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
Currently advised by Prof. David Lindell, at Vector Institute and UofT DGP Lab
Part of the DGP Lab (for AI and Computer Vision) and Theory Research Group
Run the UofT Computer Vision Club, Part of the UofT CS Student Union Council.

High School, Narayana Junior College 2020-2022
Received scholarship by Narayana Junior College
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 • CUDA • GCP
Git • Linux • C++ • HTML • Firebase • Android • Kotlin • SQL • Rust • Research

SELECT RESEARCH

Program Committee member for ICLR Tiny Papers 2023. Reviewer for ICLR 2023, ICLR PML4DC 2023, CVPR 2023, ICCV 2023, ICML 2023, NeurIPS 2023, and Cloud Native Wasm Day NA 2023.

Some select recent publications are (please see research statement for current or pre-print stage work):

Rishit Dagli. Astroformer: More data might not be all you need for classification, 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 twice for a TED-Ed talk 2020-2022
Research Grant by Google, sponsors costs working on a paper as a student researcher at Brain 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 for high-quality projects with a lot of impact 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 TV channel and YouTube where they highlighted top PyTorch contributors 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
Release Team Held high-impact roles in the release team for Kubeflow 1.17 and Kubernetes 1.26, 1.27, 1.28 2023

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

Research Scientist, Computer Vision May 2023 - Ongoing
Civo Cloud *Remote from Toronto, ON*

- Civo Cloud is a popular cloud hosting company that started its machine learning offerings through managed Kubeflow and then established a new academic AI research division, with a few popular names in the field and I was a part of the first 3 hires for their academic division and I currently work on vision and multimodal.
- I work on academic Computer Vision research, currently working mainly on a new multimodal speech and vision model we came up with which we are also working on building a product out of and working on a paper.

Research Scientist, Vision and Computational Imaging October 2022 - April 2023
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, majorly working on academic research for 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.

Research Scientist, Machine Learning 2021-2022
James Webb Space Telescope *Remote from Mumbai, India*

- Worked on the data processing team for exoplanet detection on the JWST, one of my team's main achievements was discovering and identifying properties of LHS-475b.
- Developed new Machine Learning algorithms as well as standard recipes to answer the question, "what can we infer from this image": is it an exoplanet, what kind of exoplanet, and what are its properties?

Student Researcher on Grant 2022
Google Brain *Remote from Toronto, ON*

- As a student on a research grant at Brain, I worked on vision research mainly working with Hee Jung, Soonson Kwon, and Anuj Duggal which was accepted at SIGGRAPH and then later published in a Nature Journal.

Apart from this, I also was an MLH Fellow and an intern at Robotron Labs and TA at Science Kidz.

LEADERSHIP AND COMMUNITY

The major ones are:

Kubernetes 1.26, 1.27, 1.28 Release Team, part of the select small team that releases a new version of Kubernetes while also being one of the maintainers of Kubernetes mainly involved with SIG API-Machinery 2022-2023
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 and I also run UofT Computer Vision Club, a special interest student group focused on vision at UofT.
• 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 and freeCodeCamp
• Personal Blog
Technical Talks 2019-2023
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 • Embedded Linux Conference
Volunteering
• Active open-source contributor/maintainer with high-trust positions in TensorFlow, Kubernetes, Kubeflow, freeCodeCamp, papersWithCode, TensorFlow Hub, WASI, 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.