Dhruva Sundararajan

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Education

1. **Integrated M.Sc. Data Science, 2019 – 2024**
   Department of Mathematics, Amrita School of Physical Sciences, Amrita Vishwa Vidyapeetham, Coimbatore, India
   CGPA: 8.33/10
   Relevant Coursework:
   - 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

   Software Skills:
   - **Programming Languages:** Python, R
   - **Data Science Libraries (Python):** TensorFlow, PyTorch, Scikit-Learn, PuLP. Pandas, Numpy, Scipy, Matplotlib, Seaborn

2. **Class 12 – CBSE, 2018-19**
   PSBB Learning Leadership Academy, Bangalore, India
   Percentage: 85.2%
   Subjects: Physics, Chemistry, Mathematics & Biology

3. **Class 10 – CBSE, 2016-17**
   PSBB Learning Leadership Academy, Bangalore, India
   CGPA: 9.8/10

Work Experience

1. **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) problems using Linear Programming (LP).

2. **Internship – Calligo Technologies, Bangalore, India (August 2022 – June 2023)**
   - Conducted research on Intermediate Representation (IR) of Graphs to optimize various deep neural network (DNN) architectures such as Resnet, VGG, and Mobilenet.
   - Implemented IR graph concepts to enhance accuracy and reduce inference time for a range of deep learning models and architectures.
   - Utilized GLOW compiler, a graph lowering compiler for deep learning architechtures, to implement these optimizations and improve overall performance, and benchmarked the performance of the GLOW compiler with other available Graph compilers such as TVM.

3. **Research Internship – RBG Labs, IIT Madras, Chennai, India (March 2021 – March 2022)**
   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 two and three-wheelers.

4. **Internship – Calligo Technologies, Bangalore, India (June 2020 – August 2020)**
- Created a Python library that improves the time efficiency of numerical and statistical algorithms when applied to 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	Impact Factor	Volume	Issue	Page No.	DOI	Year
1.	R. Krishankumar, **Dhruva Sundararajan**, 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	657		119890	[10.1016/j.ins.2023.119890](#)	2024
2.	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 & Engineering Sciences	2.027	138	3	2845-2872	[10.32604/cmes.2023.029438](#)	2024

Conference Proceedings

S. No	Authors	Title	Conference	Publisher	Location	Date	Page No.	DOI
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)	IEEE	Budapest, Hungary	21st – 23rd November 2023		Yet to be published

Leadership and Service
- Organizing Committee Head of Algorithm Quiz (2020, 2021 & 2023) at 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 for over 15 years)
- Secured 3rd Rank in Karnataka State Junior Exam for Carnatic Vocal, 2017.