ASUNCIÓN GÓMEZ COLOMER

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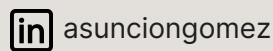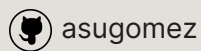
SUMMARY STATEMENT

Passionate researcher with a strong background in Computer Science, specializing in algorithms and data structures. Eager to pursue a PhD to explore interdisciplinary applications in data compression, storage, and efficient data management. Skilled in solving complex computational problems with innovative solutions. Enthusiastic about working in collaborative environments and committed to advancing cutting-edge research.

RESEARCH INTERESTS

Data structures | Algorithms | Databases | Optimization | Theory of Computation

EDUCATION

Master's Degree in Computer Science   **Aug 2023 - June 2025**
University of Chile, Chile
- **Thesis topic**: "Gradual retrieval, ranked enumeration and lazy evaluation of graph database joins".
- **Advisor**: Prof. Gonzalo Navarro.
- Designed and implemented new strategies to optimize join operations in graph databases. Improved efficiency using compact data structures (qdags) for worst-case optimal joins.
- *Developed and evaluated a new version of qdags that prioritizes result order. Developed lazy qdags and extended them to support full relational algebra.*
- Graduated with honors, Final GPA: 7.0/7.0.

Double Degree in Engineering and Computer Science   **Aug 2019 - June 2025**
École Centrale de Lille, France

Bachelor of Science in Computer Science with Distinction **March 2017 - Aug 2023**
University of Chile, Chile
- Recognized as an Outstanding Student in 2017, 2018, 2022 and 2023.
- Final GPA: 6.0/7.0.

RESEARCH EXPERIENCE

Research Project, Course Compact Data Structures   **July 2023**
University of Chile
- Level Ancestor and Lowest Common Ancestor in Faster Compressed Quadtrees.
- Prof. Gonzalo Navarro.

Research Assistant   **Feb - Jun 2021**
École Centrale de Lille
- Multi-agent system for carpooling using Reinforcement Learning.
- Prof. Slim Hammadi.

Winter Internship, Metaheuristics for Flowshop Scheduling **Jan - Feb 2021**
CRIStAL - Inria
- Conducted research on metaheuristic algorithms to solve the flowshop scheduling problem.
- Prof. Laetitia Jourdan.

WORK EXPERIENCE

Software Engineer   **July 2021**
Computer Engineering, Paris, France   **- present**

- Led the development of an augmented reality application to assist in chemotherapy preparation.
- Maintained and improved a mobile application used by pharmacists to streamline workflow and enhance efficiency.
- Working remotely since February 2022.

TEACHING EXPERIENCE

Teaching Assistant, Design and Analysis of Algorithms   **March - July 2023**
University of Chile   **Aug - Dec 2023**

- Student evaluation scores of 6.9/7.0 and 7.0/7.0.

Teaching Assistant, Operating Systems   **March - July 2023**
University of Chile   **Aug - Dec 2023**

- Student evaluation scores of 6.2/7.0 and 6.4/7.0.

PUBLICATIONS

- Cache-Friendly Compressed Boolean Matrices (SPIRE 2025).

CONFERENCES

- Poster presentation at the University of Chile's Postgraduate Conference 2024.
- Poster presentation at the University of Chile's Postgraduate Symposium in Engineering, Science and Innovation 2024.
- 1-Minute Thesis Presentation at the University of Chile's Postgraduate Symposium in Engineering, Science, and Innovation 2024.

GRANTS / AWARDS

- Master's thesis funding awarded through a selection process by the Millennium Institute Foundational Research of Data.
- Selected to attend KHIPU 2025 Latin American Meeting in Artificial Intelligence.
- 3rd place for Best Poster at the Postgraduate Conference of the University of Chile, 2024.
- 3rd place for Thesis in 1 minute in the Postgraduate Symposium in Engineering, Science and Innovation 2024.
- Awarded an ACM grant to attend the 2024 ACM SIGMOD/PODS International Conference on Management of Data in Santiago, Chile.

SKILLS

- Languages: Spanish (native) │ English (IELTS C1) │ French (advanced)
- Programming languages: C/C++, Python, Java, SQL.
- Library: SDSL-lite (Succinct Data Structure Library), Tikz - Latex.

PERSONAL INTERESTS

- Football : player of the faculty of Physical Sciences and Mathematics of the University of Chile.
- Cycling: completed Brevet Pangue 200 km (January 2025).

REFERENCES

- Prof. Gonzalo Navarro │ Full Professor at the Department of Computer Science │ University of Chile │ gnavarro@dcc.uchile.cl

- Prof. Nancy Hitschfeld │ Full Professor at the Department of Computer Science │ University of Chile │ nancy@dcc.uchile.cl