FRANCISCO DE ASSIS BOLDT

Professor - Machine Learning Researcher

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RESEARCH INTERESTS

Machine Learning | Deep Learning | Automatic Fault Diagnosis | Signal Processing | Natural Language Processing | Forecasting

EXPERIENCE

Professor — Ifes

Instituto Federal de Educação, Ciência e Tecnologia do Espírito Santo

March 2004 – Ongoing Serra-ES

- Machine Learning Researcher
- Research Project Coordinator
- Lecturer and advisor (Master Course in Applied Computing)
- Disciplines:
  - Artificial Intelligence
  - Pattern Recognition
  - Artificial Neural Networks

Teacher of informatics, developer and programmer

Coopen - Cooperativa de Profissionais de Ensino

Jan 2001 – Jan 2002 Colatina-ES

High-school Teacher of Informatics

Cefetes - Centro Federal de Educação Tecnológica do Espírito Santo

July 1999 – Dec 2000 Colatina-ES

EDUCATION

Ph.D. in Computer Science

Universidade Federal do Espírito Santo

Dec 2012–July 2017 Vitória-ES

Classifier Ensemble Feature Selection for Automatic Fault Diagnosis

M.Sc. in Informatics

Universidade Federal do Espírito Santo

Feb 2006–June 2008 Vitória-ES

Specialization in Systems Development with Java

Universidade Federal do Espírito Santo

Feb 2005–June 2006 Vitória-ES

Tech. in Data Processing

Unesc

Aug 1995–July 1998 Colatina-ES

NATIONALITY

Brazilian and Italian

LANGUAGES

Portuguese	●●●●●
English	●●●●○
German	●●○○○
Spanish	●○○○○
Italian	●○○○○

REFEREES

Prof. Thomas Walter Rauber
@ thomas@inf.ufes.br
Universidade Federal do Espírito Santo

Prof. Flávio Miguel Varejão
@ fvarejao@inf.ufes.br
Universidade Federal do Espírito Santo

Prof. Karsten Berns
@ berns@informatik.uni-kl.de
University of Kaiserslautern

AWARDS

Best Paper
2018 - I Congresso de Tecnologia da Informação, IFSUL - Passo Fundo, IFSUL

Best Paper
2013 - Conferência IADIS Ibero-Americana Computação Aplicada 2013, International Association for Development of Information Society.

PROJECTS

Smart Watcher

Ifes/Fapes **Researcher**

March 2021 – February 2023 Serra-ES

A wearable device connected to a real time monitoring system to protect workers at industrial plants. Position and vital signs are collected to predict issues.

Application of Deep Learning Algorithms for Biological Signs Classification

Ifes **Researcher**

August 2021 – July 2022 Serra-ES

Two deep learning approaches are compared to classify biological signals: 1) pre-process the signals to a spectrogram before using a deep neural network with 2D convolutional layers; 2) feed with raw signals a deep neural network with 1D convolutional layers.

Natural Language Processing Applied for Automated Bibliometrics

Ifes **Researcher**

August 2021 – July 2022 Serra-ES

Analyze and compare different methods of Natural Processing Language applied in a system designed to assist researchers in their bibliographic surveys.

Automated Bibliometrics

Ifes/Fapes **Coordinator**

July 2019 – November 2021 Serra-ES

Search, select and compile scientific and technical information about some field of study. Apply the automated method to collect data about reuse of ornamental rock wast.

Compilation of real datasets for fault diagnosis

Ifes **Coordinator**

August 2019 – July 2020 Serra-ES

Select public available datasets used for automatic fault diagnosis. Compile the most important datasets and explain how to use them. Develop a framework that applies machine learning methods to the selected datasets.

Defect Pattern Recognition in Centrifugal Pump Systems

Ufes/Petrobras **Researcher**

2011-2014 Vitória-ES

This project used computational intelligence techniques to identify defect patterns in submerged centrifugal pumping systems during the testing and acceptance phase of this system.

ACADEMIC ADVISORY

Instituto Federal do Espírito Santo

Master in Applied Computing

Diego Luchi
July 2021 –

André Luiz Pereira Delgado
July 2021 –

Israel de Morais Madalena
April 2020 –

Leandro Rodrigues Ramos
April 2019 –

Carlos Henrique Gomes Correia.
April 2019 –

Lucio Antonio Stange Venturim.
April 2019 –

Alter Diego do Nascimento Santos
March 2018 – October 2019

Rodrigo Piol Capucho
March 2018 – November 2019

Big Data Specialization

Marcelo Magalhães do Carmo
03/2019 – 11/2019

Anderson Esteves Bragança
11/2019 – 09/2020

Bachelor in Information Systems

André Barbosa da Vitória
04/2019 – 08/2020

Undergraduate Research Project

Ana Carolina Ichimura
08/2019 – 07/2020

Flávio Fonsêca de Mendonça
08/2019 – 07/2020

Kamila Maria Vieira Pralon
08/2019 – 07/2020

PUBLICATIONS

Journal Articles

- Correia, Carlos Henrique Gomes, Karin Satie Komati, and Francisco de Assis Boldt (2021). “Reconhecimento de Gestos de Mão em Sequência a partir de Sensores Inerciais”. In: *Journal of Health Informatics* 12.
- Rauber, Thomas Walter, Antonio Luiz da Silva Loca, et al. (2021). “An experimental methodology to evaluate machine learning methods for fault diagnosis based on vibration signals”. In: *Expert Systems with Applications* 167, p. 114022.
- Correia, Carlos Henrique Gomes, Karin Satie Komati, and Francisco de Assis Boldt (2020). “Amostras de integração artıstica: Transferência de Estilo em Imagens usando Redes Neurais”. In: *PORTO ARTE: Revista de Artes Visuais* 26.44.
- Rauber, TW, FA Boldt, and CJ Munaro (2020). “Feature Selection for Multivariate Contribution Analysis in Fault Detection and Isolation”. In: *Journal of the Franklin Institute*.
- Assis Boldt, Francisco de, Thomas W Rauber, and Flávio M Varejão (2017). “Cascade feature selection and elm for automatic fault diagnosis of the tennessee eastman process”. In: *Neurocomputing* 239, pp. 238–248.
- Rauber, Thomas W, Francisco de Assis Boldt, and Flávio Miguel Varejão (2015). “Heterogeneous feature models and feature selection applied to bearing fault diagnosis”. In: *IEEE Transactions on Industrial Electronics* 62.1, pp. 637–646.
- Assis Boldt, Francisco de, Thomas Walter Rauber, and Flávio Miguel Varejão (2013). “A fast feature selection algorithm applied to automatic faults diagnosis of rotating machinery”. In: *Journal of Applied Computing Research* 3.2, pp. 78–86.

Conference Proceedings

- Ramos, Leandro Rodrigues et al. (2020). “Geração Semiautomática de Valores de Referência para Identificação de Obstruções em Lingotamento Contınuo”. In: *Anais do XLVII Seminário Integrado de Software e Hardware*. SBC, pp. 116–127.
- Carmo, Marcelo, Karin Komati, and Francisco Boldt (2019). “Previsão de receitas de ICMS do estado do Espırito Santo através de Seleção de Caracterısticas em Cascata e técnicas de Aprendizado de Máquina”. In: *Anais do XVI Encontro Nacional de Inteligência Artificial e Computacional*. SBC, pp. 118–129.
- D. N. Santos, Alter, Francisco Boldt, and Richard Godinez Tello (2018). “Uma Avaliação do Desempenho de Uma Rede Neural Extreme Learning Machine (ELM) aplicado a Sinais de Eletromiografia de Superfıcie (sEMG)”. in: *XXII Congresso Brasileiro de Automática 2018, João Pessoa, Brazil*.
- D. N. Santos, Alter, Rodrigo P. Capucho, et al. (2018). “An Evaluation of an Adapted Extreme Learning Machine (ELM) Neural Network applied to Hand Gesture Recognition from Two Channels sEMG”. in: *I Congresso de Tecnologia da Informação do IFSUL - Passo Fundo, Brasil*.
- P. Capucho, Rodrigo, Francisco Boldt, and Richard. Godinez Tello (2018). “Reconhecimento de Sequência de Movimentos de uma Mão a partir de Sensores Inerciais para o Controle de uma Cadeira de Rodas Robotizada”. In: *I Congresso de Tecnologia da Informação do IFSUL - Passo Fundo, Brasil*.
- Assis Boldt, Francisco de, Thomas Walter Rauber, Thiago Oliveira-Santos, et al. (2017). “Binary feature selection classifier ensemble for

EDITORIAL MEMBER

Progress in Human Computer Interaction

PEER REVIEWING

Journals

IEEE Access

IEEE Transactions on Industrial Electronics

IET Computer Vision

IET Science, Measurement and Technology

International Journal of Acoustics and Vibration

Conferences

SBAI 2021 Simpósio Brasileiro de Automação Inteligente

CBEB 2020-27º Congresso Brasileiro de Engenharia Biomédica

CBA 2018-22º Congresso Brasileiro de Automática

CBA 2016-21º Congresso Brasileiro de Automática

fault diagnosis of submersible motor pump". In: *2017 IEEE 26th International Symposium on Industrial Electronics (ISIE)*. IEEE, pp. 1807–1812.

- Rauber, Thomas Walter, Thiago Oliveira-Santos, et al. (2017). "Kernel and random extreme learning machine applied to submersible motor pump fault diagnosis". In: *2017 International Joint Conference on Neural Networks (IJCNN)*. IEEE, pp. 3347–3354.
- Assis Boldt, Francisco de, Thomas W Rauber, and Flávio M Varejão (2015). "Single sequence fast feature selection for high-dimensional data". In: *2015 IEEE 27th International Conference on Tools with Artificial Intelligence (ICTAI)*. IEEE, pp. 697–704.
- Assis Boldt, Francisco de, Thomas W Rauber, Flávio M Varejão, and Marcos Pellegrini Ribeiro (2015). "Fast feature selection using hybrid ranking and wrapper approach for automatic fault diagnosis of motorpumps based on vibration signals". In: *2015 IEEE 13th International Conference on Industrial Informatics (INDIN)*. IEEE, pp. 127–132.
- Assis Boldt, Francisco de, Thomas W Rauber, Fláavio M Varejão, et al. (2014). "Performance analysis of extreme learning machine for automatic diagnosis of electrical submersible pump conditions". In: *2014 12th IEEE International Conference on Industrial Informatics (INDIN)*. IEEE, pp. 67–72.
- Assis Boldt, Francisco de, Thomas W Rauber, and Flávio M Varejão (2014). "Evaluation of the extreme learning machine for automatic fault diagnosis of the tennessee eastman chemical process". In: *IECON 2014-40th Annual Conference of the IEEE Industrial Electronics Society*. IEEE, pp. 2551–2557.
- Boldt, Francisco de A, Thomas W Rauber, and Flávio M Varejão (2013). "Feature Extraction and Selection for Automatic Fault Diagnosis of Rotating Machinery". In: *X Encontro Nacional de Inteligência Artificial e Computacional (ENIAC)*.
- Rauber, Thomas W et al. (2013a). "Computational intelligence for automatic diagnosis of submersible motor pump conditions in offshore oil exploration". In: *2013 IEEE 20th International Conference on Electronics, Circuits, and Systems (ICECS)*. IEEE, pp. 477–480.
- – (2013b). "Feature models and condition visualization for rotating machinery fault diagnosis". In: *2013 IEEE 20th International Conference on Electronics, Circuits, and Systems (ICECS)*. IEEE, pp. 265–268.