

Luiza Soezima

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Education

- 2024 – 2025 📖 **M.Sc. Computer Science - Cybersecurity** at *École nationale supérieure d'informatique et de mathématiques appliquées de Grenoble – Grenoble INP*, Grenoble, France.
Persyval M2 Excellence Scholarship.
Subjects:
- Software security, secure programming and computer forensic
 - Security architectures : network, system, key managements, blockchains, cybersecurity of industrial IT
 - Cryptographic engineering, protocols and security models, data privacy, coding and applications
 - Threat and risk analysis, IT security audit and norms Presentation Course page
 - Physical Security : Embedded, Smart Card, Quantum
 - Advanced Cryptology
- 2019 – 2024 📖 **B.Sc. Computer Science** at *Universidade de São Paulo - USP*, São Paulo – SP, Brazil.
Hackatons: SheHacks 2020, SheHacks 2022, Hackfools 2019.
[2019] **MaratonUSP**: Member of the coding marathon team focused on solving ICPC problems and participating in ICPC competitions.
[2021, 2022] **Student Council Representative**: Representative of the students at the Council of Computer Science Department.
[2023, 2024] **Undergraduate Committee Student Representative**: Representative of the students at the Undergraduate Committee.
Monograph title: *Folding FrodoPIR - Private Information Retrieval with Query Optimization* supervised by *Prof. Hilder Vitor Lima Pereira* and *Prof. Alfredo Goldman*
- 2014 – 2017 📖 **B.Sc. Mechanical Engineering** at *Universidade Estadual de Campinas*, Campinas – SP, Brazil.
(Interrupted).
- 2011 – 2013 📖 **High School** in Colégio Bandeirantes, São Paulo – SP, Brazil

Work and Research Experience

- Feb 2025 – Present 📖 **Research internship** at *Laboratoire Jean Kuntzmann* – Université Grenoble Alpes
Supervision: Prof. Jean-Guillaume Dumas and Prof. Aude Maignan
Brief Explanation: In this project I have been investigating optimal approaches for Private Set Union (PSU) and Private Set Intersection (PSI) in the context of secure multi-party computation. Exploring Fuzzy Matching techniques for set operations, including metric-based matching and their applicability to PSU and PSI. Analyzing the use of Oblivious Key-Value Stores (OKVS) and function secret sharing (FSS) to improve the efficiency of fuzzy private set operations.

Work and Research Experience (continued)

Aug 2023 – Dec 2024

📖 **Scientific Initiation** at *Universidade de São Paulo*

Supervision: Prof. Hilder Vitor Lima Pereira

Brief Explanation: In this project, I aim to enhance the existing protocol FrodoPIR (<https://eprint.iacr.org/2022/981>), a stateful Private Information Retrieval (PIR) scheme rooted in the learning with errors (LWE) problem. My focus is on refining how the FrodoPIR does the client-server data communication. For the theoretical work, I had to dive into a few specific topics such as the GSW scheme, TFHE(Fast Fully Homomorphic Encryption over the Torus) and DGHV(DijkGentry-Halevi-Vaikuntanathan) schemes, and the mathematical problems used to construct them, i.e., the LWE(Learning with errors) and AGCD(Approximate Greatest Common Divisor) problems.

Mar 2021 – Mar 2022

📖 **Scientific Initiation** at *Universidade de São Paulo, National Deputies Chamber, Justice Court of São Paulo*

Supervision: Prof. André Carlos Ponce de Leon Ferreira de Carvalho

Brief Explanation: The project is a bilateral agreement between the University of São Paulo and the São Paulo State Justice Court (TJSP) to create an Artificial Intelligence that makes Natural Language Processing tasks on the Brazilian Legal court. My main work was to deal with machine learning techniques and do a deep research on them and their applicability in our domain, testing and adapting them to enhance our results. My tasks are the following:

- Article mapping for machine learning techniques applied to named entity recognition.
- Article survey for BERT and Information Retrieval Techniques.
- Worked on inconsistency verification in the database that caused problems with preprocessing results.
- Working on Entities Annotation to create a new Legal Portuguese Corpus. Targeting something new and without any previous publication.
- Working on a revision/SoK article with other 3 PhD's of Named Entity Recognition applied in Portuguese and Legal Domain.
- Working with an interdisciplinary team of politicians, computer engineers and computer scientists.

Scientific initiation with recognized scholarship

2015 – 2016

📖 **InovEdu** at *Universidade Estadual de Campinas*

Founded an educational NGO to develop the active learning method inside the university to develop students learning methodology.


2014 – 2015

📖 **Motriz EJ** at *Universidade Estadual de Campinas*


Member of the junior enterprise company, finance administrative coordinator, ISO 9001:2008 internal auditor and quality manager. Organized the mechanical engineering week, together with international companies, and academic sponsors. Took part in workshops on finance, administration, and innovative business.

Research Publications

Conference Proceedings





- 1 Hidelberg O. Albuquerque et al. "UlyssesNER-Br: A Corpus of Brazilian Legislative Documents for Named Entity Recognition". In: *Computational Processing of the Portuguese Language: 15th International Conference, PROPOR 2022, Fortaleza, Brazil, March 21–23, 2022, Proceedings*. Fortaleza, Brazil: Springer-Verlag, 2022, pp. 3–14. ISBN: 978-3-030-98304-8.  DOI: 10.1007/978-3-030-98305-5_1.

Preprints and Other Publications




- 1 Alex Davidson, Luiza Soezima, and Fernando Virdia. *Practical Semi-Open Chat Groups for Secure Messaging Applications*. Cryptology ePrint Archive, Paper 2025/469. Under submission to a conference. 2025.  URL: <https://eprint.iacr.org/2025/469>.

Miscellaneous Experience

Awards and Achievements

- 2024  **Master Excellence Scholarship** from *Agence nationale de la recherche (ANR)*
The "Université Grenoble Alpes", through its excellence center (LabEx) PERSYVAL, funds a scholarship program for attracting exceptional candidates in the second year of one of its master's degree related to the PERSYVAL disciplines: Computer Science, Control, Mathematics and Signal Processing.
- 2021  **Global Challenge Lab** jointly between *Imperial College London, Tsinghua University, Huawei Inc., Nestlé Inc.*
Selected among students to represent Brazil and University of São Paulo.
The Global Challenge Lab is an entrepreneurship program as a partnership between Imperial College London Enterprise Lab and Tsinghua University's X-lab in Beijing. The objective is to create new ideas that help achieve UN SDG 3: Good Health and Wellbeing. The program constituted of workshops, guest speakers and mentoring to help you come up with and develop innovative ideas. For the Challenge, we worked with students from University of Toronto, Imperial College and Tsinghua University, and developed a solution called Baby Beep, a voice tone pager using reused technological parts from previous pager manufacturers.
- 2020  **SheHacks** by *USP CodeLab*
Won honorable mention
SheHacks is hackathon for university students identifying as women and the LGBTQI community. That year, the theme was "Innovative ways of enhancing life quality and well-being of people" and had companies such as Google, BzW, and iFood as primary sponsors.
-  **University Student Talent Award** by *CAPES - Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, Brazilian Government*
Awarded a scholarship from the education ministry (CAPES University Talent Award) for being one of the Brazilian best first-year students.

Miscellaneous Experience (continued)

- 2019 - 2020  **ICPC – International Collegiate Programming Contest** representing *Universidade de São Paulo*
2019 - Won Honorable Mention - Classified 5th on São Paulo regionals and 50th on Brazilian overall.
2020 - Classified 15th on São Paulo regionals and 57th on Brazilian overall.
“The International Collegiate Programming Contest is an algorithmic programming contest for college students. Teams of three, representing their university, work to solve the most real-world problems, fostering collaboration, creativity, innovation, and the ability to perform under pressure.”(<https://icpc.global/>)
- 2019  **Hackfools** by *USP CodeLab, Facebook Inc.*
Won honorable mention with the PetMe application, a dating app for pets.
Immersive hackathon that pushes students into innovative careers and stimulates the entrepreneurship spirit. 12-hour hackathon to foster creativity, innovation, group collaboration, and performance under pressure to bring a solution.
- 2018  **Helping Hand Challenge** by *Universidade Estadual de Campinas, University College London and Royal Academy of Engineering*
Won best prosthesis in Brazil and second best worldwide.
Developed a hand prosthesis adapted for low- and middle-income countries (LMIC), and won the Hand Challenge Contest, sponsored and guided by a joint group between Royal Academy of Engineering and University College London.
- 2015  **National Youth Science Forum** by *Australian National University* at Canberra - Australia
Represented the Brazilian scientific delegation as an honorable invitee. The NYSF is a forum that gathers students to potentialize their passion for science and technology. This forum combines the scientific field and academic experience to inspire students to choose different STEM careers.
- 2013  **London International Youth Science Forum** by *Imperial College London, Oxford University, Cambridge University, Cranfield University* at London, United Kingdom
Represented the Brazilian youth scientists delegation as an honorable invitee. The LIYSF forum gathers around 500 leading young scientists from over 70 countries. The objective is to share and discuss how we see world changes and bring new sights and ideas back to our countries. In 2013 the theme was Science without Borders, bringing several discussions toward the limits of the future in science.



Conferences Attendance

- 2025  **Eurocrypt 2025** in Madrid, Spain. *Scholarship Awarded.*
 **Real World MPC (RWMPC) 2025** in Sofia, Bulgaria.
 **FHE.org Conference 2025** in Sofia, Bulgaria.
 **RWC 2025** in Sofia, Bulgaria. *Scholarship Awarded.*
- 2024  **Eurocrypt 2024** in Zurich, Switzerland.
- 2023  **LatinCrypt 2023** in Quito, Ecuador. *Scholarship Awarded.*



Advanced Schools and Workshops

- 2024  **Crossfyre 2024**, *Workshop Affiliated to Eurocrypt 2024* in Zurich, Switzerland.



Miscellaneous Experience (continued)

- 2023  **INCACrypto 2023 - Introductory school in Cryptography**, School Afilliated to Latin-Crypt 2023 in Quito, Ecuador.
-  **ASCrypto 2023 - Advanced School in Cryptology**, School Afilliated to LatinCrypt 2023 in Quito, Ecuador.

Talks and Seminars

- 2024  **SymComp (Computer Science Symposium) 2024 - The Adventures of Alice in Cryptoland - An introduction to cryptography** at Universidade de São Paulo - São Paulo, Brazil.
-  **Crossfyre (International Workshop on Cryptography, Robustness, and Provably Secure Schemes for Female Young Researchers) 2024 - PIR + FHE: Chip'n'Dale of privacy (A survey on PIR and FHE)** at Universidade de São Paulo - São Paulo, Brazil.

Other Courses and Schools

- 2023  **General Business Program** at *Business Training Company*, São Paulo – SP, Brazil
Subjects: Business training program focused on: Strategy, Corporate Finance, Valuation, Marketing, Negotiation.
- 2017,2020  **Summer Course – Scientific Initiation** at *IMPA – Instituto de Matemática Pura e Aplicada*, Rio de Janeiro – RJ, Brazil.
Subjects: Linear Algebra, Real Analysis, Introduction to Mathematical Economics.

Skills

Languages



- Portuguese – Mother tongue
- Spanish – Upper-Intermediate Level – DELE Certificate - B2
- English – Advanced Level – Cambridge CAE Certificate - C1
- French – Upper-Intermediate Level – DELF Certificate – B2

Coding



C++, Python, SQL, L^AT_EX, LISP, Kotlin, MySQL, PostgreSQL, HTML, CSS, JavaScript. ...

Tools



Docker, NMap, GDB, Wireshark, Git, CMake, Frama, Ghidra

Software Development




Technical Writing, Test Driven Development, Agile, Kanban, Bug Report and fixing

Misc.



- Piano – Graduated from the Souza Lima Conservatory in Classical Piano.
- Athletics Team (5K, 1500 and shot-put), E-Sports (Valorant and Counter-Strike).
- Choir volunteer at Barefoot Carmelites Church of Campinas and Our Lady of Brazil Church.

Skills (continued)

Hobbies  As hobbies I love surfing (on the waves), music, games, learning new languages and cooking.