Fernando Pujaico Rivera

Curriculum Vitae

Personal information

Born	Peru - 17 December 1982
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Identifiers

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Google Scholar	https://scholar.google.com/citations?user=wijGLBIAAAAJ
Web of Science ResearcherID	AAW-9842-2020

Education

2014 **PhD in Electrical Engineering**, *State University of Campinas (UNICAMP)*, Brazil
Title: Bit-Flipping algorithms for joint decoding of correlated sources in noisy channels.

2011 **Master's degree in Electrical Engineering**, *UNICAMP*, Brazil
Title: Hard-decision decoding algorithms for LDGM codes.

2008 **Electronic Engineer**, *National University of Engineering (UNI)*, Peru
Title: Electrical resistivity tomography applied to the study of roots growth.

2006 **Bachelor of science with mention in Electronic Engineering**, *UNI*, Peru

Areas of expertise

Electronic engineering, digital signal processing, machine learning, neural networks, error correcting codes, programing, electronic design.

Experience

Teaching experience

Second semester 2019
PSI528 - Signal processing, *Engineering Department*, UFLA, Brazil
30 horas

November 2016
short course: Dynamic Speckle Laser in Bio-systems, *Entity: Faculty of Agricultural Engineering*, UNICAMP, Brazil
8 hours

Second semester 2015
PEG530 - Laser, applications and metrology , *Engineering Department*, UFLA, Brazil
8 hours

Second semester 2013
Teacher training stage: PED C, *GL100* , Mathematics I
Entity: FCA UNICAMP

First semester 2010
Teacher training stage: PED C, *EE881* , Communications principles
Entity: FEEC UNICAMP

2008
Teacher, *C++ Language*, Level I
Entity: CCIESAM - UNI. Peru.

Professional experience

2015 – 2020
Postdoctoral, *University of Lavras (UFLA)*, Brazil
Engineering department / Applied Instrumentation Development Center to Agriculture (CEDIA)

2007 – 2008
Researcher, *Institute for Research and Development of Civil Engineering Faculty (IIFIC)*, UNI, Peru
Type of contract: Labor
Description: Design, construction and data processing of an accelerometer to the Accelerometers National Network of CISMID - II.

2006 – 2008
Researcher, *IIFIC*, UNI , Peru
Type of contract: Labor
Description: Design and construction of a data acquisition system for dynamic testing of piles.

Published works

Books

2025
Samba de gafieira: História, dança, teoria e prática, *ISBN: 978-65-01-47320-8*, 1 Ed., Independent edition
`https://trucomanx.github.io/book/gafieira/`

2025
Métodos numéricos: Problemas não lineares e inversos, *ISBN: 978-65-01-45384-2*, 2 Ed., Independent edition
`https://trucomanx.github.io/book/metodos/`

2016
A practical guide to biospeckle laser analysis: theory and software, *ISBN: 978-85-81-27051-7*, 1 Ed., Ed. UFLA
`http://repositorio.ufla.br/jspui/handle/1/12119`

Chapters of Books

2019
Engenharias, ciência e tecnologia 4, *ISBN: 978-85-72-47087-2*, 2019, Editora Atena
DOI: 10.22533/at.ed.87219310127

Articles published in magazines

2025 **Computers in Biology and Medicine**, *DOI: 10.1016/j.compbiomed.2025.110350*
Title: "Emotion recognition from facial images, body gestures, and skeletal posture keypoints: The BER2024 dataset".

2024 **Theoretical and Applied Engineering**, *DOI: 10.31422/taae.v8i3.62*
Title: "Identification of spinal disorders through three-dimensional reconstruction of the human dorsum".

2023 **Workshop de Visão Computacional (WVC)**, *DOI: 10.5753/wvc.2023.27543*
Title: " Posture Pattern Recognition Analysis in Lectures".

2023 **Agriculture**, *DOI: 10.3390/agriculture13112077*
Title: "Analysis of the Effect of Tilling and Crop Type on Soil Structure Using 3D Laser Profilometry".

2023 **Theoretical and Applied Engineering** , *DOI: 10.31422/taae.v7i2.49*
Title: "3d reconstruction system by means of unique camera, structured light and mathematical models".

2023 **Smart Agricultural Technology**, *DOI: 10.1016/j.atech.2022.100062*
Title: "Optical and Portable Equipment for Characterizing Soil Roughness".

2022 **Maderas-Cienc Tecnol**, *DOI: 10.4067/s0718-221x2022000100413*
Title: "Particle image velocimetry technique and ultrasound method to obtain the modulus of elasticity of Bertholletia excelsa wood ".

2022 **Scientia Agricola**, *DOI: 10.1590/1678-992X-2020-0297*
Title: "Particle image velocimetry and digital image correlation for determining the elasticity modulus in wood".

2021 **Maderas-Cienc Tecnol**, *http://revistas.ubiobio.cl/index.php/MCT/article/view/4860*
Title: "Particle image velocimetry technique for analysis of retractibility in woods of Pinus elliottii".

2020 **Brazilian Journal of Development**, *DOI: 10.34117/bjdv6n5-072*
Title: "Use of particle image velocimetry (PIV) to study the modulus of elasticity of plywood panels".

2020 **Brazilian Journal of Development**, *DOI: 10.34117/bjdv6n5-069*
Title: "Use of the velocimetry technique by particle images (PIV) for the study of deformations in pinus oocarpa wood panels".

2020 **Brazilian Journal of Development**, *DOI: 10.34117/bjdv6n5-074*
Title: "Use of the Particle Imaging Velocimetry (PIV) technique to obtain the deformation map in Pinus Oocarpa wood panels".

2020 **Optics And Laser Technology**, *DOI: 10.1016/j.optlastec.2020.106221*
Title: "Illumination dependency in dynamic laser speckle analysis".

2019 **Computers and Electronics in Agriculture**, *DOI: 10.1016/j.compag.2019.105050*
Title: "Development of an optical technique for characterizing presence of soil surface crusts".

2019 **CERNE**, *DOI: 10.1590/01047760201925022633*
Title: "Particle image velocimetry for estimating the young's modulus of wood specimens".

2019 **Optik**, *DOI: 10.1016/j.ijleo.2019.02.055*
Title: "Viability of biospeckle laser in mobile devices".

2019 **CERNE**, *DOI: 10.1590/01047760201925012619*
Title: "Displacement measurement in sawn wood and wood panel beams using particle image velocimetry".

2019 **Computers and Electronics in Agriculture**, *DOI: 10.1016/j.compag.2019.01.051*
Title: "Sound as a qualitative index of speckle laser to monitor biological systems".

2018   **Theoretical and Applied Engineering**, *DOI: 10.31422/taae.v2i2.5*
Title: "The use of particle image velocimetry for displacement measurements in steel columns subjected to buckling".

2018   **Optics and Laser Technology**, *DOI: 10.1016/j.optlastec.2018.07.006*
Title: "Diode laser reliability in dynamic laser speckle application: Stability and signal to noise ratio".

2018   **Journal of Food Measurement and Characterization**, *DOI: 10.1007/s11694-018-9839-8*
Title: "Measurement of water activities of foods at different temperatures using biospeckle laser".

2018   **Engenharia Agrícola, ISSN:0100-6916**, *DOI: 10.1590/1809-4430-eng.agric.v38n2p159-165/2018*
Title: "Analysis of elasticity in woods submitted to the static bending test using the particle image velocimetry (PIV) technique".

2017   **Journal of Biomedical Optics**, *DOI: 10.1117/1.JBO.22.4.045010*
Title: Dynamic laser speckle analyzed considering inhomogeneities in the biological sample.

2017   **Optics Communications**, *DOI: 10.1016/j.optcom.2017.03.015*
Title: Selection of statistical indices in the biospeckle laser analysis regarding filtering actions.

2014   **IEEE Communications Letters**, *DOI: 10.1109/LCOMM.2014.2377237*
Title: Optimal Rate for Joint Source-Channel Coding of Correlated Sources Over Orthogonal Channels.

Articles published in annals of events

2015   **I Congresso Mineiro de Engenharia e Tecnologia**, *Brasil*, `http://www.eventos.ufla.br/comet/ANAIS_COMET_2015_1ed_FINAL.pdf`
Title:"Diferenciação da Crosta Superficial do Solo por Meio de Técnicas Óticas"

2013   **XXXI Brazilian Telecommunications Symposium**, *Brasil*, DOI: 10.14209/sbrt.2013.95, `http://gestao.sbrt.org.br/simposios/artigo/visualizar/a/145`
Title: "Algoritmo Para Decodificação e Fusão De Dados Correlacionados Em Redes De Sensores Sem Fio".

2012   **XXX Brazilian Telecommunications Symposium**, *Brasil*, `http://gestao.sbrt.org.br/simposios/artigo/visualizar/a/432`
Title: "Algoritmos de Decodificação Abrupta para Códigos LDGM".

2011   **XXIX Brazilian Telecommunications Symposium**, *Brasil*
Title: "Decodificação Iterativa Conjunta Fonte-Canal".

2007   **XVII National Congress of Engineering, Mechanical, Electrical and Allied**, *Peru*
Title: "Tomógrafo de Resistividad Eléctrica Aplicado al Estudio del Crecimiento de los Tubérculos de la Papa".

Professor adviser

Joint supervisor

2017   **Study of trajectories reconstruction based on low cost inertial sensors and applied to terrestrial mobility context**, *Ribeiro, Eduardo Zampieri*, Master's degree in Systems Engineering and Automation, UFLA
`http://repositorio.ufla.br/handle/1/28225`

2016   **Development of an optic technique for characterizing the presence of superficial crust of the soil**, *Barreto, Bianca Batista*, Master's degree in Agricultural Engineering, UFLA
`http://repositorio.ufla.br/jspui/handle/1/11903`

2020 **Digitalização da coluna por meio da visão monocular com projeção de luz estrutu-rada**, *Ribeiro, Elisângela* , Phd degree in Agricultural Engineering, UFLA
http://repositorio.ufla.br/handle/1/43483

2020 **Optical and portable equipment to characterize soil roughness conditions**, *Barreto, Bianca Batista*, Doutorado em Engenharia Agrícola, Universidade Federal de Lavras
http://repositorio.ufla.br/jspui/handle/1/46056

Participation in stalls completion work

Doctoral's degree

2020 **Digitalização da coluna por meio da visão monocular com projeção de luz estrutu-rada**, *Participation in stalls of Elisângela Ribeiro*, Dissertation defense of post-graduation program agricultural engineering
UFLA. Ordinance PRPG Nro 726/2020 de 14/08/2020.

2016 **Digitization of physical deformations of the soil through a digital camera**, *Participation in stalls of Diego Eduardo Costa Coelho*, Dissertation defense of post-graduation program agricultural engineering
UFLA. Ordinance CPGSS/PRPG Nro 987/2016 de 23/11/2016.

Master's degree

2017 **Low cost inertial sensor-based trajectory generation: Application in intelligent transport systems**, *Chairman of the stall of Eduardo Zampieri Ribeiro*, Dissertation defense of post-graduation program in system and automation engineering
UFLA. Ordinance CPGSS/PRPG Nro 563/2017 de 11/10/2017.

2015 **Influence of laser intensity in the biospeckle actvity map**, *Participation in stalls of Renan Oliveira Reis*, Dissertation defense of post-graduation program in system and automation engineering
UFLA. Ordinance CPGSS/PRPG Nro 655/2015 of 13/07/2015.

Doctoral's degree qualification

2019 **Participation in the evaluation committee of Elisângela Ribeiro**, Qualification exam of post-graduation program in agricultural engineering
Universidade Federal de Lavras.

2019 **Participation in the evaluation committee of Bianca Batista Barreto**, Qualification exam of post-graduation program in agricultural engineering
Universidade Federal de Lavras.

2016 **Participation in the evaluation committee of Rodrigo Allan Pereira**, Qualification exam of post-graduation program in agricultural engineering
UFLA.

Master's Degree Qualification

2018 **Participation in the evaluation committee of Thiago Juvenal Ribeiro**, Qualification exam of post-graduation program in agricultural engineering
UFLA.

2018 **Participation in the evaluation committee of Dione Weverton Dos Reis Araújo**, Qualification exam of post-graduation program in system and automation engineering
UFLA.

2016 **Participation in the evaluation committee of Eduardo Zampieri Ribeiro**, Qualification exam of post-graduation program in system and automation engineering
UFLA.

Complementary Training

Complementary Training Courses

2020 **Introdução à Ciência da Computação com Python Parte 2**, *7 weeks*, `http://coursera.org/verify/DH6VVXCQEBHP`
an online non-credit course authorized by USP and offered through Coursera.

2020 **Introdução ao Desenvolvimento de Aplicativos Android**, *5 weeks*, `http://coursera.org/verify/N3YXYEYLFT3U`
an online non-credit course authorized by Unicamp and offered through Coursera.

2020 **Object detection**, *6 weeks*, `http://coursera.org/verify/FQA75P2H8JLS`
an online non-credit course authorized by Universitat Autònoma de Barcelona and offered through Coursera.

2020 **Machine Learning**, *11 weeks*, `http://coursera.org/verify/TLNHXEJP22ZB`
an online non-credit course authorized by Stanford University and offered through Coursera.

2020 **Machine Learning for All**, *20 Horas*, `http://coursera.org/verify/CZE8NBUCW87H`
An online non-credit course authorized by University of London and offered through Coursera.

Presentations

2013 **Algorithm for decoding and fusion of correlated data in wireless sensor networks**
XXXI Brazilian Telecommunications Symposium, Brazil

2012 **Hard-decision decoding algorithms for LDGM codes**
XXX Brazilian Telecommunications Symposium, Brazil

2011 **Iterative source-channel joint decoding**
XXIX Brazilian Telecommunications Symposium, Brazil

Languages

Spanish Native language

Portuguese Read good, write good, understands good, speak good

English Read good, Write reasonably, Understands reasonably, Speaks little

Free software projects

2015 – Actual **Bio-Speckle Laser Tool Library**, `http://www.nongnu.org/bsltl/`
This package is a set of functions, written in M-code, for the digital processing of images of a bio-speckle analysis. The library is designed to be used in OCTAVE or MATLAB. You can find functions to calculate: Co-occurrence matrix, THSP, AVD, inertia moment, Fujii, GD, PTD, etc.

2015 – Actual **PDS-IT Package**, `http://trucomanx.github.io/pdsit-pkg`
This package is a set of functions, written in M-code, for to work with digital signal processing and information theory in OCTAVE or MATLAB. You can find functions for: Entropy for binary sources, Joint entropy for binary sources, bit error rate in the CEO problem, etc.

2011 – Actual **PDS Project Library**, `http://www.nongnu.org/pdsplibrary/`
It is a set of libraries, written in C language, for the digital signal processing. You can find libraries for: Random variables, complexes numbers, vectors, matrices, FFT, digital filters, digital sources, neural networks, etc.

Computer languages

C	C language
M-code	MATLAB/OCTAVE language
C++	C++ language
Java	Java language
LaTeX	LaTex language
Python	Linguagem Python
Java/Android	Development of Android applications

Interests

- Photography
- Ocarinas maker
- Dance

- Running
- C language
- Raw food