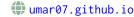
# Umar Masud □ um71000@gmail.com







### **Education**

August 2019 - Present April 2004 - March 2019

- **B.Tech ECE**, Jamia Millia Islamia, New Delhi,  $(9.07/10 \text{ till } 2^{nd} \text{ Sem})$
- Science Stream, The Frank Anthony Public School, New Delhi, (98%, ICSE  $12^{th}$ )

#### MOOC

Mar 2021 (Issued) May 2021 (Issued) Oct 2020 (Issued)

- Machine Learning: From Basics to Advanced
- Python and Flask Framework
- Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship, Finance for Startups

# Work Experience

### Research

May 2021 - July 2021

#### SUMMER RESEARCH INTERN, IIIT-Allahabad.

Worked on the topic of "Automatic Detection of Image Splicing", under Prof. Anupam Agarwal, in Interactive Technologies and Multimedia Research (ITMR) Lab.

Did literature review and comparative analysis, implemented five baseline papers from scratch and ran various experiments/simulations, cross-evaluated the SOTA papers with different datasets and out-of-distribution training/testing environments. Concluded a study that the latest methods have an overestimated performance and are unsuitable for real-world applications.

April 2021 - Present

## UNDERGRADUATE RESEARCHER, Jamia Millia Islamia.

Working on a problem pertaining to "Facial Mask Detection and Positioning", under Prof. Sarfaraz Masood.

Designing a research participation form and collecting a dataset from scratch for our purpose. Exploring various benchmark Facial Recognition datasets, literature review and analysis, applying latest Object Detection techniques on a novel sythentic dataset we developed by image stitching using homography matrix for our purpose.

#### **Engineering**

September 2021 - Present

#### Junior ML Engineer, Omdena Global.

Collaborating in a team of 50+ ML engineers to develop a production-ready deep vision system that uses geospatial data to provide accurate rooftop solar PV analysis, inlcuding factors such as total roof-area, roof obstacles, shadows/solar potatential, rooftop material, etc. This project is in association with Rebase Energy.

December 2020 - January 2021

## Web Development & Design Intern, The Spark Foundation.

Completed two tasks of building a demo-banking system and making a donation webpage with payment gateway integration.

December 2020 - February 2021

Web Development Volunteer, M.I.N.D.S Responsible for the development and timely updating of their website.

#### **Open Source Participation**

October 2020 - November 2020 December 2020 - January 2021

- Succesfully completed the Hacktoberfest'20.
- Contributed in Winter of Code, IIT Kharagpur (kWoC).

## **Projects**

### **Machine Learning**

Classical ML

- Reproduced 5 papers on the topic *Image Forgery Detection* that uses hand-crafted features for classification of pristine and tampered images.
- Diabetic Retinopathy Detection using Texture Features and Ensemble Learning (paper implementation). Achieved F1-score = 0.97 and accuracy = 97.2%
- Fog detection in images using GLCM based features and SVM (paper implementation). Got F1-score = 0.83 and test accuracy = 82.3%
- Phishing URL detection system based on URL features using SVM (paper implementation). Achieved F1-score = 0.99 and test accuracy = 99.2%

#### OpenCV Projects

- Air-Piano, an air-based piano enabling the person to play through hand(fingertip) movements.
- Air-Drum System, an air-based drum beat generator.
- Background Color Detection, uses 2 techniques to detect a suitable background for the input image.

#### Deep Learning

- Background Remover tool for portrait images of humans, made using a U-Net model trained for semantic segmentation of the image. The model achieved 0.981 IOU-score on test data. Also deployed on a web-app.
- Implemented the paper Medical image denoising using Convolutional Denoising Autoencoders(CAE). Achieved a loss = 0.106 or Structural Similarity Index(SSIM) = 0.894.
- Image similarity measure through Siamese network on fashion apparels. Got an evaluation accuracy of 94.2%
- Plant Pathology Challenge, a FGVC8 workshop challenge at CVPR-2021 for multilabel classification of plant leaf diseases. Got 87.34 accuracy with a pre-trained model as feature extractor.
- Human Emotion Detection, Pneumonia Prediction models.

#### Web Development

**Banking System** 

The project contains a simple banking system that enables to transact between the customers. It uses HTML, CSS, bootstrap, PHP, and MySQL, with the local server provided by the XAMPP.

Website Template for InnerveSOC

As a part of the InnerveSOC competition, designed a complete website template for Innerve Tech-Fest 2020, IGDTUW. **I was the adjudged winner.** 

### Miscellaneous

#### **Skills**

Languages

Python, Java, HTML/CSS, PHP, Javascript

Libraries

NumPy, Pandas, Matplotlib, Sklearn, OpenCV, Keras, TensorFlow, Flask.

Database

MySQL, PostgreSQL

Interpersonal

Communication, Public Speaking, Critical Thinking, Team Leadership, Team Management.

## Positions of Responsibilty

August 2021 - Present January 2021 - Present

- **ML/AI Dev,** Google Developer Student Club JMI.
- **Youth Ambassador,** HundrED Global Organisaton.

### **Awards and Honors**

August 2021 June 2019

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5th Summer School of AI 2021 - IIIT Hyderabad: One amongst 500 participants worldwide. INSPIRE Science Award For Top 1%: Scholarship for Higher Studies by Govt. of India.

September 2019

August 2017

- Mr. Harbinder Singth Dugal Rolling Trophy: Awarded for Proficiency in Science ISC-XII.

  Mr. G W Mayer's Merit Scholarship: Awarded for excellence in Mathematics and Science.
- Shanker Sumeda Rolling Trophy: Awarded for Excellence in Academics.