



Kritin Garg
Computer Science & Engineering
Indian Institute of Technology Bombay

170050028
UG Third Year (B.Tech.)
Male
DOB: 02-09-2000

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	9.75
Intermediate/+2	CBSE	St. Joseph Convent School	2017	96.80
Matriculation	CBSE	K.V. No. 1	2015	10.00

Email : kritingarg0209@gmail.com LinkedIn Profile : Kritin Garg Contact : +91-7976795342
 Completed Minor in **Applied Statistics and Informatics** and Pursuing **Honors** in Computer Science

SCHOLASTIC ACHIEVEMENTS

- **Department rank 5** in a batch of 126 students (2020)
- Received **Institute Academic Prize** (given to top 10 students) for exceptional academic performance (2018)
- Awarded **3 AP** (Advance Performer) given to top 6 out of 900 students for academic performance (2017-20)
- Achieved **All India Rank 56** in JEE-Advanced out of 1,50,000 candidates (2017)
- Secured **All India Rank 22** in JEE Mains out of 1.4 million candidates (2017)
- Received **Gold Medal** for being among **top 35** students in Indian National Chemistry Olympiad (2017)
- Amongst the **top 35** students to attend selection camp of Indian National Junior Science Olympiad (2015)
- Qualified for Indian National Physics and Astronomy Olympiad along with **300** other students (2017)
- Recipient of the prestigious **KVPY fellowship** by DST, Govt. of India with **All India Rank 63** (2016)
- Awarded National Talent Search Examination **NTSE** scholarship by NCERT, Govt. of India (2015)

INTERNSHIPS AND RESEARCH EXPERIENCE

Chatbot For Samsung Smart TV Documentation

May - June 2020

Guide: SeokJae Oh

Samsung Korea, Suwon

- Built an **Android app** based **Chatbot** to resolve queries regarding Samsung TV Documentation
- Developed a **Knowledge Graph** to store complete documentation and graph paths to answer queries
- Trained an **NLP** based intent classifier to return best possible answer using knowledge graph

Developing Trading Strategies Using GAN

June - August 2020

Guide: Longzhuang He

Dynamic Technology Lab, Singapore

- Implemented complete pipeline for **Backtesting** Strategies and developed various **Technical Indicators**
- Predicted the Signals for each stock using multiple machine learning and data processing algorithms
- Generated Artificial stock market data using **GAN** and evaluated using Leverage Effect, Fat tail properties
- Predicting the next day return for each stock using a GAN Model, and obtained better **Sharpe Ratio**.

Single Age Gender Mask Classifier

April - May 2020

Guide: Jason Rigby

AWL Inc, Japan

- Received **Pre Placement offer** and **Letter of Appreciation** for inquisitiveness and exemplary performance
- Implemented **CycleGAN** and **pix2pix** models in Pytorch for generating mask annotated dataset.
- Trained a single model to perform age, gender and mask classification for both mask and non-mask faces.
- Implemented **Grad Cam**, Fretchet Inception Distance and Inception score methods for gan evaluation

Information flow through Interval Labelled Markov Chain (ILMC)

Summer 2019

Guide: Prof. Blaise Genest

INRIA, France

- Designed a **PSPACE** algorithm to verify opaqueness (security) of the system for both semantics of ILMC
- Developed a **LOGSPACE** algorithm to detect any information flow from the system for an ILMC
- Designed an approximation algorithm to quantify the average opacity degree of LMC and ILMC

Medical Knowledge Graph for Disease, Symptoms, Treatment

Winter 2019

Guide: Prof. Ira Assent

Aarhus University, Denmark

- Received **Letter of Appreciation** for inquisitiveness and exemplary performance
- Build a summarised Knowledge Graph containing diseases, their symptoms, aliases and treatment using **Graql**
- Performed relation extraction for symptoms and treatment using logistic, bayesian and noisy or loss functions

Connect Socially and Whatsapp Automation

Winter 2018

Guide: Sanjeet Gupta

Giant View, Pune

- Developed a **PWA** (Progressive Web Application) of social media platform using Django, Bootstrap and jquery
- Built a Chatbot to send text and media files through **WhatsApp** employing **Yowsup** library
- Developed an online interface using Vue.js to completely automate messaging using Whatsapp Bot

KEY PROJECTS

Bachelor Thesis: Visual Question Answering for Charts and Graphs

Autumn 2020 - Ongoing

Guide: Prof. Soumen Chakrabarti

IIT Bombay

- Developing **End-to-End Models** to answer questions based on different Charts and Graphs
- Building Architectures to relate legends in charts to citations in a paper or paper itself
- Ensure robustness of the developed models to Visual Changes in colors and syntax of different Chart

Adversarial Attacks on CNNs

Spring 2019

Guide: Prof. Sunita Sarwagi | Course Project

IIT Bombay

- Studied and Implemented various attacks on CNN and their preventive techniques on different datasets
- Performed **Carlini-L2** adversarial attack for CNNs and tested accuracy on various datasets.
- Implemented a Gan Based Solution to fool Carlini-L2 attack and achieved 90% accuracy on MNIST dataset

Protection Against Sophisticated DOS attacks

Spring 2019

Guide : Prof. Bernard Menezes | Course Project

IIT Bombay

- Implemented a Python Daemon that maintains real time profiles of each user, detects Sophisticated DOS attacks and communicates with the server to block malicious users through **two layer Iteration**
- Developed a security library that protects any C++ server with minimal code and performance overhead
- Used **Function Level Profiling** and Statistical Execution Model to detect and block malicious requests

Secure Personal Cloud

Autumn 2018

Guide: Prof. Soumen Chakrabarti | Course Project

IIT Bombay

- Implemented a **Zero-Knowledge** based secure cloud using **RSA, ARC4, Blowfish** and **AES-CBC** block level file encryption at the client side to ensure secure end-to-end encryption while uploading files
- Developed a server with **Django** web framework at the back-end integrated with an **SQL** database
- Programmed a **Linux client** and a daemon which can observe a directory and sync user data actively

Complete Health Management System

Spring 2019

Guide: Prof. S. Sudharshan | Course Project

IIT Bombay

- Built an **React App** for booking online appointments, managed using a common Postgres Database
- Introduced the idea of **EMR**(Electronic medical records) allowing the complete process to be online
- Provided hospitals with a **Complete Management System** to handle Appointments and online consultations
- Used Knowledge Graph to store complete health history of each patient accessible to their doctors

Carrom Playing Engine

Spring 2018

Guide: Prof. Amitabha Sanyal | Course Project

IIT Bombay

- Simulated Carrom game in Racket language using **Object-Oriented** and **Functional programming** paradigms
- Designed and Implemented a **Ptime** algorithm to determine next best possible move in single player mode
- Created the 2-D interface of board using Racket Graphical Toolkit with feature of undoing previous move

Other Course Projects

- **Hub App**: Built an app to get GitHub repository information of the users using **GitHub REST API v3**
- **Socket Programming**: Implemented terminal based client/server **file transfer protocol** which handled all the file types, catered to multiple simultaneous requests and supported error handling
- **Chrome Extension**: Created a Google Chrome Extension to detect and block **XSS** whole script injection

TECHNICAL SKILLS

Programming

C++, Python, Java, Bash, ASP, Prolog, Racket, Arduino, AWK, Sed, VHDL

Data Science

Pytorch, Tensorflow, Keras, OpenCV, NumPy, Sklearn

Web Development

Django, HTML, CSS, JavaScript, GoLang, Bootstrap, JQuery, Android Studio

POSITIONS OF RESPONSIBILITY

Department Academic Mentor

June 2020 - ongoing

- Mentoring 6 sophomores of CSE department to assist them in navigating department-specific curriculum

Teaching Assistant, MA-105 ,Calculus

Autumn 2018

- Conducted regular **tutorial sessions** for a batch of **50** students in association with Prof. Sourav Bhaumik

Volunteer, Web and Coding Club

July'18- Mar'19

- Actively planned and organized various **hackathons**, conducted **bootcamp** on github

EXTRACURRICULARS

- Mentored 4 students to implement POP3 protocol and Rampart a **SDOS** defense mechanism under SOC (2019)
- Achieved **3rd** position out of **256** teams participating in **Jigyasa Quiz**, organised by Mumbai University (2017)