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Affiliation: Mila/UdéM

Rohan Sukumaran

RESEARCH INTERESTS
Adversarial ML, Fairness, Parameter Efficient Fine Tuning, Privacy, Robustness, Sparsity

EDUCATION

University de Montreal, Quebec (Mila) — Montreal, CA
Masters in Computer Science — Aug 2022 - Present

Indian Institute of Information Technology, Sri City — Andhra Pradesh, IN
Bachelor of Technology in Computer Science and Engineering — Aug 2016 - June 2020

PUBLICATIONS

M. Hasimezadeh*, J. Ramirez*, **R. Sukumaran** et al., **Balancing Act: Constraining the Disparate Impact of Sparse Models**, ***ICLR***, *2024*

J. Ramirez, **R. Sukumaran**, et al., **OMEGA:Optimistic EMA Gradients**, ***LXAI workshop @ ICML***, *2023*

R. Sukumaran, et al., **COVID-19 Outbreak Prediction and Analysis using Self Reported Symptoms**, ***Journal of Behavioural Data Science***, *2021*

R. Sukumaran, et al., **Enhanced Text Classification using Proxy Labels and Knowledge Distillation**, *short paper* **ACM CODS-COMAD**, 2021

A. Gupta*, **R. Sukumaran***, et al., **Hostility Detection and Covid-19 Fake News Detection in Social Media**, *CONSTRAINT Workshop* ***AAAI-21***

P. Patwa, V. Reddy, **R. Sukumaran**, et al., **Can Self Reported Symptoms Predict Daily COVID-19 Cases?**, *Oral Presentation at AI4SG Workshop* ***IJCAI-21***

D Tula, P Potluri, S Ms, S Doddapaneni, P Sahu, **R. Sukumaran**, et al., **Bitions@ Dravidian-Lang Tech-EACL2021: Ensemble of Multilingual Language Models with Pseudo Labeling for offence Detection in Dravidian Languages**, *DravidianLangTech Workshop* ***EACL-21***

S Shankar*, R Kanaparti*, A Chopra*, **R. Sukumaran**, et al., **Proximity Sensing: Modeling and Understanding Noisy RSSI-BLE Signals and Other Mobile Sensor Data for Digital Contact Tracing** *ML4MH Workshop* ***NeurIPS-20***

UNDER REVIEW/ IN-PROGRESS

A. Singh, V. Sharma, **R. Sukumaran** et al., **SIMBA: Split Inference - Mechanisms, Benchmarks and Attacks**, ***under-review***

INVITED TALKS

Presented "Introduction to Privacy in Machine Learning" at **Trustworthy and Responsible AI Learning (TRAIL) program**, organized by **AI for Humanity - Mila**

Presented "Balancing Act: Constraining the Disparate Impact of Sparse Models" at **Google Research**, India - Oct 2023

Presented "Privacy-preserving crowdsourced computational health toolkit" at **IIIT Bangalore** , India - Nov 2021

AWARDS AND GRANTS

- **Top 3** across the world in **Facebook Data for Good** - COVID-19 Symptoms Survey Challenge across 35 teams.
- **Mila Excellence in Research Scholarship** - Won $5,000 for my research in Responsible AI
- BOURSE EN INTELLIGENCE ARTIFICIELLE 2022-2023 DES ESP — AVIS D'OCTROI - **$5,000 Awarded from University of Montreal, Quebec**

- **Global Finalist** in the **MIT SOLVE** Health Security and Pandemics Challenge for our solution - *Crowdsourced Epidemic Analytics via Citizen Engagement* - across 3,600+ applicants **globally**.
- **Honorable mention** in the Trinity Challenge for our solution of *Privacy preserving crowdsourced epidemiology* across 350+ teams **globally**.
- **Top 10** in first round of **XPRIZE Pandemic Response Challenge** globally across 300+ teams.
- Conference Grant/Scholarship to attend SatML-24, Upperbound AI week, IJCAI 2021, ICLR 2021, ICML 2021, MLHC 2021
- 2 posters accepted at the **Michigan AI Symposium 2020**.
- Got **letter of appreciation from Google AI** for being one of the top facilitators in the cohort! Check the letter out here
- Project on Diabetic Retinopathy Detection selected as top 20 projects across India selected by **Google AI**.
- Central Board of Secondary Education - **top 0.05%tile** in the country (AISSE).

RESEARCH EXPERIENCE	**Fairness and Privacy**, Mila - Quebec AI Institute *Advisor - Prof. Golnoosh Farnadi*	Montreal, CA Aug 2022 - Present

- **Graduate Student Researcher** - Building sparse training strategies for privacy and fairness in foundation models

Data Science and Privacy, PathCheck Foundation (MIT spin-off)   Cambridge, MA
*Advisor - Prof. Ramesh Raskar - **MIT Media Lab***   Dec 2020 - Aug 2022

- **Research Manager** - Co-leading the Data Science and Privacy teams in various research projects towards publication and/or grant opportunities.
- Co-founded the **Data Informatics Center for Epidemiology (DICE)** at PathCheck, with *Prof. Manuel Morales - University of Montreal, Quebec* and *Prof. Sue Fieldman - University of Alabama, Birmingham*, as ***Deputy Director - Scientific Programs (Research)***.

Research Scientist Intern - Applied Research, Swiggy   Bangalore, IN
Advisor - Sundeep Teki, Ph.D (Ph.D UCL, post-doc Oxford)   Feb 2020 - Nov 2020

- Implemented and deployed a novel knowledge distillation model based on Transformer architecture for product category classification. Used semi-supervised learning and weak supervision to handle the large unlabelled corpora.
- Developed a pipeline for zero shot intent classification of code-mixed customer conversations

ADVISING EXPERIENCE   Co-advised a cohort of undergraduate students for a project titled **Offense Detection in Dravidian Languages using Code-Mixing Index based Focal Loss and Cosine Normalization**, accepted at the Springer Nature Computer Science Journal.

TEACHING ASSISTANT	Information Retrieval Database Management Systems Programming in C	Prof. Rajendra Prasath (*Ph.D IIT Kharagpur*) Prof. Prerana Mukherjee (*Ph.D IIT Delhi*) Prof. Venkatesh Vinayakarao (*MS CMU, PhD IIIT Delhi*)

PROFESSIONAL EXPERIENCE   **OpexAI LLC**   Bangalore, IN
Artificial Intelligence Developer   May 2018 - July 2018

- Built a scalable crowd analytics module using MASK R-CNN for analysing attentiveness of large crowds using mounted cameras during large scale expos.
- Developed a computer vision algorithm to identify damaged car parts for insurance claims.

VOLUNTARY WORK
- Core Organizer (Program Chair) New in ML, NeurIPS 2023
- Program Commitee member epiDAMK workshop KDD 2023

- Reviewer at the DravLangTech workshop at EACl 21, CONSTRAINT workshop at AAAI 21 and SemEval Task COLING 20 and volunteer at IJCAI 2021
- Organizing committee member of the "Vaccines for all" conference by Trusted Pandemic Technologies and MIT.

LEADERSHIP
EXPERIENCE

- **Global Health Innovator Seminar** - co-organizing the seminar where top academic/industry based computational health researchers can share ideas
- **Google AI Explore ML Facilitator** - Taught basic to advanced ML to **700+** students.
- **Founding head** of AI ML club at the Indian Institute of Information Technology, Sri City.
- **Secretary, TechFesia** - First international technical festival of Indian Institute of Information Technology, Sri City - with 1000+ participants.