Fernando Pujaico Rivera

Curriculum Vitae

Personal information

Born	Peru - 17 December 1982
Address	Rua Barbosa Lima 638, Centro, Lavras, MG, Brazil, CEP:37200-000
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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, information theory, error correcting codes, programing, electronic design, digital signal processing.

Experience

Teaching experience

Second semester 2018 — **PSI528 - Signal processing**, *Engineering Department*, UFLA, Brazil.
30 hours

First semester 2018 — **PSI528 - Signal processing**, *Engineering Department*, UFLA, Brazil.
30 hours

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

2020 — **Métodos numéricos: Problemas não lineares e inversos**, *ISBN: 978-65-00-07314-0*, 2020, Edição independente.
`https://trucomanx.github.io/metodos.numericos/index.html`

2016 — **A practical guide to biospeckle laser analysis: theory and software**, *ISBN: 978-85-81-27051-7*, 2016, 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

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`

Participation in stalls completion work

Doctoral's degree

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.

2014 – Actual **PDS Project Library in Java**, *http://pdsplibj.sourceforge.net/*.
It is a set of libraries, written in Java language, For the digital signal processing. You can find libraries for: Random variables, vectors, matrices, digital filters, digital sources, particle image velocimetry, etc.

2014 – Actual **LDPC Tools**, *https://launchpad.net/ldpc-tools*.
It is a set of programs, written in C language, for to work with low density parity check matrices.

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, complexs numbers, vectors, matrices, FFT, digital filters, digital sources, neural networks, etc.

2008 – Actual **PIC-GCC Library**, *http://pic-gcc-library.sourceforge.net/*.
This project implement the utility library and standard C library for the PIC-GCC compiler for micro-controllers PIC of Microchip 16F family.

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