

# HARSHAL GAJJAR

This is NOT my handwriting!  
Scroll to projects to learn more & interact with outputs

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2<sup>nd</sup> year Grad (MSCS) student at Georgia Institute of Technology who is into caving, ethics, design, human behavior, and is passionate about creating systems that impact lives.

## CORE COMPETENCIES

Data collection (human-in-the-loop/APIs)	Data(set) management	Intrapreneurship	Complete Solution Engineering
Neural Net Implementations & Research	Rapid Prototyping	Workflow Automation	Web & Cloud Development
Innovative/hacky Problem Solving	Software Connectors	UX & Design	Technical Documentation
Code/Feature/Product Ownership	Computer Vision	Time-series Modeling	Customer Loyalty

## TECHNICAL COMPETENCIES

Python, TensorFlow, Keras, Wolfram Language, PHP, CSS, JavaScript, SQL, PySide, OpenCV, FFMPEG, Neo4j (& Cypher), Flask, GCP, AWS, PySpark, C++, Selenium, Bash, Node.js, React.js, Redux, ArangoDB (& AQL)

## EDUCATION

**Georgia Institute of Technology; Atlanta, GA, USA** Aug 2021 to Dec 2022

Master of Science (M.S., Computer Science specialising in Machine Learning)

**Indian Institute of Technology (IIT) Dharwad; Dharwad, KA, India** Aug 2016 to May 2020

Bachelor of Technology (B.Tech, Computer Science & Engineering)

## EXPERIENCE

### Graduate Research Assistant

**CLAWS Lab, Georgia Institute of Technology;**

Spring 2022 to Present – Atlanta, GA, USA

Developing a system for better capturing the flow of online misinformation by collecting, processing and visualising massive amounts of content generated online. The aim is create a scalable platform for defending against misinformation where humans and ML models work together to reduce human load and handle concept drift. This project has been funded by NSF.

### FDE Intern

**C3.ai**

Summer 2022 – Redwood City, CA, USA

Delivered an internal app for optimised resource management within C3, contributed to the UI framework library, and to the C3 online documentation/community.

### Machine Learning Researcher

**Axis Technical Pvt. Ltd.**

October 2020 to July 2021 – Remote, India

Made attention layers, transformer models from scratch in TensorFlow using its functional API for OCR and handwriting recognition. Reached an accuracy better than Tesseract and matching that of OmniPage, with a word error rate of <2.1% and line error rate of <4% on the internal datasets. This work gave Axis the ability to process any language/script which off-the-shelves software did not!

### Computer Vision Intern

**GMD Consultants Pvt. Ltd.**

Summer 2019 & 2020 – Mumbai, MH, India

Developed a fully automated video analytics (speeds/paths/counts of vehicles in videos) software using YOLOv4 and PySide2 which is saving GMD Consultants more than Rs. 20k (\$250) per day on the human labor costs.

### Instructor

**Wolfram Summer Camp**

Summer 2019 & 2020 – Boston, MA, USA

Sponsored by Wolfram for 2 talks on image processing and importing of data in Wolfram Language each year. Mentored 9 machine learning projects (ranging from character recognition to transfer learning on GPT2.)

### Software Development Intern

**GMD Consultants Pvt. Ltd**

Summer 2018 – Mumbai, MH, India

Delivered a software to generate constant time commute polygons for a given time, start/end location, and mode of transport using Google Maps API, and Here Maps. Used to aid clients strategically position stores. This work generated over Rs. 8L (\$11k) of revenue just during my period of involvement over the summer.

## PROJECTS ↗

### DeFi Startup *Fall 2021 to Spring 2022*

Our team's idea was selected in Georgia Institute of Technology's I2P program for Spring 2022 semester. We're working towards making a cryptocurrency wallet that is as easy to use as current bank accounts.

### Adversarial Attack on DISQUS *Fall 2021*

Attacking DISQUS toxic filter using GAN to make the filter misclassify malicious toxic comments. Our model was inspired by Gumbel-softmax GAN and MALCOM paper.

### THIS Writing Does Not Exist ↗ *2020*

Fictional hand writing generator - made while learning about GANs (Generative adversarial (neural) networks). GANs consist of two (sub) neural networks - generator and discriminator, which over time learn to generate better fictional images and discriminate better between fictional and real images respectively. To generate new writings, the trained generated is being used.

### Court ↗ *Fall 2016 to Spring 2020*

Being a hostel maintenance secretary at IIT Dharwad, I used this opportunity to develop a hostel complaints and students' leave management portal for the institute.

## RESEARCH EXPERIENCE

### Chromatic Discrepancies of Graphs (a B.Tech. Project), IIT Dharwad *Fall 2019 to Spring 2020*

Solved (with Prof. Sagnik Sen and Prof. Sandeep R.B.) two open problems in the field of Chromatic Discrepancies of Graphs - algorithm for Cluster Graphs and algorithm for Cactus, Cacti/Deserts.

### Summer Researcher in Wolfram Summer School ↗, Wolfram Research Inc.; Boston, MA, USA *Summer 2018*

Created a new algorithm for tiling of surface using a given set of polyominoes.

## VOLUNTEERING

### Software Developer

#### Humanistic Co-Design Initiative ↗

*Since Jan 2019 — Boston, MA, USA (Remote)*

Creating online platform (in association with an Prof. Kyle Keane from MIT) for connecting of differently abled people & young engineers with ability to manage workshops, challenges & meetings, (and collaboratively edit projects.)

## TEACHING ASSISTANTSHIPS

### Comp. Sci. T.A. (under Prof. R. Phawade)

#### IIT Dharwad

*Fall 2018 — Dharwad, KA, India*

For the course "Software Systems Lab" course which covered 11 languages in 11 weeks.

## OTHER ACHIEVEMENTS

[Audit] Sequence Models (Coursera, Prof. Andrew N.G. from Stanford) *June 2020*

[Audit] Stanford CS231N CNN for Visual Recognition *Jan 2020*

Guinness World Record ↗ (Group record for longest cycle chain) *Jan 2019 - March 2019*

Machine Learning Course by Stanford ↗ *Jan 2018*

### Public Opinion Analysis towards 2020 US

#### Presidential Elections *Fall 2021*

Analysed 20M tweets (hashtags and stance, 47GB of data) to confirm correlation between news and online opinion

### Campus Speaks ↗ *Fall 2019*

IIT Dharwad had no platform for public rating of courses, hence CampusSpeaks was born. It is a course (and Professor) rating platform with a user based Collaborative Filtering recommender system for better course selection.

### Sambhal ↗ *Fall 2018*

Electronic Devices Lab at IIT Dharwad was using old school paper registers to keep track of equipment/component issues. Me and my team used this opportunity to deliver a platform to manage inventory, request purchases, manage issuing of components & devices.

### PostPublish ↗ *Spring 2017*

A CMS for converting any static website into blog in seconds. This was developed as a simpler alternative to WordPress.

### Technical Manager

#### DIAL 2018 (ML, AI & DL)

*Oct 2018 — IIT Dharwad, KA, India*

Development of Industry Academia Link (DIAL) is an annual discussion forum (at IIT Dharwad) involving round table & public discussions.

### Physics T.A. (Prof. C. V. Tomy)

#### IIT Dharwad

*Spring 2017 — Dharwad, KA, India*

For the course "Electricity and Magnetism" in second semester.