

# Ritu Raj Singh

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## EDUCATION

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**Bachelor and Master of Technology in Mathematics and Computing (Honours), IIT BHU, Varanasi**  
CGPA: 8.59 / 10

2017 – 2022

## EXPERIENCE

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### SDE(II)@Citrix

08/2022 – present

- Optimized API performance by employing asynchronous programming techniques and leveraging **Node.js** event-driven architecture.
- Developed robust **RESTful APIs** using Java and the **Spring framework**, including Spring Boot and Spring MVC.
- Developed a high-performing **Azure Sentinel Function** SIEM application capable of handling up to 15,000 events per invocation for efficient security event management and response.
- Utilized **Azure Databricks** to perform **data profiling** on various data sources for improved data quality and decision-making.

### Research Intern, Chanakya UG Fellowship

02/2022 – 06/2022

- Created a battery arbitrage system using **reinforcement learning (RL)** and **recurrent neural networks (RNN)** to develop a sustainable home energy management system.
- Utilized Python and Keras frameworks to implement the **deep Q-network (DQN)** algorithm and optimize energy consumption in homes.
- Developed a solution that effectively manages home energy usage by **minimizing waste and ensuring efficient** use of renewable energy sources.

Team- Aditya Singh, Prof T.Som(Advisor)

### Data Scientist@Citrix

Summer21

- Created a geofencing **recommendation system** from the login session data of users from different products of Citrix.
- Used the concept of Unsupervised learning like **KMeans, DBSCAN** to create a Ranking and Recommendation system and got exposure to Big Data analytics in Databricks and used Hive and Spark.
- Created and deployed the geofencing recommendation system pipeline using **Azure Databricks**.
- Used **Python, SQL, Python Spark, Azure Databricks**

### NumFocus Sponsered Intern @ SymPy

Summer19

- Developed a module([Link to Code](#)) in python to solve the general type of hypergeometric ordinary differential equations(ODEs)
- Created documentation and wrote unit tests for the implemented code in Python.
- Used Python, Git, C++

## TECHNICAL SKILLS

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Python • Data Science/Image Processing Stack • MySQL • Docker • Basic Kubernetes • Azure Databricks

## PROJECTS

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### Retinal Blood Vessels Segmentation

Created a supervised **SVM model** for classifying severity level of retinal blood vessels from Images by extracting features vector from the saliency map of images using the concept of **Locality Constrained Linear coding(LLC) and SIFT descriptor**. The concept behind this was to make the model fast and reliable for real-world use by avoiding the complex deep neural network. This was developed using **Python, Keras, and MatLab** on public data under the supervision of departmental professor Dr. Sunil Kumar.([Code Link](#) )

### Health Monitoring System

Created a simple UI by combining **NodeJs, Python, and (Kmeans)Unsupervised machine learning** to monitor a patient's health over time. It takes patient health data as a CSV format and predicts the condition of patients as Normal, Mild, Sever, Urgent Medical treatment requirement. It has a feature of finding the nearest location of Hospitals/Medicine shops by checking the availability of medicine/machines/space as per your health condition from your location. ([Code Link](#) )

### Face Recognition System For Lost People

**Tech: Transfer Learning(Zero-Shot Learning), Git, Heroku**

Developed an application(team: 3 members) for recognition of lost people by faces images using the Face matching API of Microsoft.([Code Link](#) )

## CERTIFICATE AND AWARD

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**GSOC Mentor @SymPy**

**Kubernetes on IBM Cloud Beginner Level Certificate.**

**LinkedIn Skill Assessment Badge of Python, Git, Machine Learning.**

**Codefest Enigma CSE department.,**

*Stood 1st in sophomore among 560 participants, a Natural Language Processing (NLP) online hackathon.*

**Flipkart Grid,** *Stood among the top 5 teams in our college and overall 19th in Flipkart Grid Level 1 machine learning challenge among 6500 teams.*

## SPORT CODING

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**Google Kick Start,** *Achieved a rank of 1101.*

**Google Code Jam,** *Achieved a rank 1749 and 423(In India) in round 1.*

**Facebook Hacker Cup,** *Achieved a rank 1487 and 173(in India) in round 2.*

## RELEVANT COURSES

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### Computer Science

Data Structures | Algorithms | Digital Image Processing | Operating System | Digital Signal Analysis and Application | Machine Learning

### Mathematics

Probability and Statistics | Mathematical Modeling and Simulation | Optimization Techniques | Numerical Analysis | Differential Equation