and services.
- Developed a static website and explored the underlying concepts of Web Development.

# Projects

### Phishing classifier

University of Central Missouri *Nov 2021 - Dec 2021*

- Developed a phishing classifier using a variety of machine learning algorithms, including Naive Bayes, Support Vector Machines, XGBoost, and Random Forest.
- Preprocessed a large dataset of phishing and legitimate emails, extracting relevant features such as sender information, subject line, and email body.
- Trained the phishing classifier on the preprocessed dataset and evaluated its performance using metrics such as accuracy, precision, and recall.
- Implemented the phishing classifier into a web application that allows users to classify emails as phishing or legitimate.
- **Skills:** Python, Machine Learning

### Online Examination System (Web Application)

University of Central Missouri *Nov 2021 - Dec 2021*

- Developed a full-stack React application to conduct an exam via Web Application.
- Designed relational MongoDB database schema to structure the data efficiently.
- The content visibility, and access privileges among the faculty and students are the core of this system.
- Used Prisma to design the database schema.
- Developed Aggregation Pipelines to process the data and return the computed results overtime.
- Implemented an auto-save feature based on the time stamps during the examination.
- Automated the event listeners to check for the correct answers and display the grade on completion of the test.
- **Skills:** Node, React TSX, MongoDB, Postman, REST API

### Antenna Positioning System

Guru Nanak Institutions *Nov 2021 - Dec 2021*

- Designed and built a prototype for an IoT-based automatic control system that can supervise the position of a receiving antenna based on the signal strength of a transmitter.
- Developed an algorithm to observe the required signal frequency and quantize the signal strength in all possible directions in a 3D plane.
- Developed AI models to eliminate the white noise, process the coordinates based on the signal strength, and lead to turn the direction & an angle of a receiving antenna in all possible directions
- Developed AWS pipelines to render the coordinates, deliver the text messages, and Decrypt the transmitted signal message.
- Deployed and Tested in the University telecommunication lab, proven a wider usage for this system
- **Skills:** Micro-controllers (NodeMCU, Arduino), IoT Sensor Technology, MATLAB, Embedded C, Micro-Python, Flask, AWS, MySQL

### Health Monitoring System

Guru Nanak Institutions *Oct 2021 - Dec 2021*

- Developed an autonomous time-based control system to analyze the patient's health condition.
- Developed an MQTT protocol to securely transmit the data among IoT devices and AWS IoT-Core.
- Defined the threshold values for individual sensors to alert the excitation.
- Designed a Flask website to display the live sensor readings as in the Doctor's portal.
- A chat interface is featured to communicate between Doctor and Patient.
- **Skills:** Micro-controllers (Arduino), IoT Sensor Technology, Flask, AWS (IoT-Core, DynamoDB & MQTT Services)

# Education

**University of Central Missouri** *Missouri, United States of America*

Master of Science - Computer Science *Jan 2023 - Present (Expected by April'24)*

- Studied the core of computers, Compiler Design, Operating Systems, Algorithms, and Databases.
- Explored different databases - MySQL, MongoDB, Neo4j Graph Data models.
- Explored the field of Ethical Hacking. Performed Vulnerability assessments and Penetration tests for a network.
- Studied Big Data Analytics, hands-on the tools like AWS EC2, Apache Spark, Hadoop, and PyTorch.
- Explored the various algorithms of Neural Networks and Deep Learning.
- Developed various Machine Learning Algorithms.

**Guru Nanak Institutions - Technical Campus** *Hyderabad, India*

Bachelor of Technology - Electronics & Communication Engineering *June 2018 - July 2022*

- Covered the fundamental principles of analog and Digital circuits. Designed and analyzed various electronic circuits, including amplifiers, oscillators, and digital logic circuits.
- Explored the theory and practical applications of signal processing techniques and implemented various Digital Signal Processing algorithms using tools such as MATLAB.
- Gained expertise in microprocessor architectures, assembly language programming, and interfacing with external devices.
- Developed and tested embedded systems using microcontrollers.
- Completed coursework in advanced mathematics, including calculus, differential equations, and linear algebra, to support engineering applications.

## Achievements

2023 **Active Speaker on Material Sciences,** American Chemical Science (ACS) - Charted by U.S. Congress

2022 **321/340,** Graduate Record Examinations (GRE)

2015 **Gold Medal,** UNESCO