José Fuentes Sepúlveda

Contact Information

Citizenship:	Chile
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Education

2011–2016   **Doctor in Computer Science**, University of Concepción, Concepción. Chile
Thesis: Parallel Construction of Succinct Data Structures
Advisors: Leo Ferres, PhD and Meng He, PhD

2014   **Visiting Graduate Student**, Dalhousie University, Halifax. Canada
Local advisor: Meng He, PhD

2005–2010   **Computer Engineering**, University of Concepción, Concepción. Chile
Thesis: Accessibility to mathematical expressions
Advisor: Leo Ferres, PhD

2005–2008   **Bachelorof Engineering**, University of Concepción, Concepción. Chile

Research Activities

3.1 Research Stays

10/2016 (3 years)   **Postdoctoral stay**, Centre for Biotechnology and Bioengineering, University of Chile, Santiago. Chile
Area: Parallel algorithms for compressed indexes and networks
Inviting professor: Gonzalo Navarro, PhD
Funding: Postdoctoral funding No. 3170534, FONDECYT.

05/2018 (1 month)   **Invited researcher**, University of A Coruña, A Coruña. Spain
Area: Data structures and algorithms for network analysis
Inviting professor: Susana Ladra, PhD
Funding: EU grant H2020-MSCA-RISE-2015 BIRDS No. 690941

09/2017 (1 month)   **Invited researcher**, University of Helsinki, Helsinki. Finland
Area: Data structures and algorithms for network analysis
Inviting professor: Simon Puglisi, PhD
Funding: EU grant H2020-MSCA-RISE-2015 BIRDS No. 690941

07/2016 (1 month)   **Invited researcher**, University of Helsinki, Helsinki. Finland
Area: Data structures and algorithms for network analysis
Inviting professor: Travis Gagie, PhD
Funding: EU grant H2020-MSCA-RISE-2015 BIRDS No. 690941

3.2 Conference Organization

2022   **Local co-chair**, International Symposium on String Processing and Information Retrieval (SPIRE). Concepción, Chile.

2018   **Co-chair**, Workshop on Compression, Text and Algorithms (WCTA). Lima, Perú.

3.3 Editorial Boards

2019–2022 **Information Director**, ACM Journal of Experimental Algorithmics.

3.4 Refereeing and Program Committees

Program Committee	2022	European Symposium on Algorithms (ESA) – track B
	2019	International Symposium on String Processing and Information Retrieval (SPIRE)
	2019	International Conference of the Chilean Computer Science Society (SCCC)
Journal Reviewer	2021	Journal of Computer Science and Technology
	2021	The Journal of Engineering
	2019	Information and Computation Journal
	2018	Journal of Discrete Algorithms
	2017	Journal of Computational Methods in Sciences and Engineering
	2017	Theory of Computing Systems Journal
Auxiliar Conference Reviewer	2022-2023	International Symposium on String Processing and Information Retrieval (SPIRE)
	2017–2019	Data Compression Conference (DCC)
	2021–2023	
	2017, 2023	Symposium on Experimental Algorithms (SEA)
	2022	International Symposium on Algorithms and Computation (ISAAC)
	2021	European Symposia on Algorithms (ESA)
	2020	Symposium on Algorithm Engineering and Experiments (ALENEX)
	2020	Conference and Workshops on Algorithms and Computation (WALCOM)
	2019	Symposium on Combinatorial Pattern Matching (CPM)
	2017	Symposium on Discrete Algorithms (SODA)
	2016	European Symposia on Algorithms (ESA)
	2016	International Conference on Data Science, Technology and Applications (DATA)
External Reviewer	2019	Teaching innovation projects call. University of Santiago

Work Experience

4.1 Academic

2023–present **Director** of Master in Data Science for Innovation, University of Concepción, Concepción

2022–present **Young researcher** at Millennium Institute for Foundational Research on Data, CoChile

2020–present **Assistant professor** at University of Concepción, Concepción

2017 **Part-Time Lecturer** at University of Chile, Santiago
Lecturer of the class *Parallel Programming*

2016 **Part-Time Lecturer** at University of Concepción, Concepción
Lecturer of the class *Information Technologies*

2014–2015 **Part-Time Lecturer** at University of Concepción, Concepción
Lecturer of the class *Systems Development*

2014 **Part-Time Lecturer** at Universidad del Bío-Bío, Concepción
Lecturer of the class *Programming Language*

2013 **Part-Time Lecturer** at Universidad Católica de la Santísima Concepción, Concepción
Lecturer of the class *Computer Architecture*

2011–2013 **Assistant student** at University of Concepción, Concepción
Assistant student to the class *Data Structures*

2012 **Assistant student** at University of Concepción, Concepción
Assistant student to the class *Systems Development*

2011 **Assistant student** at University of Concepción, Concepción
Assistant student to the class *Parallel Programming in Multicore Systems*

2010–2011 **Assistant student** at University of Concepción, Concepción
Assistant student to the class *Data Base*

2009 **Assistant student** at University of Concepción, Concepción
Assistant student to the class *Formal Languages and Introduction to Compilers Theory*

2008 **Assistant student** at University of Concepción, Concepción
Assistant student to the class *Programming Language*

4.2 Occupational

2014–2016 **Co-founder & Chief operations officer** at Azu Labs, Concepción

2011 **System developer** at Comercial sistemas inteligentes para la producción, Concepción
Development of project *SGI EDENORTE RD*

2009–2011 **System developer** at Cefop - University of Concepción, Concepción
Development of project *CEFOP FB0824*

4.3 Voluntary

2013–2014	**Volunteer teacher** at Infocap, Concepción
2019	Volunteer teacher to teach a profession to workers with social vulnerability

Scholarships and Awards

2022–2024	Research funding, No. 11220545. National fund for scientific and technological development (FONDECYT). Chile Proyect: Algorithms and data structures for the edge computing paradigm
2017–2019	Postdoctoral funding, No. 3170534. National fund for scientific and technological development (FONDECYT). Chile Proyect: Efficient compressed indexes construction for multicore architectures
2014	ELAP Democracy Study Tour. Canadian Bureau for International Education (CBIE). Canada
2014	Emerging Leaders in the Americas Program (ELAP) scholarship. Department of Foreign Affairs, Trade and Development (DFATD). Canada
2012–2015	Doctoral scholarship. National commission for scientific and technological research (CONICYT). Chile
2011	University of Concepción award. University of Concepción. Chile
2011	Faculty of engineering award. University of Concepción. Chile
2010	Funding for undergraduate and graduate thesis. Innova Bío-Bío. Chile

Languages

English:	Upper intermediate
Spanish:	Mothertongue

Publications

Journals (WOS-SCOPUS)

1. C. Cárdenas, Herrera-Seda C, **J. Fuentes-Sepúlveda**, and Hugo Torres-Contreras. The context required it: Pandemic, teacher agency and inclusion in chile. *Psicoperspectivas*, 22(2), 2023

2. **J. Fuentes-Sepúlveda**, D. Gatica, G. Navarro, M. A. Rodríguez, and D. Seco. Compact representations of spatial hierarchical structures with support for topological queries. *Information and Computation*, 292:105029, 2023

3. **J. Fuentes-Sepúlveda**, G. Navarro, and D. Seco. Navigating planar topologies in near-optimal space and time. *Computational Geometry: Theory and Applications*, 109:101922, 2023

4. **J. Fuentes-Sepúlveda**, D. Seco, and R. Viaña. Succinct encoding of binary strings representing triangulations. *Algorithmica*, 2021. Avaible at: https://doi.org/10.1007/s00453-021-00861-4

5. D. Arroyuelo, **J. Fuentes-Sepúlveda**, and D. Seco. Three success stories about compact data structures. *Communications of the ACM*, 63(11):64–65, 2020

6. **J. Fuentes-Sepúlveda**, G. Navarro, and Y. Nekrich. Parallel computation of the Burrows-Wheeler Transform in compact space. *Theoretical Computer Science*, 812:123 – 136, 2020. In memoriam Danny Breslauer (1968-2017)

7. L. Ferres, **J. Fuentes-Sepúlveda**, T. Gagie, M. He, and G. Navarro. Fast and compact planar embeddings. *Computational Geometry: Theory and Applications*, 89:101630, 2020

8. **J. Fuentes-Sepúlveda** and S. Ladra. Energy consumption in compact integer vectors: A study case. *IEEE Access*, 7:155625–155636, 2019

9. **J. Fuentes-Sepúlveda**, L. Ferres, M. He, and N. Zeh. Parallel construction of succinct trees. *Theoretical Computer Science*, 700:1 – 22, 2017

10. **J. Fuentes-Sepúlveda**, E. Elejalde, L. Ferres, and D. Seco. Parallel construction of wavelet trees on multicore architectures. *Knowledge and Information Systems*, 51(3):1043–1066, 2017

11. **J. Fuentes-Sepúlveda** and L. Ferres. Improving accessibility to mathematical formulas: the Wikipedia math accessor. *New Review of Hypermedia and Multimedia*, 18(3):183–204, 2012

CONFERENCES

1. S. SALINAS-FERNÁNDEZ, **J. Fuentes-Sepúlveda**, AND N. HITSCHFELD-KAHLE. GENERATION OF POLYGONAL MESHES IN COMPACT SPACE. IN *International Meshing Roundtable Workshop (IMR)*, 2023

2. A. IRRIBARRA-CORTÉS, **J. Fuentes-Sepúlveda**, D. SECO, AND R. ASÍN. SPEEDING UP COMPACT PLANAR GRAPHS BY USING SHALLOWER TREES. IN *Data Compression Conference (DCC)*, PAGES 282–291, 2022

3. Z. LI, D. SECO, AND **J. Fuentes-Sepúlveda**. WHEN EDGE COMPUTING MEETS COMPACT DATA STRUCTURES. IN *2021 IEEE Cloud Summit*, PAGES 29–34, 2021

4. **J. Fuentes-Sepúlveda**, D. GATICA, G. NAVARRO, M. A. RODRÍGUEZ, AND D. SECO. COMPACT REPRESENTATION OF SPATIAL HIERARCHIES AND TOPOLOGICAL RELATIONSHIPS. IN *DCC*, PAGES 113–122, 2021

5. **J. Fuentes-Sepúlveda**, G. NAVARRO, AND D. SECO. IMPLEMENTING THE TOPOLOGICAL MODEL SUCCINCTLY. IN *SPIRE*, 2019

6. **J. Fuentes-Sepúlveda**, G. NAVARRO, AND Y. NEKRICH. SPACE-EFFICIENT COMPUTATION OF THE BURROWS-WHEELER TRANSFORM. IN *DCC*, PAGES 132–141, 2019

7. **J. Fuentes-Sepúlveda**, J. KÄRKKÄINEN, D. KOSOLOBOV, AND S. PUGLISI. RUN COMPRESSED RANK/SELECT FOR LARGE ALPHABETS. IN *DCC*, PAGES 315–324, 2018

8. L. FERRES, **J. Fuentes-Sepúlveda**, T. GAGIE, M. HE, AND G. NAVARRO. FAST AND COMPACT PLANAR EMBEDDINGS. IN *WADS*, PAGES 385–396, 2017

9. L. FERRES, **J. Fuentes-Sepúlveda**, M. HE, AND N. ZEH. PARALLEL CONSTRUCTION OF SUCCINCT TREES. IN *SEA*, PAGES 3–14, 2015

10. **J. Fuentes-Sepúlveda**, E. ELEJALDE, L. FERRES, AND D. SECO. EFFICIENT WAVELET TREE CONSTRUCTION AND QUERYING FOR MULTICORE ARCHITECTURES. IN *SEA*, PAGES 150–161, 2014

11. L. FERRES AND **J. Fuentes-Sepúlveda**. IMPROVING ACCESSIBILITY TO MATHEMATICAL FORMULAS: THE WIKIPEDIA MATH ACCESSOR. IN *W4A*, PAGES 25:1–25:9, 2011

WORKSHOPS

1. **J. Fuentes-Sepúlveda** AND G. NAVARRO. SPACE-EFFICIENT PARALLEL CONSTRUCTION OF THE BURROWS-WHEELER TRANSFORM. IN *WCTA*, 2017

2. **J. Fuentes-Sepúlveda**. PARALLEL CONSTRUCTION OF SUCCINCT TREES. IN *Encuentro de Tesistas, JCC*, 2015

3. **J. Fuentes-Sepúlveda** E. ELEJALDE, D. CARO, L. FERRES, D. SECO, AND M. A. RODRÍGUEZ. EFFICIENT WAVELET TREE CONSTRUCTION AND QUERYING FOR MULTICORE ARCHITECTURES. IN *MASSIVE*, 2013

4. **J. Fuentes-Sepúlveda**. IMPROVING ACCESSIBILITY TO MATHEMATICAL FORMULAS: THE WIKIPEDIA MATH ACCESSOR. IN *Encuentro de Tesistas, JCC*, 2012