# Sivakumar Palanisamy


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## RESEARCH INTEREST

Theoretical Machine Learning; Deep Learning; Near-optimal algorithms for Computationally hard problems in Graphs;

## 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 in 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
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 the top 11 datasets that we (our team) chose for 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. The project will generate output graphs based on the number of nodes and graph instances provided.

## PUBLICATION

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)

## TEACHING INVOLVEMENTS

**Teaching Assistant** 2015-16
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?