




Bruno Machado Pacheco


Control and Automation Engineering Student

Highly focused MSc student with a passion for challenges. Looking forward to starting a PhD in deep learning and applications.

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EDUCATION

Systems and Automation, MSc

Federal University of Santa Catarina

08/2022 - Present GPA: 9.05/10

Courses

- Graph neural networks for solution predictions of combinatorial optimization problems
- Applications to oil production optimization and nanosatellite task scheduling

Exchange Student, Systems and Automation, MSc

RWTH Aachen

04/2020 - 09/2020 GPA: 2.3 (German system)

Control and Automation Engineering, BSc

Federal University of Santa Catarina

03/2016 - 07/2022 GPA: 8.73/10

Highlights:

- Thesis: Physics-Informed Deep Equilibrium Models for Solving ODEs
- Honors courses in calculus, linear algebra and linear analysis

PROFESSIONAL EXPERIENCE

Student Researcher

Machine Learning & Applications Research Group - GAMA/UFSC

11/2020 - Present Florianópolis, Brazil

Achievements/Tasks

- Trained state-of-the-art U-Net-based models for brain tumor segmentation and brain extraction (brain segmentation)
- Authored a journal article on deep-learning-based brain extraction methods in the tumor segmentation pipeline
- Authored a conference paper on pre-training for brain age deep learning models
- Currently working on post-hoc confidence estimation for selective prediction on image segmentation tasks

Student Assistant

Production Quality - Fraunhofer IPT

04/2019 - 09/2020 Aachen, Germany

Achievements/Tasks

- Implemented and automated a data preprocessing pipeline for a turbomachinery milling process (+250 GB per dataset)
- Developed and implemented an anomaly detector for time series data from an industry partner
- Co-authored a scientific publication on automatic machine learning application in the production environment

INTERESTS

Deep Learning

Python

Combinatorial Optimization

Learning with Guarantees

AI Safety and Regulation

PUBLICATIONS

"Automated machine learning for predictive quality in production" Procedia CIRP (2020)

"Towards fully automated deep-learning-based brain tumor segmentation: Is brain extraction still necessary?" Biomedical Signal Processing and Control (2022)

"Does pre-training on brain-related tasks results in better deep-learning-based brain age biomarkers?" BRACIS (2023)

"Deep-learning-based Early Fixing for Gas-lifted Oil Production Optimization: Supervised and Weakly-supervised Approaches" SBAI (2023)

"Graph Neural Networks for the Offline Nanosatellite Task Scheduling Problem" (Under Review)

LANGUAGES

Portuguese
Native

English
Advanced

KNOWLEDGES

Python

PyTorch

JAX

SCIP