

JAY GALA

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EDUCATION

**Dwarkadas J. Sanghvi College of Engineering
(University of Mumbai)**

Aug 2017 - May 2021
Overall GPA: 9.86/10

B.E. in Computer Engineering

Applied Mathematics, Discrete Mathematics, Algorithms, Databases, Machine Learning, Artificial Intelligence, Natural Language Processing

EXPERIENCE

Remote Research Collaboration

Sep 2021 - Present

Independent Researcher

Advisor: [Zeerak Talat](#)

- Identify real-world representations of overt hate speech on different non-iid datasets using Federated Learning.
- Extension to the cross-dataset model generalization by [Fortuna et al.](#) for hate speech.
- Experiments include base models, AWD-LSTM, DistilBERT, ALBERT, DistilGPT-2, FNet, etc.

University of California San Diego

Jun 2021 - Present

Research Intern

Advisor: [Prof. Pengtao Xie](#)

- Working on applying humans' learning skills, specifically *learning from mistakes*, as an extension to [Skilllearn](#).
- Built efficient optimization algorithms for Neural Architecture Search adopting an importance weighting strategy.
- Preliminary results outperforms DARTS, P-DARTS, and PC-DARTS on CIFAR.

Tata Consultancy Services

Dec 2019 - Feb 2020

Machine Learning Project Intern

- Developed models using VAEs and K-means clustering for customer behavior analysis to prevent customer churn.
- Prepared a custom dataset by developing surveys to handle open-ended and closed-ended questions.
- Extracted feedback responses from handwritten survey forms using OCR achieving 12% CER and 18% WER.

Ucadd EdTech

Dec 2018 - Aug 2019

Web Developer

- Built a learning platform with support for content streaming, adaptive assessments, doubt-solving, etc using MERN stack.
- Worked on optimizing lecture streaming with limited data bandwidth from hosting providers such as Vimeo.
- Introduced data analytics to generate useful insights about the courses for instructors based on user interactions.

Sensum Fintech

Jan 2019 - Feb 2019

Web Developer

- Constructed visualization graphs using plotly to show and analyze the trends in the finance trading markets.
- Integrated backend APIs for stock recommendations and improved user experience by optimizing the builds.

Unicode

Aug 2018 - Jun 2021

Web Developer & Student Mentor

- Mentored a team of sophomores on projects such as Inventory Management, Masters and Placement Portals.
- Conducted workshop on web development and open-source development for over 100 students in the college.

PROJECTS

Ocubot - Image-based Dialog

Advisor: [Prof. Pratik Kanani](#)

- Final-year research project on building a conversational dialog system about visual information in an image.
- Incorporate coreference resolution using attention over dialog history to have more natural conversations.
- Reduced modality biases by improving visual context with dense captions and attention over these captions.

Anomaly Detection in ECG Signals

Advisor: Prof. Pratik Kanani

- Industry collaboration to develop neural models for detecting anomalies in processed ECG signals from IoT devices.
- Applied distributed computing algorithms for speed improvements during inference and load balancing by 60%.

Annotated PyTorch Paper Implementations

[View](#)

- Annotated PyTorch implementations of deep learning papers as interactive jupyter notebooks.
- Includes papers such as Word2Vec, GloVe, KimCNN, Bahdanau Attention, Transformer, etc.

Image Captioning using Attention

[View](#)

- Automatically generate descriptive captions from an image along with attention map.
- Implementation of Show, Attend and Tell paper by [Kelvin Xu et al.](#) using PyTorch.

C Programming Exam Portal

[View](#)

- A paperless solution for conducting C programming exam for over 500 students at [D. J. Sanghvi](#).
- Generated data-driven detailed reports for students and instructors to enhance the overall learning experience.

RESEARCH & PUBLICATIONS

Publications available at [Google Scholar](#)

- [1] **Jay Gala**, Hrishikesh Shenai, Pranjal Chitale, Kaustubh Kekre, and Pratik Kanani, "Improving Image-Based Dialog by Reducing Modality Biases," in *Advances in Computing and Data Sciences*, pp. 33–41, Springer International Publishing, 2021.
- [2] Hrishikesh Shenai*, **Jay Gala***, Kaustubh Kekre*, Pranjal Chitale*, and Ruhina Karani*, "Combatting COVID-19 Using Object Detection techniques," in *Cyber-Physical Systems for COVID-19*, ch. 4, Elsevier, *Accepted*.
- [3] Pranjal Chitale*, Kaustubh Kekre*, Hrishikesh Shenai*, and Ruhina Karani* and **Jay Gala***, "Pothole Detection and Dimension Estimation System using Deep Learning (YOLO) and Image Processing," in *2020 35th International Conference on Image and Vision Computing New Zealand (IVCNZ)*, pp. 1–6, 2020.
- [4] Dev Savla, Amogh Parab, Kaustubh Y. Kekre, **Jay Gala**, and Meera Narvekar, "IoT and ML based Smart System for Efficient Garbage Monitoring: Real Time AQI monitoring and Fire Detection for dump yards and Garbage Management System," in *2020 Third International Conference on Smart Systems and Inventive Technology (ICSSIT)*, pp. 315–321, 2020.
- [5] Dev Savla, Amogh Parab, Kaustubh Kekre, **Jay Gala**, S. Ramchandra, and Pankaj Sonawane, "Virtual Farmer: Real Time Crop Prediction and Automatic Irrigation System," in *2020 11th International Conference on Computing, Communication and Networking Technologies (ICCCNT)*, pp. 1–5, 2020.

SKILLS

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| Languages | Python, C, Java, JavaScript, SQL, HTML5 |
| Databases | MySQL, SQLite, PostgreSQL, MongoDB |
| Libraries and frameworks | PyTorch, Keras, Scikit-learn, NumPy, Pandas, OpenCV, Gensim, SpaCy, NLTK, Flask, FastAPI, Streamlit, ReactJs, NodeJs |
| Others | Git, Jupyter, Docker, Raspberry Pi, LaTeX |

CO-CURRICULAR ACTIVITIES

Teaching Assistant for an undergrad-level Machine Learning Course - [UMLSC](#), supported by **Google Research India**
Member of [Shalizi–Stats](#) reading group which focuses on the stats book [Advanced Data Analysis from an Elementary Point of View](#) by Cosma Shalizi and [Bayesian Statistics](#).

Working on identifying the causal effects of non-expert mentors on the careers of the mentee (students) in educational institutions as a part of **Unicode Research Group**

Presented [machine learning paper reviews](#) in the Unicode Research Group and ML Collective

Selected for [Advanced Language Processing Winter School \(ALPS\) 2022](#)