

HARSH AGARWAL

Senior Undergraduate

Department of Computer Science and Engineering

Indian Institute of Technology, Kanpur

harshagarwal0194@gmail.com ✉

harsh-agarwal 🏠

Harshagarwal19 🌐 | harsh-agarwal6 in

+91-8384882018 📞

EDUCATIONAL QUALIFICATIONS

Year	Degree	Institution(Board)	CGPA/%
July'17 – June'21 (expected)	B.Tech, CSE	Indian Institute of Technology, Kanpur	9.9/10.0
2017	AISSCE – XII	AVMD Institute, Agra (CBSE)	93.4%
2015	ICSE – X	St. Peter's College, Agra (CISCE)	95.5%

SCHOLASTIC ACHIEVEMENTS

- Academic Excellence Award, for three consecutive years
- Rank 113, JEE Advanced (amongst 200,000 candidates)
- Rank 224, JEE Main (amongst 1.5 million candidates)
- KVPY Scholarship Awardee, Indian Institute of Science
- Top 1%, National Olympiad in Physics and Chemistry

PROJECTS

Sentiment Analysis arxiv.org/abs/2007.10819 📄

Research Project under Prof. Ashutosh Modi Jan 2020 - Apr 2020

- Participated in Task 9 of SemEval-2020 Challenge. Aim was Sentiment Analysis of Code-Mixed Social Media Text.
- Proposed a novel ensemble of CNN and self-attention based LSTM. Utilizing pre-trained XLM-R embeddings.
- Visualized performance by projecting encoded sentence vectors onto a 2D subspace using t-SNE algorithm.
- Ranked 5th on the leaderboard with accuracies of 70.75% and 72.5% for Hinglish and Spanglish tasks.
- Research Paper accepted at SemEval Workshop in COLING'2020 conference to be held at Barcelona, Spain.

CrackCaptcha [Harshagarwal19/CrackCaptcha](#) 📄

Course Project Nov 2019

- Used gaussian blur to remove noise and implemented Image Segmentation to break captcha into individual letters.
- Recognized individual characters using a multi-layer CNN.
- Obtained more than 99% accuracy on the test set.

Building GemOS [Harshagarwal19/CS330](#) 📄

Course Project Aug 2019 - Nov 2019

- Implemented various OS designs and optimizations such as Process Context, Paging, Filesystem, and Multithreading.
- Implemented pipes, multilevel page tables with lazy allocation, cfork, vfork for smart process creation, and parallelized hash tables using Multithreading.

Log Analyser [SnehalRaj/LogAnalyser](#) 📄

Nutanix's All India Hackathon Mar 2019

- WINNER of Nutanix's Cloud.init.io hackathon.
- Created a Distributed log analyser web app with Django.
- Implemented features like Live Debugging, Timeline view, Searchable exception patterns, and Statistical graphs.

Movie Booking App [Harshagarwal19/BookMyMovie](#) 📄

Course Project Oct 2019

- Built an Android App to book movie tickets using MERN.
- Used Node.js for backend, React Native for creating UI, and Native Android functions for camera and gallery.

Recommender System [Harshagarwal19/RecommenderSys](#) 📄

Course Project Oct 2019

- Analysed multiple extreme classification approaches.
- Finalized on PFastreXML which works better for tail labels. Achieved 0.66 prec@3 and 0.06 mprec@3 on given data.

Substitution Cipher [Harshagarwal19/D-Cipher](#) 📄

Course Project Mar 2019

- Implemented a decrypting tool in Haskell. Used frequency analysis and dictionary-lookup and achieved 89% accuracy.

WORK EXPERIENCE

Sansung Electronics HQ *Suwon, South Korea*

Computer Vision Engineer May 2020 - June 2020

- Worked on Occlusion removal to improve object recognition.
- Implemented a novel pipeline by breaking the original problem into two well-known computer vision problems - Instance Segmentation to remove object in foreground and Image Inpainting to complete object in the background.
- Used Mask R-CNN for segmentation and EdgeConnect for inpainting. Dataset images were scrapped from google.
- Achieved 29.15 PSNR and 0.0104 MAE metric values.

Learngram AI *Bangalore, India*

AI Intern July 2020 - Aug 2020

- Worked on building a Deep Learning model to map question to the corresponding topic in Mathematics domain.
- Modelled the problem as semantic similarity on documents.
- Used triplet loss with Siamese network and extractive summarization for shortening long documents.
- Obtained 65% recall@3 and 75% recall@5.
- Also worked on performing handwritten text recognition.
- Used word segmentation and then image2text conversion.

Skillate *Bangalore, India*

Data Science Intern May 2019 - July 2019

- Developed a sentence auto-complete tool, to help the clients write improved and faster Job Descriptions (JD).
- Trained an encoder-decoder architecture, with Bert encoder and Transformer decoder, using transfer learning.
- Implemented an algorithm to effectively use the API result.

Summer of Code *Kanpur, India*

Full Stack Intern May 2018 - July 2018

- Developed an app to dynamically keep track of every individual's presence in the office using live attendance.
- Used CCTVs to take live attendance. Had email support.
- Developed on Django and integrated Azure's face APIs.

MISCELLANEOUS

- Selected for Google's AI Summer School, 2020
- Completed all 5 levels of Google Foobar Challenge
- Tutor for course Introduction to Programming, Fall 2020
- Mentored 6 freshers in building a Transpiler

SKILLS

Programming: C++, C, Python, Haskell, R, PHP, MYSQL, Bash, Java(Basic), Verilog

Libraries: PyTorch, Tensorflow, Scikit-learn, NLTK, OpenCV

Web: Django, React, Javascript, TypeScript

Tools: Linux Shell Utilities, Git, L^AT_EX, Vim

RELEVANT COURSES

Natural Language Processing, Image Processing(*i*), Data mining(*i*), Intro to Machine Learning, Computer Organisation, Computer Networks, Operating System, Data Structures and Algorithms, Computing Laboratories, Theory of Computation, Compilers, Probability, Linear Algebra *i* - Ongoing