

Sivakumar Palanisamy

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RESEARCH INTEREST

Machine Learning; Deep Learning; Computer Vision; Geometric Deep Learning;

EDUCATION

Coimbatore Institute of Technology (Affiliated to Anna University) 2012-16
B.E. in Computer Science and Engineering

WORK EXPERIENCE

Zoho Corporation Pvt. Ltd. 2016-21
Member Technical Staff - Senior Software Engineer at Zoho Payroll

- I modeled our database for the optimal functioning of several features in multiple editions.
- Worked on Apache Kafka for our integration to sync employees data from Zoho People.
- Contributed to Docker implementations to help fellow developers use our test machines for ensuring if their implementations pass existing test cases.
- Developed an algorithm to avoid brute force implementation of an auto-computation in one of the product modules.
- Performed code refactoring and implemented several Object-Oriented Programming concepts to facilitate smooth support for future editions.
- Studied and applied necessary algorithms for building an ML software used by my team.

RESEARCH EXPERIENCE

Research Assistant 2021 - Present
Supervisor: Prof. Ramraj Thirupathyraj, Department of Artificial Intelligence and Data Science, Coimbatore Institute of Technology.

- Worked on a research project to provide a Quantized Graph Similarity Measure based on important graph properties.
- Performed empirical study on Graph Isomorphism with Filtration Curves to assess graph similarity by analyzing the difference between the Filtration Curves in the mathematical space.
- Conducted a comparative analysis on Graph Classifications with Graph Neural Networks and Filtration Curves and their analogy with graph similarity scores from our study.

SELECTED PROJECTS

Branching Heuristics impact analyser ([GitHub](#))
A research project - developed to study the impact of various branching heuristics in an Argumentation Framework solver. The corresponding research paper of this project is mentioned in the publication section.

A New Framework for model training ([GitHub](#))

I developed a new framework from scratch using vector implementation in Python. A simple way to define and train CNN models.

GraphDS-Adjacency Matrix Generator ([GitHub](#))

The project will generate adjacency matrices for 11 datasets used in a research project. The GitHub repository contains the details of the graph datasets.

Model Comparator ([GitHub](#))

PyTorch project - train two models simultaneously, compare them based on multiple factors like training time, efficiency and test accuracy after each approach.

Random Isomorphic Graph Generator ([GitHub](#))

I created this project with an idea to generate random isomorphic graphs. Here, output graphs will be generated based on the number of nodes and graph instances provided.

PUBLICATIONS

Ramraj Thirupathyraj, Prabhakar Ramachandra Gupta, **Sivakumar Palanisamy**. Exploring substantial statistical significances in graph similarity measures [submitted to IEEE Transactions on Knowledge and Data Engineering] (2022)

Ramraj Thirupathyraj, **Sivakumar Palanisamy**. Examining the effectiveness of branching heuristics in a CDCL-type SAT solver for Argumentation Framework [under review in Expert Systems With Applications] (2021) - [preprint](#)

TEACHING INVOLVEMENTS

Teaching Assistant

2015-16

Supervisor: Prof. Ramraj Thirupathyraj, Department of Artificial Intelligence and Data Science, Coimbatore Institute of Technology.

- Data Structures and Algorithms - I & II (09CS33 & 09CS43)
- DataBase Management Systems (09CS56)

Member of Placement Helper Program

2015-16

Department of Computer Science, Coimbatore Institute of Technology.

- Volunteered the program to help undergraduates who struggled with Data Structures, Algorithms and DBMS necessary for placements.

Mentor

2017-21

Zoho Books Team

- I was involved in the group that focussed on providing essential skills for a new employee to master our team's internal architecture and framework.

TALKS

Student Induction Program

2021

Coimbatore Institute of Technology.

Topic: How to kick start your AI journey?