Jordão Bragantini

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WORK EXPERIENCE

CZ Biohub (Royerlab)   **April 2021 - Current**
Software Engineer   San Francisco, US
- Implemented and maintained image processing pipelines of light-sheet data with out-of-memory and distributed processing. Each multiple terabyte dataset (3D+time) is processed in less than an hour using SLURM.
- Developed a scalable cell segmentation and tracking pipeline using deep learning, graph algorithms, and combinatorial optimization using PyTorch and Gurobi, top scoring on multiple 3D datasets benchmarks;
- Performed quantitative fluorescence microscopy analysis on confocal and light-sheet data;
- Coordinated within the company to standardize image acquisition formats and image loading API;
- Collaborated with microscopists and biologists, designing experiments to uncover biological phenomena;
- 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;
- Heavily used optimum connectivity, graph-cut, and hierarchical clustering methods for graph partition;
- 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 neural networks and low-dimensional embedding;
- Researched state-of-the-art methods of deep interactive image segmentation and visual analytics systems;
- Developed a large-scale image segmentation annotation tool using Qt (Python), PyTorch, and other frameworks.

PUBLICATIONS

- Lange, M., et al. Zebrahub–Multimodal Zebrafish Developmental Atlas Reveals the State-Transition Dynamics of Late-Vertebrate Pluripotent Axial Progenitors. *bioRxiv*, 2023.
- Silva, I. F., Sousa, A. de M., **Bragantini, J**., Falcão, A. X. "Differential Dynamic Trees for Interactive Image Segmentation" *ICPR*, 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

AWARDS

- Best M.Sc. thesis award at SIBGRAPI 2022
- 3x FAPESP* undergraduate research fellow

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

PROGRAMMING LANG. & FRAMEWORKS

5 years: Python, C & R
4 years: PyTorch, (Py)Qt & tidyverse
2 years: Cupy, Gurobi & SLURM
1 year: C++, CUDA, OpenCV & SQL

OTHERS

- Contributions to multiple open source projects: scikit-image, SciPy, napari, PyTorch-Metric-Learn
- Open source maintainer of iohub, dexp, napari-segment-anything, pyift