

## EDUCATION

Course/Board	Institute	Specialization	Year of passing
Bachelor in Engineering	Thapar Institute of Engineering and Technology, Patiala	Computer Engineering	2023
12 <sup>th</sup>	Delhi Public School, Faridabad	PCM	2019

## EXPERIENCE

### Google Summer of Code

Contributor at PyMC | May 2022 - Sep 2022

- Created a new model builder class that extends current PyMC model functionality.
- Documented and tested model builder class and merged it to pymc-examples, reported my progress to Thomas Wiecki (CEO & founder of PyMC labs).
- Working on deployment of these models on various deployment tools like Docker, Sagemaker, Dask.

### Indian Institute of Technology, Delhi

Research Internship | Jun 2022 - Aug 2022

- Working with Dr. V V K Srinivas on a project related to Time Series Analysis.
- Used ARIMA, SARIMA, LSTM, RNN to forecast prices for Indian Energy Exchange day ahead markets.

### Indian Institute of Information and Technology, Allahabad

Research Internship | Jun 2021 - Mar 2022

- Worked with Dr. Javed on compressed domain of JPEG2000 image, used TensorFlow Keras to make Convolution Neural Network for classification of images using their Discrete Wavelet Transform Coefficients retrieved during compression of images using High throughput JPEG200. (**Work under review**)
- Segmented semi compressed images using their DWT Coefficients, worked on data augmentation using GANs.

### Bennet University, Noida

Research Intern | Aug 2021-Dec 2021

- Worked with Dr. Suneet Gupta and Dr Ekta Walia (University of Saskatchewan) on data augmentation of MIAS dataset using GANs

## Skills

Programming languages: Python, C++, MATLAB, R\*, Solidity\*

Libraries / Frameworks: TensorFlow, openCV, NLTK, PyTorch, PyMC, MLflow\*

Tools / Platforms: Docker, Git, L<sup>A</sup>T<sub>E</sub>X, GPU computing\*

(\* : Elementary proficiency)

## Projects

NoTouch: Contact less fingerprint biometric verification

Image processing, Deep learning, Computer vision | Ongoing

- Studied theory of fingerprint biometric and verification.
- Segmented fingerprint from fingerprint photos using skin colour and saliency based mask.
- Designed a U-net for enhancement of fingerprint photos.
- Used Deep Learning model for extraction of minutiae points.

## Sticky Stuff MLB

### Bayesian Modelling, PyMC, Aesara | July 2022

- Made a PyMC model to find change in mean of spin of baseball pitchers due to baseball regulations.
- Used Bayesian modelling to compute the predicted change in mean.
- Wrote a blog on usage of PyMC for making traditional Bayesian models [blog].

## Adversarial Attacks on CNN classification model

### Adversarial, Computer Vision | August 2021

- Designed a Convolutional Neural Network for classification of images from MNIST dataset
- Attacked the same network with a gradient based perturbation which uses gradient tape to disrupt the predictions of neural network.
- The attack successfully reduced the accuracy of CNN from 98.33% to 4.74% after the attack. [repo]

## Captcha Reader

### Optical character recognition, Computer Vision | July 2021

- Improved and trained a model to read text captcha using Convolutional Neural Network and Recurrent Neural Network to crack captchas using OCR.
- This model specialises in reading images with strikes out characters or distorted characters. [repo]

## DeepFake Classifier

### DeepFake detection, Computer Vision | May 2021

- Implemented a DeepFake classifier on images using MesoNet, created a Convolutional Neural network to compute the binary classification model. Implemented the same model for videos on a Kaggle contest. [repo]

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## Other Interests and Achievements

- Bronze medal in Kaggle contest hosted by American Express on Time series forecasting (top 7%)
- 3 star programmer on CodeChef, 5 star in DSA, Python, C++ at HackerRank
- Keen interest in Blockchain technology and Cyber Security.
- Worked on multiple IOT projects using Arduino and Raspberry pi 4B

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## Coursework

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|------------------------------|--------------------------------------|----------------------------------|
| • Artificial Intelligence    | • Design and Analysis of Algorithm   | • Introduction to Cyber Security |
| • Machine Learning           | • Data Structure                     | • Cyber Forensics                |
| • Probability and Statistics | • Operating Systems                  | • Secure Coding                  |
| • Optimisation Techniques    | • Computer Networks                  | • Blockchain                     |
| • Compiler Design            | • Computer Organisation Architecture | • Embedded systems               |
|                              |                                      | • Network Programming            |

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## Relevant links

Github: [github.com/5hv5hvnk](https://github.com/5hv5hvnk)  
Kaggle: [kaggle.com/shashankkirtania](https://kaggle.com/shashankkirtania)  
LinkedIn: [linkedin.com/in/shashank-kirtania](https://linkedin.com/in/shashank-kirtania)  
CodeChef: [codechef.com/users/shashank1608](https://codechef.com/users/shashank1608)