Dhruva Sundararajan

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Education

Amrita Vishwa Vidyapeetham, Coimbatore, India

Integrated M.Sc. Data Science, 2019-2024

CGPA: 8.42/10
Coursework: Linear Algebra, Calculus, Numerical Methods, Optimization Techniques, Convex Optimization, Design & Analysis of Algorithms, Data Structures, Probability and Statistics, Graph Theory, Fuzzy Sets, Logic & Systems, and Applications, Machine Learning, Deep Learning, Reinforcement Learning, Multivariate Statistics.

PSBB Learning Leadership Academy, Bangalore, India (Affiliated to CBSE, India)

Class 12 - CBSE, 2018-19

Percentage: 85.2%
Subjects: Physics, Chemistry, Mathematics & Biology

Class 10, 2016-17

CGPA: 9.8/10

Work Experience

Research Internship – IIT Madras, Chennai, India (July 2023 - Present)

Guide: Dr. Sridharakumar Narasimhan

- Developed a shrinking horizon MPC for scheduling the distribution of water by minimizing the overall power and meeting all the demands. A conference paper on this work has been submitted to European Control Conference, 2024.
- Conducted a literature survey on the use of machine learning to speed up optimization algorithms.
- Modernized an existing web application for sensor placement in water distribution networks by migrating it to a Python and HTML-based architecture, utilizing FastAPI for enhanced performance and scalability.
- Working on Generalized Column Generation (GCG) solver for Column Generation (CG) algorithms which utilize Linear Programming (LP).

Internship – Calligo Technologies, India (Aug 2022 - June 2023)

- Conducted research on Intermediate Representation of Graphs to optimize various deep neural network (DNN) architectures such as Resnet, VGG, and Mobilenet.
- Successfully implemented IR graph concepts to enhance accuracy and reduce inference time for a range of deep learning models and architectures.
- Utilized GLOW compiler to implement these optimizations and improve overall performance.
- Conducted benchmarking analyses comparing the performance of the GLOW compiler with other available Graph compilers such as TVM.

Research Internship – IIT Madras (RBG Labs), Chennai, India (March 2020 - March 2021)

Guide: Dr. Rajkumar Elagiri Ramalingam

- Conducted a comprehensive literature review on Road Safety techniques utilizing Deep Learning & Image Processing across India and worldwide.
- Analyzed existing Computer Vision-based Road Safety models such as YOLO, including road damage detection, vehicle detection, and road feature detection (traffic signs, median, pavements, etc.).

- Created a deep-learning model using the YOLOv5 architecture and Intel's India Driving Dataset to identify automobiles, placing emphasis on the identification of standard vehicles found on Indian roads, such as commuter two and three-wheelers.

Internship – Calligo Technologies, India (June 2020 - August 2020)

- Created a Python library that improves the time efficiency of numerical and statistical algorithms on DataFrames.

- Utilized Dask, Vaex, and Modin Python libraries to enhance the performance of the developed library.

- Improved the speed and efficiency of data processing through this work.

Publications

S. No	Authors	Title	Journal	Impace Factor	DOI	Year
1.	Raghunathan Krishankumar, **Dhruva Sundararajan**, K.S. Ravichandran, Edmundas Kazimarias Zavadskas	An evidence-based CoCoSo framework with double hierarchy linguistic data for viable selection of hydrogen storage methods	CMES – Computer Modelling in Engineering & Sciences	2.027	10.32604/cmes.2023.029438	2024
2.	R. Krishankumar, **Sundararajan Dhruva**, Kattur Soundarapandian Ravichandran, Samarjit Kar	Selection of a viable blockchain service provider for data management within the internet of medical things: An MCDM approach to Indian healthcare	Information Sciences	8.1	10.1016/j.ins.2023.119890	2024
3.	**Sundararajan Dhruva**, Raghunathan Krishankumar, Edmundas Kazimieras Zavadskas, Kattur Soundarapandian Ravichandran, Amir H. Gandomi	Selection of Suitable Cloud Vendors for Health Centre: A Personalized Decision Framework with Fermatean Fuzzy Set, LOPCOW, and CoCoSo	Informatica	3.429	10.15388/23-INFOR537	2023

Conference Proceedings

S. No	Authors	Title	Conference	Location	DOI	Year
1.	**Sundararajan Dhruva**, Raghunathan Krishankumar, KS Ravichandran, Amir H Gandomi	Fermatean-fuzzy based PCA-CoCoSo framework to assess digital technologies in Health 4.0	IEEE 23rd International Symposium of Computational Intelligence and Informatics (CINTI)	Budapest, Hungary	10.1109/CINTI59972.2023.10382088	2023

Leadership and Involvement

- Organizing Committee Head of Algorithm Quiz (2020, 2021 & 2023) at Anantham Club (Mathematics Club of AVV).

- Secretary, Nādam Club (Classical Music Forum of AVV), 2021-22.

- Vice President, Nādam Club (Classical Music Forum of AVV), 2022-23.

- President, Nādam Club (Classical Music Forum of AVV), 2023-24.

Extracurricular Activities

- Accomplished Carnatic composer, vocalist, and percussionist, Learning Carnatic music Vocal for over 15 years.

- Secured 3rd Rank in Karnataka State Junior Exam for Carnatic Vocal, 2017