Giovanna Kobus Conrado

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RESEARCH INTERESTS

Parameterized Algorithms, Graph Theory, Static Analysis, Automata Theory

EDUCATION

Doctor of Philosophy, Computer Science and Engineering Sep 2021-Jul 2025
Hong Kong University of Science and Technology, Hong Kong
Advisors: Amir Goharshady and Pedro Sander
Thesis: "Parameterized Graph Algorithms and Their Role in Static Program Analysis"

Bachelor's Degree, Computer Science Feb 2017-Jul 2022
University of São Paulo, Brazil
Bachelor's Thesis "Algorithms for the 2D ham sandwich problem"

PUBLICATIONS

CFL-based Methods for Approximating Interleaved Dyck Reachability STTT 2025
***G.K. Conrado**, A. Pavlogiannis*
Accepted for publication

Program Analysis via Multiple Context Free Language Reachability POPL 2025
***G.K. Conrado**, A. H. Kjelstrøm, A. Pavlogiannis, J. van de Pol*
CORE A*

PYRAMID: A Protocol for Private and Trustless Multi-level Marketing on the Blockchain IEEE BCCA 2024
***G.K. Conrado**, A.K. Goharshady, K.N. Long Nguyen*

A Better Approximation for Interleaved Dyck Reachability SOAP 2024
***G.K. Conrado**, A. Pavlogiannis*
Best Presentation Award

Faster Treewidth-based Approximations for Wiener Index SEA 2024
***G.K. Conrado**, A.K. Goharshady, P. Hudec, Pingjiang Li, H.J. Motwani*
CORE B

The Bounded Pathwidth of Control-flow Graphs OOPSLA 2023
***G.K. Conrado**, A.K. Goharshady, C.K. Lam*
CORE A

Exploiting the Sparseness of Control-flow and Call Graphs for Efficient and On-demand Algebraic Program Analysis OOPSLA 2023
***G.K. Conrado**, A.K. Goharshady, K. Kochekov, Y.C. Tsai, A.K. Zaher*
CORE A

PREPRINTS AND SUBMISSIONS

Parameterized Algorithms for Topological Indices in Chemistry
Giovanna Kobus Conrado, Amir Goharshady, Harshit Motwani, Sergei Novozhilov

GRANTS

Hong Kong PhD Fellowship Scheme 2021 - 2024
Fellowship established by the Research Grants Council of Hong Kong. The Fellowship provides an annual stipend of HK$322,800 (approximately US$41,400). It is highly competitive with a less than 2% acceptance rate.

Redbird Scholarship Program 2021
HKUST award in recognition of outstanding academic performance and research capacity.

VISITS

IIT Bombay Janary 2025-February 2025
Research Intern
Internship under the supervision of Prof. S. Akshay. Worked on the application of parameterization techniques in Program Synthesis and Petri Nets.

Aarhus University July 2023-January 2024
Research Intern
Internship under the supervision of Prof. Andreas Pavlogiannis. Worked mostly on problems related to interleaved Dyck reachability.

TEACHING AND SUPERVISION

TA, Computational Geometry Spring 2024
Hong Kong University of Science and Technology, Hong Kong
Prof. David Mount

Instructor, Saudi Arabia IOI camp February 2023
Malik Abdulaziz Foundation for Giftedness and Creativity, Saudi Arabia

TA, Advanced Algorithms Fall 2022
Hong Kong University of Science and Technology, Hong Kong
Prof. Amir Goharshady

TA, Design and Analysis of Algorithms Spring 2022
Hong Kong University of Science and Technology, Hong Kong
Prof. Dimitris Papadias

Instructor, ICPC Summer School January 2022
Unicamp, Brazil

Lecturer, Programming Challenges 2 Spring 2021
University of São Paulo, Brazil

TA, Problem Solving Programming Strategies Spring 2019
Texas A&M University, USA
Prof. John Keyser

TA, Introduction to Computer Science Fall 2018
University of São Paulo, Brazil
Prof. Yoshiharu Kohayakawa

Instructor, UFRGS Winter School July 2018
Universidade Federal do Rio Grande do Sul, Brazil

TA, Mathematics for Computer Science Spring 2018
University of São Paulo, Brazil
Prof. Yoshiharu Kohayakawa

SCHOOLS AND WORKSHOPS ATTENDED

Czech Summer School in Discrete Mathematics July 2024
Charles University, Prague, Czech Republic
Attended courses "Combinatorial and algorithmic applications of twin-width" by Édouard Bonnet and "Poset inequalities" by Igor Pak

EPIT 2024 - Graphs and Algorithms: Conjectures May 2024
CAES, Aussois, France
Attended courses on width parameters, forbidden induced structures, coloring, distributed graph algorithms and games on graphs and hypergraphs

Swedish Summer School in Computer Science 2022 June 2022
KTH Stockholm, Sweden
Completed courses "The Method of Moments in Computer Science and Beyond" by Ankur Moitra and "Polyhedral Techniques in Combinatorial Optimization" by Ola Svensson

XVII Summer School in Discrete Mathematics Jan 2022
CMM - Center for Mathematical Modeling — FCFM — Universidad de Chile, Chile
Completed courses "Graph Turán problems" by Boris Bukh, "Prophets, Secretaries, and other online puzzles" by Shuchi Chawla and "Submodular functions in combinatorial optimization" by Jan Vondrak

Paulista Workshop in Optimization, Combinatorics and Algorithms Nov 2020

Worked on the complexity of seaching in random partial orders in the random graph model (problem proposed by Yoshikaru Kohayakawa)

COMPETITIONS AND AWARDS

ICPC World Finals Oct 2021

IEEExtreme Oct 2020
3rd place

Google CodeJam to I/O for Women Feb 2020
2nd place

ICPC Latin America Regionals Nov 2019
1st place

WORK EXPERIENCE

VTEX March 2021-March 2023
Contractor

Consulting for outreach activities for competitive programmers in Brazilian universities.

VTEX Dec-Feb 2021
Software Engineering Intern

Worked with GraphQL to create a customizable data model for an ecommerce platform.

Facebook London May-Aug 2019
Software Engineering Intern

Worked on the design and implementation of state machines for a tool for the creation of Augmented Reality effects.

Texas A&M University Spring 2019
Student Intern

Assisted in the creation of an online Information Retrieval course for the university.