

# Legends of OR: Celebrating Jayme Szwarcfiter & Nelson Maculan

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## Honoring Jayme's outstanding career and pioneering work on graph theory



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## A Perspective on Theoretical Computer Science in Latin America

THEORETICAL COMPUTER SCIENCE is everywhere, for TCS is concerned with the foundations of computing and computing *is* everywhere! In the last three decades, a vibrant Latin American TCS community has emerged: here, we describe and celebrate some of its many noteworthy achievements.

Computer science became a distinct academic discipline in the 1950s and early 1960s. The first CS department in the U.S. was formed in 1962, and by the 1970s virtually every university in the U.S. had one. In contrast, by the late 1970s, just a handful of Latin American universities were actively conducting research in the area. Several CS departments were eventually established during the late 1980s. Often, theoreticians played a decisive role in the foundation of these departments.

One key catalyst in articulating collaborations among the few but growing number of enthusiastic theoreticians who were active in the international academic arena was the foundation of regional conferences. The first one was LATIN in 1992 followed by LAGOS and Latincrypt as well as other more specialized or local meetings (see the sidebars in this article for details). These conferences have fostered regional and international collaboration and helped consolidate TCS research groups in Argentina, Brazil, Chile, Mexico, and Uruguay, and their impact is felt in other Latin American countries.

In this article, we briefly discuss some of the most notorious research topics in TCS in Latin America. Our perspective is inspired by the research scope of LATIN, LAGOS, and Latincrypt; we have grouped them into nine topics.

### Automata Theory and Networks

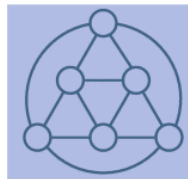
One of the main instigators of interest and research in TCS in Brazil was Imre Simon, whose work in automata theory was very influential (for details see Pin<sup>1</sup>). Owing to Simon's research, a semiring and some of its variants were dubbed tropical semirings, and the name has endured as they became fashionable in algebraic geometry. São Paulo's theory group grew in several directions under Simon's leadership. In 1992, he launched the first Latin American theory conference (LATIN), thus fostering the emergence of a vibrant regional community. In Chile, a somewhat similar story took place. Eric Goles returned from Grenoble in the early 1980s and continued his Ph.D. thesis work on dynamics of cellular automata via discrete Lyapunov functions. He mentored several of the first Chilean TCS researchers, who, together with his more recent students, are active throughout several institutions in Chile, working in graph theory, distributed computing, Boolean networks, and so forth. Not surpris-

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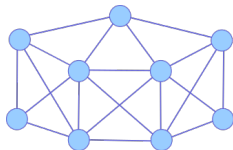
- In the last three decades, a vibrant Latin American TCS community has emerged. A main source of TCS development in the region has been graph theory. The pioneering work by Jayme Szwarcfiter and the late Victor Neumann-Lara has had great influence in Latin America.
- One key catalyst in articulating collaborations among the few but growing number of enthusiastic theoreticians who were active in the international academic arena was the foundation of regional conferences: LATIN, LAGOS and LAWCG.
- LATIN. The Latin American Theoretical INformatics Symposium started in 1992. It is currently in its 14th edition.

# LAGOS

- The Latin American Algorithms, Graphs and Optimization Symposium has been held on 10 occasions, all but once in Latin America. The meeting per se arose in 2005 as the merger of two regional events that were taking place, GRACO since 2001, and LACGA since 2004.
- Jayme together with Thomas Liebling compose the Emeritus Steering Committee
- [www.cos.ufrj.br/~celina/lagos/](http://www.cos.ufrj.br/~celina/lagos/)



- The Latin American Workshop on Cliques of Graphs is a biennial meeting originally focused on clique graphs (the intersection graphs of the maximal cliques of a graph) a research topic that mostly originated in Latin America. However, it soon broadened its spectrum and became a forum for research in graph theory.
- The meeting is known as Jayme's birthday conference. It started in 2002 on the occasion of Jayme's 60th birthday. Marina Groshaus organized the events honoring Jayme's 70th birthday in Buenos Aires and Jayme's 80th birthday in Curitiba.
- [www.lawcg.mat.br](http://www.lawcg.mat.br)



## Honoring Jayme at CLAIO 2022

- Honoring Jayme Szwarcfiter I – Monday at 9:00  
chair: Rosiane de Freitas
  
- Honoring Jayme Szwarcfiter II – Tuesday at 12:30  
chair: Lia Alessandra da Silva Martins
  
- Honoring Jayme Szwarcfiter III – Wednesday at 9:00  
chair: Marcos José Negreiros Gomes

## Honoring Jayme Szwarcfiter II – Tuesday at 12:30

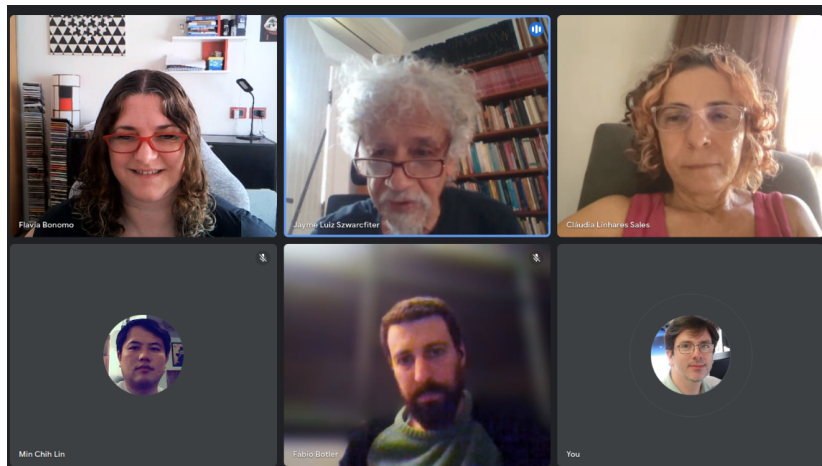
First PhD thesis at the State University of Rio de Janeiro (nov 2022)  
grandson Luerbio Faria, Jayme, student Bruno Masquio, son Vinícius Santos, son Paulo Eustáquio, son Fabiano Oliveira, daughter Sula Klein, grandson Guilherme Gomes





# Jayme's academic family

Latest PhD thesis at the Federal University of Rio de Janeiro (nov 2022)  
granddaughter Flavia Bonomo, Jayme, Claudia Linhares, son Oscar Lin,  
Fábio Botler, son Fabiano Oliveira



# Jayme's 80th birthday at ETC



# Jayme's 80th birthday at LAWCG



## Jayme's student coauthors

- 47 supervised theses; many students from Argentina and Chile: Silvia Beatriz Tondato UNLP, Maria Patricia Dobson UNLP, Marina Esther Groshaus UBA, Min Chih Lin UBA, Guillermo Duran UBA, Monica Villanueva Illufi (from Chile supervised at UFRJ).
- Among his coauthors, Oscar Lin is the second most frequent Flavia Bonomo, Francisco Soullignac, and Willy Duran together hold the seventh position.

## Jayme's themes and journals

- Themes: Scheduling, Posets, Parallel Algorithms, Huffman coding, Parameterized Complexity, Cryptography, Digital Watermarks, Intersection Graphs, Graph Convexity
  
- Journals: DAM, IPL, DM, TCS, JGT, Ann OR, DMTCS, Graph Combin, SIAM J DM, SIAM J Comput, Algorithmica, Networks, Rairo ITA , Rairo OR, ITOR, Math Programming, Otim Lett, Parallel Proc Lett, Comm ACM

# Prêmio Elon Lages Lima 2019



Jayme Luiz Szwarcfiter | Lilian Markenzon

## Estruturas de Dados e Seus Algoritmos

3ª edição



Jayme Luiz  
Szwarcfiter

SERIE  
SBC  
SOCIETY OF  
BRAZILIAN  
COMPUTERS

## TEORIA COMPUTACIONAL DE GRAFOS

### Os algoritmos

Com programas Python por  
Fabiano S. Oliveira e  
Paulo E. D. Pinto

LTC

## Premio Luis Federico Leloir 2014



# Legends of OR

