

Vaibhav Ganatra

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EDUCATION

- **BITS Pilani, K.K. Birla Goa Campus** Goa, India
• *B.E. - Computer Science; GPA: 9.6* *August, 2019 - July 2023*
• *Courses: Data Structures and Algorithms, Database Management Systems, Operating Systems, Analysis Of Algorithms, Computer Networks, Foundations of Data Science, Applied Statistical Methods, Deep Learning, Quantum Information and Computing*

PUBLICATIONS

1. **V. Ganatra et al.** SmartKC++: Improving the performance of smartphone-based corneal topographers. Winter Conference on Applications of Computer Vision **WACV '25**
2. **V. Ganatra**, S. Gun, P. Joshi, A. Balasubramaniam, K. Murali, N. Kwatra and M. Jain. *DEDector*: Smartphone-based Noninvasive Screening of Dry Eye Disease. Proc. ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies. **IMWUT** (Accepted : Aug '24)
3. **V. Ganatra** and D.Goel. PRECISE: PRECISE: Prototype-Reservation for Explainable classification under Imbalanced and Scarce-Data Settings. Machine Learning for Healthcare. **MLHC '24**
4. **V. Ganatra**. Logarithm-transform aided Gaussian Sampling for Few-Shot Learning. 4th Visual Inductive Priors Workshop for Data-Efficient Deep Learning, **ICCV '23**
5. **V. Ganatra**, A. Parayil, S. Ghosh, Y. Kang, M. Ma, C. Bansal, S. Nath and J. Mace. Detection is better than cure - A Cloud Incidents Perspective, ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (**ESEC/FSE '23**)
6. A. Swain, **V. Ganatra**, S. Saha, A. Mathur, and R. Phadke. Flexibility of activation functions in lstm for glucose level prediction. International Conference on Neural Information Processing, **ICONIP '22**

EXPERIENCE

- **Microsoft Research Lab India** Bengaluru
• *Research Fellow - Supervisor : Dr. Mohit Jain & Dr. Nipun Kwatra* *Jan 2023 - Present*
 - **ML x Ubiquitous Healthcare**: Democratizing healthcare for eye diseases by developing low-cost screening tools
- *Research Intern - Supervisor : Dr. Anjaly Parayil & Chetan Bansal*
 - **Undergraduate Thesis**: Improving cloud efficiency and reliability using data-driven techniques.
- **Amazon India** Bengaluru
• *Applied Scientist Intern - Manager : Pooja A* *August 2022 - January 2023*
 - **Multi-label Classification**: Developed a multilabel neural network model for labelling of ads - achieved a 15x reduction in training time from ~ 30 hours to ~ 2 hours, while also achieving a small gain (1-2%) in model performance
 - **Model Evaluation**: Developed scripts for evaluation and benchmarking of the trained model. Also, devised new metrics for model evaluation in the context of the existing ML pipeline and authored scripts for their estimation
- **École Polytechnique de Montréal** Montreal, Canada
• *MITACS Globalink Research Internship - Supervisor: Prof. Heng Li* *May 2022 - August 2022*
 - **Quantum ML based Anomaly Detection**: Utilised Quantum Machine Learning algorithms for detecting anomalies in software logs. Also, developed a novel quantum embedding for encoding classical data in quantum circuits
 - **Semi-Supervised Anomaly Detection**: Continuing after my internship, currently, exploring semi-supervised methods for anomaly detection in software logs
- **betterdata.ai, Singapore** Remote
• *Machine Learning Engineering Intern* *Jan 2022 - April 2022*
 - **Synthetic Data**: Researched, implemented, trained and evaluated methods (GANs and VAEs) for Tabular Synthetic Data Generation
 - **Credit Data Generation**: Utilised CTAB-GAN and MIT's Synthetic Data Vault for credit data generation
- **Indian Institute of Remote Sensing, Dehradun** Remote
• *Summer Research Intern - Supervisor: Dr. Manish Bhatt* *June 2021 - July 2021*
 - **Remote Sensing Image Fusion**: Extended a DL based Image Fusion technique for Visible and Infrared Image Fusion to fuse Visible and Synthetic Aperture Radar - SAR (Microwave) Images [[Project Report](#)]

PROJECTS

- **p-LSTM: A Novel LSTM architecture for Glucose Level Prediction Problem : Supervisor - Dr. Snehanshu Saha:** Developed a novel LSTM architecture for effective blood glucose level prediction in patients suffering from Type-I Diabetes. The work is published in the International Conference of Neural Information Processing (ICONIP), 2022
- **Bifurcations in the sinusoidally forced Hodgkin-Huxley Neuron : Supervisor - Dr. Gaurav Dar:**
 - * Analysed the spike patterns and transitions in mode-locking of the sinusoidally forced Hodgkin-Huxley Neuron Model.
 - * Reduced the 4-dimensional model to 3 and 2 dimensions, and studied the bifurcation pattern of the reduced Hodgkin-Huxley Model
- **Segrify - Learn Waste Management - :**
 - * Developed and released on Google Playstore, an Android App, that would help people, learn about waste management and segregation in a fun quiz-based interface.
 - * Developed a keyword based image-scraping script using Selenium and BeautifulSoup that download images related to the specified keyword.
 - * Used Firebase Cloud Storage for storing scraped images, and Express.js server to develop the REST API for the App Backend

Tech - Selenium, Python, Firebase Cloud Storage, NodeJS, Express.js

HONORS AND AWARDS

- Selected for the **MITACS Globalink Research Internship 2022** at Ecole Polytechnique de Montreal, Canada
- Recipient of **Summer Internship Assistance, 2022**, a research grant awarded to students of BITS Goa to pursue original research
- Recipient of the **Prof. Suresh Ramaswamy Memorial Award**, a research grant awarded to students of BITS Goa for working on a research project.
- Recipient of the **Indian Academy of Sciences, Summer Research Fellowship, 2021**
- **1st position** in Healthcare domain in the **Social Innovation Challenge, 2020** jointly organized by **IISc Bengaluru and Keio University, Japan**
- **1st position** in **Impact Hackathon 2021**, a Virtual Accessibility Hackathon organized by GiftAble
- **1st position** in BITS BIRAC BioNest Hackathon, 2021
- Recipient of 100% Merit Scholarship provided by BITS Pilani to the academically best 1% of students, for all semesters of college
- 2 time recipient of the KVPY-Fellowship in 2017 in the SA Stream with an All India Rank(AIR)-611 and in 2018 in the SX Stream with AIR-317

SKILLS

Languages - Python, Java, C++, Javascript, Shell

Frameworks and Libraries - Tensorflow, Pytorch, Keras

Relavant Coursework - Deep Learning, Foundations of Data Science, Applied Statistical Methods, Quantum Information and Computation, Nonlinear Dynamics and Chaos, Quantum Mechanics

TEACHING AND VOLUNTEERING

- **Teaching Assistant for the course Object Oriented Programming** (Aug 2021 - Dec 2021) - Assisted in conducting weekly labs, and in the major project submission.
- **Teaching Assistant for the course Quantum Mechanics - I** (Jan 2022 - May 2022) - Created and evaluated problem sheets. Also, developed a computational simulation of time-evolution of quantum systems using the Schrodinger's Equation
- **Senior Developer with the Developers' Society (DevSoc), BITS Goa** (Aug 2019 - May 2022) - Brainstormed, developed and released multiple software utilities for on-campus students at BITS Goa

WORKSHOPS

- IIT Delhi Winter School on Theoretical Computer Science - December 2022
- Amazon ML Summer School, 2021
- Google ML Explore - Beginner Track, 2019