RITU RAJ SINGH

ACADEMIC PROFILE

Degree/Certificate	Institution	Percentage/CGPA	Year
IDD (Mathematics & Computing)	Mathematical Sciences IIT (BHU), Varanasi	8.37	2022

Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Sem VII	Sem VIII	Sem IX	Sem X
8.04	7.62	8.07	7.80	9.84	8.88	-	-	-	-

CBSE (XII)	B.N.S ENGLISH SCHOOL NARIA BHU VARANASI	84.60	2016
CBSE (X)	B.N.S ENGLISH SCHOOL NARIA BHU VARANASI	91.20	2014

SKILLS

Programming Languages | C++/C, Python, Java(Basic)

Area of Interests | Machine Learning/Deep Learning, Open Source, Mathematics, Parallel Computing, Algorithm and Data structure

Tools & Technologies | Keras, TensorFlow, Numpy, Pandas, Scikit Learn, Matplotlib, Azure

INTERNSHIP/TRAINING

NumFocus Sponsered Project 2019 1 May'19- 30 July'19

Organization: SymPy | Guided by: Ondřej Čertík, Aaron Meurer

- Developed a module to solve the general type of hypergeometric ordinary differential equations(ODEs)
- Developed a module to solve Differential Equations in Terms of Bessel Functions
- Refactor the ordinary differential equation(ODE) module

Technologies Used: Python, Git, Travis CI, Mathematics

PROJECTS

UG Project: Retinal Blood Vessels Segmentation Jan'2020 - Present

Supervisor: Dr Sunil Kumar, Department of Mathematical Sciences IIT (BHU) Varanasi

- Implemented a Linear Constrained Coding(LLC) algorithm for image classification
- Build and finely-tuned an LLC with Max_Ppoling to classify among 2 groups with an average accuracy score of 93%
- Currently building Saliency, and Adaptive LLC algorithm

Technologies Used: Python, MatLab, Image Processing

Milan:WebApp October 2018

Team Name:Sunami | Event Microsoft Codefundo++

- Developed an application for recognition of lost people by faces using Face Recognition on the data submitted by lost people relatives
- Stored the submitted data in Microsoft Azure database
- Deployed automated Microsoft Azure Face Recognition API and database on the Heroku platform to answer queries/issues related to lost people

Technologies Used: Microsoft Azure Face API, Heroku, Python

Exploratory Project: Diabetic Retinopathy Detection August'18- December'18

Supervisor: Dr Sunil Kumar, Department of Mathematical Sciences IIT (BHU) Varanasi

- Build an attention model similar to Natural Language Processing(NLP) attention models for Image Processing
- Build and finely-tuned a neural network to classify among five retinal groups with an f1 score of .54

Technologies Used: Keras, Python, Image Processing

Website: Departmental Society(MACS) Website 2019-2020

POR : Joint Secretary (Resource and Developement)

- Developed a website for Mathematics and Computing society(MACS)
- Build the design and feature of the website with resource and development team
- Hosted it on Hostinger

Technologies Used: HTML/CSS, Java Script

WorldQuant | Research Consultant July'19-October'19

- Selected after achieving Gold Level in WorldQuant Global Alpha Challenge
- Developed trading signal(alphas) for back-testing for trading in different universes(EU/Asia/US) and different tiers(Top 100/ Top 500/ Top 1000) using quant finance models

Exposure: Finance, Stock Market

PUBLICATIONS

- Submitted an e-print paper on diabetic retinopathy detection on arXiv, the paper was written by me under the supervision of Dr. Sunil Kumar, Department of Mathematical Sciences IIT (BHU) Varanasi.

- Submitted an e-print paper on Retinal Blood Vessels Segmentation on arXiv, the paper was written by me under the supervision of Dr. Sunil Kumar, Department of Mathematical Sciences IIT (BHU) Varanasi.

POSITION OF RESPONSIBILITY

- **Google Summer of Code(GSOC) Mentor** of the SymPy organization for the session 2019-2020
- **Captain of Volleyball team(Part III)** for Mathematics and Computing Society(MACS) sports meet 2018
- **Joint Secretary (Resource and Development)** of Mathematics and Computing Society(MACS) for the session 2019-2020

HONOURS AND ACHIEVEMENTS

- **Prastuti19: Recognizance** stood 1st among all college participants, a machine learning event on the prediction of electrical energy of the plant
- **Flipkart Grid**: Stood among the top 5 teams in our college and overall 19th(in a team) in Flipkart Grid Level 1 machine learning challenge among 6500 teams from all over India
- **Departmental Sports Meet-2019** Participated(Captain) in a team and had secured 1st position in Volleyball
- **Codefest18 Enigma**: Stood 1st in sophomore among 560 participants in Codefest Enigma, a Natural Language Processing (NLP) online hackathon on predicting the number of upvotes an article will get based on the data of other articles

EXTRA-CURRICULAR ACTIVITIES

- Participated in PyData global proposal writing workshops 2020
- Microsoft AI Challenge 2018: Participated(in Team) in Microsoft AI challenge India and made it to the final phase of the competition. The problem statement was to select the most relevant answer among all options provided a question and experimented on CNNs, BM25, BM25+, and BM11.
- Participated in Prastuti18: Recognizance (in a team) a machine learning event and successfully completed round one, in which we have to classify image objects in ten groups
- Participated in a startup weekend Varanasi powered by Google, where we worked on our startup idea for two days in a row and pitched it to the guests
- Contribution to open-source organization Vowpal Wabbit(owned by Microsoft), SymPy, SymPy Benchmarks, scancode-workbench

T: 7355082863 **E:** riturajsingh878@gmail.com **Address:** 07 Khanpur Chunar Mirzapur 231306