Samuel Botter Martins

Assistant professor, data scientist, researcher, and YouTube creator. Skilled machine learning professional with a solid theoretical background and practical experience in designing ML solutions for different areas. Strong communication skills. *Eligible to work in Europe.*

samucoding.com *(website & ML blog)* linkedin.com/in/samuel-botter-martins github.com/iamsamucoding
youtube.com/xavecoding *(aimed at Portuguese speakers)* samuel.martins@ifsp.edu.br

Experience

10/2020 – present **Coordinator of Data Science Specialization,** *Federal Institute of São Paulo, Campinas-SP, Brazil*
Faculty management, project and student supervision, and fundraising.

06/2020 – present **YouTube Creator – Channel: xavecoding** *(aimed at Portuguese speakers)*
Channel dedicated to courses and tutorials on ML and computer science topics.

07/2016 – present **Assistant Professor,** *Federal Institute of São Paulo, Campinas-SP, Brazil*
- Conducting lectures and tutorials for undergraduate and graduate students.
- Guiding and mentoring graduate and undergraduate students in research projects.

01/2012 – 12/2012 **Web Developer,** *Tray E-Commerce Platform, Marília-SP, Brazil*

08/2004 – 08/2016 **Radio Broadcaster (volunteer work),** *Millenum FM 104.9, Pompéia-SP, Brazil*
Presentation of radio programs, recording and production of commercials.

Education

03/2015 – 11/2020 **Ph.D. in Machine Learning,** *UNICAMP (Brazil) & University of Groningen (Netherlands)*
Research on ML for **medical image analysis.** [Ph.D. thesis]
- Designed **automatic unsupervised solutions** to detect brain anomalies in MR images.
  - Combination of image processing (*e.g.*, supepixels) and one-class classification (OC-SVM).
  - High anomaly detection rates (86%+) on stroke images with a reduction by up 20x false positives.
- Developed a **deep-learning-based approach** to *detect abnormal hippocampi* from epilepsy patients.
  - Detection accuracies from 86% to 100% (in some specific scenarios).
  - Applied **visual analytics** to understand the model and results, improving accuracy by up 13%.
- Proposed an automatic method based on *statistical learning* (probabilistic models and texture classifications) for **anomalous brain image segmentation** - reduced *segmentation errors* by up 15%.

03/2013 – 02/2015 **M.Sc. in Machine Learning,** *UNICAMP (Brazil)*
Research on ML for **face recognition and negative mining**. [Dissertation]
- Investigated state-of-the-art **deep features for face recognition** in *unconstrained scenarios*.
- Designed an *SVM-based method* that mines **informative negative samples** within interactive times.

03/2008 – 12/2012 **B.Sc. in Computer Science,** *University of São Paulo (Brazil)*

Skills

Key skills
- Machine learning algorithms
- (Medical) Image processing and analysis
- Computational vision
- Neural networks, deep learning, CNNs, GANs
- Experiment design and quantitative analysis
- Data visualization and visual analytics

Tools and Packages
</> Python, C/C++, Java, SQL Git, Linux ITK-snap, napari Pandas, NumPy, Matplotlib
SKlearn, XGboost, PyCaret Keras, Pytorch Skimage, OpenCV, nibabel

Languages **English** (fluent), **Italian** (basic), **Portuguese** (native)

Selected Publications and Awards

12/2022 **Federated Learning Enables Big Data for Rare Cancer Boundary Detection**, *Nature Communications.* [Paper]

10/2021 **Unsupervised Brain Anomaly Detection in MR Images,** *SIBGRAPI.*
Best Ph.D. thesis award of the Workshop of Theses and Dissertations [Paper][Presentation]

02/2021 **BADRESC: Brain Anomaly Detection based on Registration Errors and Supervoxel Classification,** *BIOSTECT BIOIMAGING.* ***Best student paper awards*** [Paper]

11/2019 **Adaptive probabilistic atlas for abnormal brain image segmentation,** *Medical Physics.* [Paper]

11/2019 **A fast and automatic lung and trachea CT-image segmentation method,** *Medical Physics.* [Paper]

10/2017 **A fast and robust negative mining approach for face recognition systems,** *SIBGRAPI.* [Paper]