Gustavo Estrela de Matos

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Education

Institute of Mathematics and Statistics (University of São Paulo)

São Paulo, Brazil

Master of Science in Computer Science — January 2018 - March 2020

Dissertation of title "Identification of cell signaling pathways based on biochemical reaction kinetics repositories". Research project awarded with a São Paulo Research Foundation (FAPESP) scholarship.

Bachelor of Science in Computer Science — February 2013 - December 2017

High Academic Merit Award Ranked #3 out of 50 students.
GPA: 9/10.

Texas A&M University

College Station, Texas

Study abroad program in Computer Science — September 2015 - May 2016

Non-degree seeking exchange student participant of the Government of Brazil program Science Without Borders.
GPA: 3.75/4

Experiences

Butantan Institute

São Paulo, Brazil

Graduate Researcher (with FAPESP Scholarship) — January 2018 - December 2019

Masters project in a team of 2 (student and advisor) placed in the Center of Toxins, Immune-Response and Cell Signaling (CeTICS) of Butantan Institute. This project has the goal of finding models based on systems of ordinary differential equations for cell signaling networks. We proposed on this project to group data from biological databases such as KEGG and BioModels to systematically find models that can reproduce biological experiments. To measure model quality we used Bayesian methods of likelihood estimation.

Undergraduate Researcher (with FAPESP Scholarship) — May 2017 - December 2017

Scientific initiation in a team of 2 (student and advisor). In this project we created new parallel algorithms to solve the U-Curve problem based on forest search and divide and conquer; some of these algorithms are competitive with state of the art in feature selection. The results were presented as a conclusion project for the bachelor title in computer science.

Undergraduate Researcher (with FAPESP Scholarship) — January 2015 - July 2015

Scientific initiation in a team of 2 (student and advisor). In this opportunity we studied the use of new data structures for the U-Curve problem. As a result we created a new algorithm, UCSR, described on a published paper.

Texas A&M University

Undergraduate Researcher — June 2016 - July 2016

In a team of 2 (student and advisor), studied forest based algorithms for the U-Curve problem. Also experimented stochastic versions of state of the art algorithms.

Publications

featsel: A framework for benchmarking of feature selection algorithms and cost functions.

SoftwareX, v. 6, p. 193-197, 2017.

REIS, MARCELO S.; ESTRELA, GUSTAVO; FERREIRA, CARLOS EDUARDO; BARRERA, JUNIOR.

In the context of machine learning, feature selection is an interesting tool to reduce data complexity. Since the feature selection problem is NP-hard, many algorithms exist to solve the problem and a standard benchmark is desirable. On this paper we describe featsel, a framework implemented in C++ to construct and benchmark different feature selection algorithms and cost functions.

Optimal Boolean lattice-based algorithms for the U-curve optimization problem.

Information Sciences, 2018.

REIS, MARCELO S.; ESTRELA, GUSTAVO; FERREIRA, CARLOS EDUARDO; BARRERA, JUNIOR.

The U-curve problem is a particular case of the feature selection problem when the cost function describes U-shaped curves in every chain of search space. In this paper we present two new algorithms and compare them to other state of the art algorithms using the featsel framework.

Skills

Programming C/C++, Python, Git, Octave (Matlab), Java, Bash, Perl, Android, React, Arduino, Ruby, JavaScript
Languages Portuguese (native), English (advanced; TOEFL IBT score: 93)

Other

Texas A&M Table Tennis Club
January 2016 - May 2016

Member

University of São Paulo Open Source Hardware Student Group

Co-founder November 2013 - August 2015

The group was founded by computer science students in an attempt to foment the studies of open source hardware such as Arduino between students and local community.

Computer Science Class' Representative

Member February 2013 - August 2015

Class representatives in our department are channels of communication between students and professors. I also participated on the department project of gathering lecture quality feedback from students.

Institute of Mathematics and Statistics Baseball and Softball Club

Member and organizer February 2013 - Present

I participate in many practice sessions and championships of the club every year. During the period of 2014 I worked as the club treasurer.