

Jessica Imlau Dagostini

✉ jessicadagostini@gmail.com ✉ jessica.dagostini@ucsc.edu
🏠 Personal Page in LinkedIn 🐙 GitHub

AREAS OF INTEREST

High-Performance Computing | GPGPU Programming | Graph Algorithms | Optimization and Load Balancing | Programming Languages

EDUCATION

Sep,2022 – Present

Ph.D. Student in Computer Science

University of California Santa Cruz (UCSC), United States

Co-Advisor: Prof. Dr. Scott Beamer

Co-Advisor: Prof. Dr. Tyler Sorensen

Mar,2020 – Mar,2022

M.Sc. in Computer Science (GPA: A)

Federal University of Rio Grande do Sul (UFRGS), Brazil

“Performance Improvements Applied in an Electromagnetic Inversion Application Focused on Homogeneous and Heterogeneous Computational Environments”

Advisor: Prof. Dr. Lucas Mello Schnorr

Feb,2015 – Dec,2019

B.Sc. in Computer Science (Summa Cum Laude – 9.39 / 10)

Universidade Regional Integrada do Alto Uruguai e das Missões - URI Erechim, Brazil

“Evaluating the Container’s Applicability in a Distributed System of Code Judgement”

(Avaliação da Aplicabilidade de Containers em um Sistema Distribuído de Julgamento de Códigos.)

Advisor: Prof. Ms. Neilor Avelino Tonin

Co-advisor: Dr. Jean Luca Bez

PROFESSIONAL EXPERIENCE

Sept,2023 – Present

PhD Intern – High Performance Computing

Pacific Northwest National Laboratory

Advisor: Dr. Joseph B Manzano

- Performance and characterization of a DNA mapping application that uses pangenomes as references and a graph structure called GBWT (Graph Burrows-Wheeler Transform) to index DNA readings
- Porting part of this code to a proxy aiming to speed up on GPGPUS

Sept,2022 – Sept, 2023

Graduate Student Researcher

University of California, Santa Cruz, United States

Co-advisor: Prof. Dr. Scott Beamer

Co-advisor: Prof. Dr. Tyler Sorensen

- Working with parallel programming, optimizations and graph reordering for high-performance computing
- Optimizing a genome application focused on DNA mapping for human pangenomic DNA references

Jan,2023 – Mar,2023

Teaching Assistant

University of California, Santa Cruz, United States

Courses:

- CSE113 - Parallel and Concurrent Programming (Winter 2023)

Jan,2021 – Jul, 2022

Principal System Architect

beecrowd, Brazil

- Responsible for managing changes and fundamental structure of beecrowd judge;
- Manage and administrate applications’ database;
- Organize and supervise team’s activities.

Mar,2020 – Mar, 2022

Graduate Student Researcher

Federal University of Rio Grande do Sul (UFRGS), Brazil

*"Computational Optimization of Data Inversion Codes"**(Otimização Computacional de Códigos de Inversão de Dados)*

Advisor: Prof. Dr. Lucas Mello Schnorr

- This project aims to investigate and implement computational techniques that improve the execution and quality of results of Data Inversion codes;
- Evaluated, proposed and applied algorithms to improve the load balancing and scalability of a data inversion application of survey oil and gas in homogeneous and heterogeneous systems.

May,2019 – Sep,2019

Adjunct Faculty

National Service for Commercial Education - RS, SENAC/RS, Brasil.

- Taught robotics to K-12 students in a project complementary to school;
- Teacher in two components of the Fundamentals of Informatics course (Compact Internet and Compact PowerPoint).

Jan,2019 – Mar,2019

Intern Researcher (Summer Program)

Brazilian Center for Research in Energy and Materials (CNPEM), Brazil

Brazilian Synchrotron Light Laboratory (LNLS), Brasil

*"GPU Code Implementation to Phase Recovery on Fraunhofer Region"**(Implementação em GPU para a Recuperação da Fase na Região de Fraunhofer)*

Advisor: Dr. Eduardo Xavier Miqueles

- Summer internship project consisted of the development of a specific tool for the restoration of projective images obtained in the Fraunhofer region;
- Main developer of an application in CUDA to be incorporated into the pipeline of the automatic processing of the detectors from the Sirius synchrotron light source;
- Discovered some bugs at cuFFT library that were reported to NVIDIA developers.

Aug,2018 – Jul,2019

Undergraduate Student Extensionist

Universidade Regional Integrada do Alto Uruguai e das Missões - URI Erechim, Brazil

*"Insertion of High School Students from Erechim on Brazilian Olympiads in Informatics"**(A Inserção de Alunos do Ensino Médio de Erechim na Olimpíada Brasileira de Informática)*

Advisor: Prof. Ms. Neilor Avelino Tonin

- Project to teach algorithms and programming languages to High School students
- Taught programming to 45 students that enrolled in the Brazilian Olympiads in Informatics (OBI)

Aug,2015 – Jul,2018

Undergraduate Research Assistant

Universidade Regional Integrada do Alto Uruguai e das Missões - URI Erechim, Brazil

- *"A Study About Distributed Systems to be Applied on URI Online Judge Portal"*
(Um Estudo Sobre Sistemas Distribuídos para Aplicação no Portal URI Online Judge)

Advisor: Prof. Ms. Neilor Avelino Tonin

- Distributed the front-end servers from URI Online Judge;
- Studied and applied tests to verify which system distribution will be the best option for the environment

- *"Developing a Customized Online Forum to URI Online Judge"*
(Criação de um Fórum Customizado para o Portal URI Online Judge)

Advisor: Prof. Ms. Neilor Avelino Tonin

- Rebuilt the online forum from the URI Online Judge (now beecrowd) platform, applying some concepts related to Human-Computer Interaction, developed using CakePHP framework;
- The new version was deployed in April, 2017, now being used by 300k users, with more than 8800 posts (<https://www.becrowd.com.br/judge/en/forum>).

Apr,2012 – Aug,2014

Junior Student Research

Universidade Regional Integrada do Alto Uruguai e das Missões - URI Erechim, Brazil

Escola Estadual Normal José Bonifácio (High School), Brazil

*"Discussion and Deepening of Concepts Regarding the Study of Mathematical Functions on High School"**(Discussão e Aprofundamento de Conceitos a Respeito do Estudo de Funções do Ensino Médio)*

Advisor: Prof. Ms. Clemerson Alberi Pedroso

- Investigated, discuss, and deepen mathematical concepts related to the study of functions and contribute to the approximation of scientific-theoretical knowledge didactic-operational knowledge in Exact Sciences;
- Developed a diversity of studies from applied mathematics and created a collection of problems modeled from real-world problems.

AWARDS

2023

2º Place - ISC Virtual Student Cluster Competition

Team Not-So-Slow-Slugs - UCSC. Awarded by ISC High Performance 2023 Conference.

2021

Students@SC'21 Best Lightning Talk

Awarded by Students@SC Program from Supercomputing'21 Conference

2021

BRASA Pré Pós-Graduação Mentee

Selected mentee for the Brazilian Student Association (BRASA) PRÉ Pós-Graduação (Graduate Program) for Ph.D Program.

2020

URI Erechim Best Student Award

SUMMA CUM LAUDE (9.39 / 10.0)

Awarded by Universidade Regional Integrada do Alto Uruguai e das Missões (URI)

2020

SBC Highlight Student Award

SUMMA CUM LAUDE (9.39 / 10.0)

Awarded by Brazilian Computer Society (SBC)

2016

2º Place - Tecnomate Contest 2016, Categoria "Libres"

Awarded by Departamento de Ingeniería en Sistemas de Información, UTN Santa Fé (Argentina).

2010

Honorable Mention on 6th Brazilian Math Olympiads of Public Schools (OBMEP)

Awarded by Conselho Nacional de Pesquisa (CNPq), Brasil.

GRANTS & FELLOWSHIPS

Aug,2023

HDF5 Group Meeting Student Travel Grant

Academic funding to participate in the annual meeting of the HDF5 group on Columbus, OH.

Apr,2023 – Jun,2023

UCSC Dean's Fellowship

Academic funding given to a small number of outstanding new PhD admitted students at UCSC for tuition coverage.

Mar,2020 – Mar,2022

Master Scholarship

Financial scholarship provided by Petroleo Brasileiro, to work in the research project "Otimização Computacional de Códigos de Inversão de Dados" (Computational Optimization of Data Inversion Codes)

Fev,2015 – Dez,2019

University for All Program (ProUni)

Financial and merit-based full scholarship provided by Brazilian Federal Government to cover university tuition (selected as 1st place)

PUBLICATIONS**JOURNAL PUBLICATIONS**

- Dagostini, J.; Bez, J. L.; Tonin, N. A.; Rodegheri, P. R. (2017) **Um novo ambiente de discussões para o URI Online Judge** *Perspectiva - Erechim*, v. 41, p. 65-74, 2017

FULL PAPERS PUBLISHED IN CONFERENCES

- Dagostini, J.; H. C. P. da Silva, V. G. Pinto, R. M. Velho, E. S. L. Gastal and L. M. Schnorr. (2021) **Improving Workload Balance of a Marine CSEM Inversion Application**. In: 2021 *IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, 2021, pp. 704-713, <https://doi.org/10.1109/IPDPSW52791.2021.00107>.

- **Dagostini, J.; Lima, M. V. de M.; Bez, J. L.; Tonin, N. A. (2018) URI Online Judge Blocks: Construindo Soluções em uma Plataforma Online de Programação.** In: *XXIX Simpósio Brasileiro de Informática na Educação (Brazilian Symposium on Computers in Education)*, Fortaleza, 2018. v. 1. p. 168-177. <http://dx.doi.org/10.5753/cbie.sbie.2018.168>
- **Dagostini, J.; Lima, M. V. de M.; Tonin, N. A. (2018) Multilayer Perceptron para Classificação de Sentimento em Textos utilizando a biblioteca TensorFlow.** In: *X Simpósio De Tecnologia Da Informação Da Região Norte e Nordeste do Rio Grande do Sul*, 2018, Erechim, RS.
- **Dagostini, J.; Tonin, N. A. (2016) URI Online Judge Fórum: Uma Plataforma para Compartilhamento de Conhecimento.** In: *II CONIGTI - Congresso Internacional de Gestão, Tecnologia e Inovação*, Erechim, RS: EdiFAPES, 2016. v. 1.

SHORT PAPERS PUBLISHED IN CONFERENCES

- **Dagostini, J.; Pinto, V., & Schnorr, L. (2021). Aplicação de Método Guloso para Balanceamento de Carga em uma Aplicação de Exploração Eletromagnética.** In: *Anais da XXI Escola Regional de Alto Desempenho da Região Sul*, (pp. 87-88). Porto Alegre: SBC. <https://doi.org/10.5753/erads.2021.14782>
- **Dagostini, J.; Lima, M. V. de M.; Bucior, L.; Bez, J. L.; Tonin, N. A. (2017) Incentivando a Aprendizagem de Algoritmos Através do URI Online Judge Forum 2.0** In: *XXVIII Simpósio Brasileiro de Informática na Educação (Brazilian Symposium on Computers in Education)*, Recife, 2017. v. 1. p. 1781. <http://dx.doi.org/10.5753/cbie.sbie.2017.1781>

SKILLS

ENVIRONMENTS

- Working proficiency: Linux/Unix | nano | bash | git | Docker and LXC containers | LaTeX;
- Basic proficiency: spack | slurm | vi.

PROGRAMMING LANGUAGES

- Working proficiency: C | C++ | Python | PHP | HTML/CSS;
- Basic proficiency: Java | JavaScript | Ruby | R.

APIs AND FRAMEWORKS

- Working proficiency: CUDA | OpenMP | CakePHP | Score-P;
- Basic proficiency: MPI | POSIX Threads | OpenACC.

GENERAL SKILLS

- Abilities with leadership and teamwork;
- Experience with teaching algorithms to new programmers;
- Knowledge of teaching didactics (High School with disciplines for teaching degree).

PRESENTATIONS AND INVITED TALKS

INVITED TALKS

1. **Dagostini, J.; Solórzano, A. L.; Girelli, V.; Carmin, M. (2022) Special Sessions - Women in High Performance Computing.** (WHPC Affiliate Brasil - Região Sul. XXII Escola Regional de Alto Desempenho, Parana, Brasil)
2. **Dagostini, J.; Gayler, R.; Beste E. de; F. ratkin, M.; Merritt, C.; Gonsiorowski, E.; Belcher, K.; Chen, D. (2021) Addressing Challenges in HPC Careers.** Students@SC Student Programming, Supercomputing 21 Conference, St. Louis, United States
3. **Dagostini, J.; Baptista, V.; Zhan, Y.; Leiva, F. H.; Gyawali, S.; Johnston, B.; Filinger, W. (2021) Presentation and Communication Skills.** Students@SC Student Programming, Supercomputing 21 Conference, St. Louis, USA
4. **Dagostini, J.; Solórzano, A. L.; Girelli, V. (2021) Por que ainda precisamos falar sobre mulheres em HPC?.** English title: *Why do we still have to talk about women in HPC?* (WHPC Affiliate Brasil - Região Sul) WSCAD Conference, Minas Gerais, Brasil

5. **Dagostini, J.**; Solórzano, A. L.; Girelli, V. (2021) **Latin American Women on HPC: WHPC Affiliate Brasil Região Sul.** *Latin America High Performance Computing Conference (CARLA 2021), Guadalajara, Mexico*
6. **Dagostini, J.**; Solórzano, A. L.; Girelli, V. (2021) **Special Session - Women in High Performance Computing.** (WHPC Affiliate Brasil - Região Sul) *XXI Escola Regional de Alto Desempenho, Santa Catarina, Brasil*
7. **Dagostini, J.**; Lima, M. V. de M.; Tonin, N. A. (2017) **Enseñar a programar jugando: URI Judge Online.** *WTIC, Resistencia, Argentina*
8. **Dagostini, J.**; Bez, J.L.; Tonin, N. A. (2016) **Portal URI Online Judge - Internacionalização. 2016.** *Tecnomate, Santa Fé, Argentina.*

COMMUNITY SERVICES

COMMITTEE

- | | |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2023 | ACM/IEEE SC'23 Supercomputing Conference, Denver, CO (USA)
Infrastructure - Wayfinding Co-Chair
Artifact Description / Article Evaluation (AD/AE) Appendix Reviewer
Lead Student Volunteers Reviewer |
| 2023 | Women in HPC SC'23 Workshop
Submissions Co-Chair |
| 2023 | International Conference on Parallel Computing
Reproducibility Committee |
| 2022 | Women in HPC SC'22 Workshop
Submissions Co-Chair |
| 2022 | 29th IEEE Hot Interconnects Symposium
Web Chair |
| 2019 | X Simpósio de Tecnologia da Informação da Região Norte e Noroeste do Rio Grande do Sul
XXIII Semana Acadêmica do Curso de Ciência da Computação da URI Erechim.
Universidade Regional Integrada do Alto Uruguai e das Missões - URI Erechim, Brazil
Member of the Organizer Team |
| 2019 | IX Simpósio de Tecnologia da Informação da Região Norte e Noroeste do Rio Grande do Sul
XXII Semana Acadêmica do Curso de Ciência da Computação da URI Erechim.
Universidade Regional Integrada do Alto Uruguai e das Missões - URI Erechim, Brazil
Member of the Organizer Team |
| 2019 | III Engenharia em 24 Horas: o desafio.
Universidade Regional Integrada do Alto Uruguai e das Missões - URI Erechim, Brazil
Member of the Organizer Team |

EXTERNAL REVIEWER

- | | |
|----------------|-----------------------------------|
| 2022 – Present | Parallel Computing Journal |
|----------------|-----------------------------------|

TUTORIALS AND SHORT TERM COURSES

- | | |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| May, 2022 | Orquestrando Containers com Docker e LXC
Cursos de Outono 2022
Short Term Course |
| Apr, 2021 | Are you Root? Experimentos Reprodutível em Espaço de Usuário
XXI Escola Regional de Alto Desempenho da Região Sul
Short Term Course |

Oct,2020

Introdução a Programação Paralela com OpenMP

I Semana Acadêmica Integrada dos Cursos de Ciência da Computação da URI
Short Term Course

VOLUNTEER EXPERIENCE

Nov,2022 – Present

SC'23 Wayfinding Co-Chair

ACM/IEEE SC'23 Supercomputing Conference, Denver (USA)

Principal Activities:

- Co-chair of Wayfinding Committee, responsible for the general information to attendees in the conference (info booth).
- Reviewer of Artifact Description / Article Evaluation (AD/AE) Appendix and the Lead Student Volunteers submissions.

May,2022 – Present

Women in HPC SC Workshop Submissions Co-Chair

Women in HPC SC'22 & SC'23 Workshop

ACM/IEEE SC'22 Supercomputing Conference, Dallas (USA)

ACM/IEEE SC'23 Supercomputing Conference, Denver (USA)

Principal Activities:

- Co-chair of Lightning Talk Submissions for the Women in HPC Workshop

Jan,2021 – Present

Women in HPC Affiliate Brasil - Região Sul

Co-Founder of the Women in HPC Affiliate Brasil - Região Sul.

First representation of WHPC Global in Latin America.

Jan,2022 – May,2023

Hot Interconnects 2022 Web Chair

Responsible for the web development and design of the Hot Interconnects 2022 web page.

Jan,2022 – Dec,2022

BRASA PRÉ Pós-Graduação Mentor

Mentor of a Brazilian student for the application process for graduate schools in USA.

Mar,2022 – Nov, 2022

Selected SCALE Student Volunteer

Lead Student Volunteer

ACM/IEEE SC'22 Supercomputing Conference, Dallas (USA)

Principal Activities:

- Lead Volunteer at Infrastructure Committee (Wayfinding)

Apr,2022

Volunteer Staff

2022 International Collegiate Programming Contest

South America/Brazil Finals

Principal Activities:

- Help with general organization and coordination in the whole final contest event.

Mar,2021 – Nov, 2021

Selected SCALE Student Volunteer

Student Committee Apprenticeship and Leadership Experience

ACM/IEEE SC'21 Supercomputing Conference, St. Louis (USA)

Principal Activities:

- Student Volunteer at Communication Committee
- Updates on social media from Students@SC Program

Nov,2020

Selected Regular Student Volunteer

ACM/IEEE SC'20 Supercomputing Conference, Atlanta (USA)

May,2015 – Aug,2017

Volunteer Member

Rotaract Club Erechim Paiol Grande - Rotaract Club recognized by the Rotary International