

WORK EXPERIENCE

CZ Biohub (Royerlab)

April 2021 - Current

Bioimage Scientist

San Francisco, US

- Implemented and maintained image processing pipelines of light-sheet data with out-of-memory and multiple GPUs processing (<https://royerlab.github.io/dexp>) --- each image (3D+time) spans multiple terabytes.
- Developed a scalable cell segmentation and tracking pipeline using deep learning, graph algorithms, and combinatorial optimization using Pytorch and Gurobi.
- Performed quantitative fluorescence microscopy analysis on confocal and light-sheet data.
- Contributed to multiple open source efforts in the bio-imaging community.

Laboratory of Image Data Science (University of Campinas)

Mar. 2017 – Oct. 2021

Research Assistant (Research fellowship by FAPESP); Advisor: Prof. Alexandre X. Falcão

Campinas, Brazil

- Researched image segmentation methods, from graph-based operators to deep learning.
- Experience with optimum connectivity, maxflow-mincut (energy minimization), and hierarchical watershed methods for graph-based clustering.
- Performed optimization in the laboratory image processing and machine learning C library.
- Developed a user interface for interactive segmentation and optimum-path analysis using Qt (C++).
- Wrapped the laboratory machine learning and image processing C library to Python using SWIG.

Laboratoire d'Informatique Gaspard-Monge (Université Paris-Est)

Dec. 2019 – Mar. 2020

Research Internship (Research fellowship by FAPESP); Advisor: Prof. Laurent Najman

Paris, France

- Developed a novel methodology for image annotation using deep neural network low-dimensional embedding.
- Researched state-of-the-art methods of deep interactive image segmentation and visual analytics systems.
- Developed a tool using the Qt (Python) and PyTorch frameworks.

General Electric - Power Conversion

Feb. 2014 – Jul. 2016

Draftsman

Campinas, Brazil

- Designed electrical motors and generators using AutoCAD and Creo for hazardous area applications.

PUBLICATIONS

- Silva, I. F., Sousa, A. de M., **Bragantini, J.**, Falcão, A. X. "Differential Dynamic Trees for Interactive Image Segmentation", ICPR (to appear), 2022.
- **Bragantini, J.**, Falcão, A. X., & Najman, L. "Rethinking Interactive Image Segmentation: Feature Space Annotation" *Pattern Recognition*, 2022.
- Yang, Bin, et al. "DaXi—high-resolution, large imaging volume and multi-view single-objective light-sheet microscopy" *Nature methods*, 2022.
- **Bragantini, J.**, Moura B., Falcão, A. X., & Cappabianco, F. A. M. "Grabber: A Tool to Improve Convergence in Interactive Image Segmentation" *Pattern Recognition Letters*, 2020.
- Martins, S. B., **Bragantini, J.**, Falcão, A. X., & Yasuda, C. L. "An adaptive probabilistic atlas for anomalous brain segmentation in MR images." *Medical Physics*, 2019.
- Falcão, Alexandre, & **Bragantini, Jordão** "The Role of Optimum Connectivity in Image Segmentation: Can the Algorithm Learn Object Information During the Process?." *International Conference on Discrete Geometry for Computer Imagery*. Springer, Cham, 2019.
- **Bragantini, Jordão**, et al. "Graph-Based Image Segmentation Using Dynamic Trees." *Iberoamerican Congress on Pattern Recognition*. Springer, Cham, 2018.

EDUCATION

University of Campinas

Graduated in 2021

Masters of Science in Computer Science (GPA 4.0/4.0)

Campinas, Brazil

- Thesis: Interactive Image Segmentation: From Graph-based Algorithms to Feature-Space Annotation
- Ranked second place in the admission process

University of Campinas

Graduated in 2020

Bachelor in Statistics (GPA 8.8/10.00)

Campinas, Brazil

- Contributor of the “High Dimensional Data Analysis” seminars, talk “Expectation-Maximization applied to image segmentation”
- Teaching assistant in database management course of the department of statistics

Colégio Técnico de Campinas (COTUCA)

Graduated in 2016

Mechatronics Technician

Campinas, Brazil

AWARDS

- FAPESP* undergraduate research grant (2018-2019).
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- FAPESP* research internship abroad grant (winter 2019-2020).

*Sao Paulo Research Foundation (FAPESP) is the highest regarded scholarship in Sao Paulo.

ADDITIONAL EXPERIENCE

Open Source Contributions:

- **Maintainer**
 - [DEXP](#) Terabyte scale light-sheet image processing library.
 - [PyIFT](#) Python wrapper of a fork of IFT C library.
- **Contributor:** [Napari](#), [PyTorch-Metric-Learn](#), [SciPy](#).

Hackathons:

- **Banco Pan Hackathon - First Place:** Record linked mismatched datasets, developed a model to provide new insights about fraudulent bank transactions using R, and presented to the data science team.
- **Urban Mobility Hackathon - First Place:** Developed an application (R language) to assist the inspection of public transportation with data collected by the users, notably, classifying information from pictures, leading to the invitation to the global stage in Dubai.
- **Youth For Public Transportation Hackathon:** Developed an application for user entertainment in public transportation, the behavior, and interaction between users were measured to crowdsource statistics and data about the transportation service, this competition was part of the UITP MENA Transport Congress and Exhibition in Dubai 2018.

SKILLS

- **Programming Languages:** Python, R, C, C++, CUDA, and SQL.
- **Frameworks:** PyTorch, CuPy, Zarr, Dask, napari, OpenCV, tidyverse, Qt, and Gurobi.