RISHIT DAGLI

"I draw a pleasure in thinking"

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EDUCATION

Bachelors of Science in Computer Science (1st year), University of Toronto 2022-2026
Received a scholarship from Geoffrey Hinton and Vector Institute.
Received an entry scholarship from the University of Toronto.
Advised by Prof. David Lindell, Vector Institute and UofT
Part of the DGP Lab (for AI and Computer Vision) and Theory Research Group
Part of the CS Student Union Council.

High School, Narayana Junior College 2020-2022
Received scholarship by Narayana
Top 1% Nationally in Junior Science Olympiad
Made past International Math Olympiad qualifier rounds

Summer School, Stanford 2019
Passed with distinction for the course "Statistical Learning", a course on supervised learning.

SKILLS

Python • TensorFlow • Machine Learning • Computer Vision • PyTorch • Kubernetes • Research • GCP
Git • Linux • C++ • HTML • CSS • Firebase • Android • Dart • Kotlin • SQL

SELECT RESEARCH

Program Committee member for ICLR Tiny Papers 2023. Reviewer for ICLR 2023, ICLR PML4DC 2023.

A few of my recent publications are:

Rishit Dagli. Astroformer: More data might not be all you need, learning to predict galaxy morphologies with limited data, ICLR 2023.

Rishit Dagli and Ali Mustufa Shaikh. Cppe-5: Medical personal protective equipment dataset, 2021. URL https://arxiv.org/abs/2112.09569.

Rishit Dagli and Süleyman Eken. Deploying a smart queuing system on edge with intel openvino toolkit. *Soft Computing*, 25(15):10103–10115, Aug 2021. ISSN 1433-7479. doi: 10.1007/s00500-021-05891-2. URL https://doi.org/10.1007/s00500-021-05891-2.

Hussain Falih Mahdi, Rishit Dagli, Ali Mustufa, and Sameer Nanivadekar. Job descriptions keyword extraction using attention based deep learning models with bert. In *2021 3rd International Congress on Human-Computer Interaction, Optimization and Robotic Applications (HORA)*, pages 1–6, 2021. doi: 10.1109/HORA52670.2021.9461296.

Rishit Dagli. Fast Transformer, September 2021a. URL https://doi.org/10.5281/zenodo.5406025.

Rishit Dagli. Perceiver, April 2021b. URL https://doi.org/10.5281/zenodo.4720376.

Rishit Dagli and Shaikh Ali Mustufa. Gradient Centralization, March 2021. URL https://doi.org/10.5281/zenodo.4596292.

HONORS AND AWARDS

Invited to give a TEDx and TED-Ed talk 2020-2021
Research Grant by Google, sponsors costs working on the CPPE-5 paper 2021-2022
Google Open Source Expert prize, given to individuals contributing extensively to the open-source AI ecosystem in terms of reproducible papers, open-source models, or open-source implementations. 2022

Linux Foundation Scholarship, with sponsored trips to KubeCon 2022
TensorFlow Community Spotlight, received the award for my recent Machine Learning paper, awarded to ML projects making using TensorFlow and of high-quality 2022
OpenJS Foundation Scholarship, with a sponsored trip to OpenJS World 2022
PapersWithCode top contributor award, received the award for my work in the field of ML 2022
Research Grant by Intel, sponsors costs working on the queuing paper 2021
TensorFlow, thanked publicly multiple times by TensorFlow Team for my open-source code contributions to TensorFlow on the TensorFlow GitHub releases page 2021-2022
Software Grant by Google Cloud, sponsors infrastructure for my open-source projects 2021
PyTorch top-contributor, being one of the top contributors to PyTorch, I was featured for an interview with Meta on CNBC 2021
Microsoft Green Hackathon, Won the Microsoft Green Hackathon and was featured on Microsoft Blog and YouTube 2021
freeCodeCamp top-contributor awards, being one of the top contributors to freeCodeCamp, the most popular open-source project 2021
HackerNoon AI Genius Award, given to individuals doing impactful work in the area of AI 2021

PROJECTS

I also maintain and have built other open-source projects. GitHub

MIRNet-TFJS

GitHub • TF Hub

- This research project implements and proposes a model for enhancing low-light images. The project also demonstrates new recipes to optimize ML inference processes to allow them to run on the web on the client side.
- Featured multiple times on GitHub Trending.

Fast Transformers

GitHub

- I implemented a new Transformer architecture, Fastformer, a Transformer Variant that can handle far longer input sequences than current ones and runs by modifying self-attention to run in a lesser time complexity. I also made this ready-to-use for anyone as a library.
- Trended # 1 on all of GitHub.

Gradient Centralization

GitHub • PyPI

- Created and implemented a new Machine Learning recipe to train models based on backpropagation of gradients faster and more efficient by modifying the gradients in a certain way after each pass. availaible as a library
- Trended # 1 on all of GitHub.

TF Watcher

GitHub • Website • Docs

- Industry scale project which allows monitoring Machine Learning training, evaluation, and prediction processes on mobile phones with as little as 2 lines of code and is compatible with all kinds of Machine Learning Code.
- Won the Major League Hacking (MLH) Fellowship Hackathon.

3D Transforms

GitHub

- Created a new Machine Learning library which made it very easy to work with 3D data and perform 3D transforms. This library made working with sparse tensors, quaternions, and special orthogonal groups easy.
- Involved running large-scale 3D operations, custom-making autodiff methods for new operations introduced with the library as well as optimizing operations based on the C-Python bindings.

GLOM

GitHub

- I made the first-ever implementation of the ML technique GLOM: Emergent part-whole hierarchies in neural networks which were thought to just be an idea paper due to the infeasibility of its implementation.
- This allows advances made by several different groups of transformers, neural fields, contrastive representation learning, distillation, and capsules to be combined.

EXPERIENCE

Machine Learning Researcher October 2022 - Ongoing
FINCH Mission *Toronto, ON*

- FINCH is a 3U CubeSat mission projected to launch in Q4 2024 aboard a SpaceX Falcon 9 rocket.
- I work on using Machine Learning to make sense of the data returned by the satellite as well as on-orbit calibration, at the moment majorly working on image super-resolution and destriping.
- Led the efforts on using attention and transformer-based methods for super-resolution and augmentation which also involved working together with others from SpaceX on the new idea and making it ready for production.

Machine Learning Researcher 2021-2022
James Webb Space Telescope *Mumbai, Remote*

- Worked on the data processing team for exoplanet detection on the James Webb Space Telescope.
- Developed Machine Learning algorithms as well as standard reciped to answer the question, "what can we infer from this image": is it an exoplanet, what kind of exoplanet, and what are its properties?

Fellow 2021 Summer
Major League Hacking (MLH) *Mumbai, Remote*

- Developed and maintained with other fellows an end-to-end open-source industry-scale Machine Learning project "TF Watcher" following best practices. This project allows efficiently monitoring your Machine Learning processes.
- MLH Fellowship is an internship alternative by MLH, Facebook, and GitHub for people who are excited about contributing to open-source.
- Won the End of Fellowship Hackathon.

LEADERSHIP AND COMMUNITY

The major ones are:

Kubernetes 1.26 Release Team, part of the team that release Kubernetes 1.26 2022
Kubeflow 1.17 Release Team, part of the team that release Kubeflow 1.17 2022
GitHub Campus Experts 2022
• A student program by GitHub Education identifying leaders of technical student communities with extremely low selection rates.
• Led the efforts for Field Day Canada, an unconference for technical communities
Blog, impacted 100,000+ developers through my blogs 2019-2022
• Authored multiple high-quality tutorials on TensorFlow Keras
• Authored multiple high-quality articles on freeCodeCamp
• Personal Blog
Technical Talks 2019-2022
Spoke at technical conferences sharing my knowledge with others. The major ones are:

ML Research on Google's YouTube • KubeCon North America • TensorFlow Everywhere India • Microsoft Global AI Student Conference • Droidcon APAC • Google Devfest • Open Source Summit • Postman Summit
Volunteering
• Active open-source contributor with high-trust positions in TensorFlow, Kubernetes, Kubeflow, freeCodeCamp, papersWithCode, TensorFlow Hub and more.
• Active open-source maintainer and creator with multiple of my projects being on GitHub #1 trending.
• Core creator and maintainer of Microsoft's ML For Beginners, now with >40K GitHub Stars.
• Helped underprivileged and orphan kids with 40 hours of practical education about Computer Science.
TensorFlow Mumbai
• Created a special interest group in my city for people interested in machine learning.
• Involved mentoring members for creating projects or making impact with ML.
• Featured twice by Google Developers for my work as part of the community.