

Fernando Pujaico Rivera

Curriculum Vitae

Personal information

Born Peru - 17 December 1982

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Identifiers

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Google https://scholar.google.com/citations?user=wijGLBIAAAAJ

Scholar

Web of AAW-9842-2020

Science

ResearcherID

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

November short course: Dynamic Speckle Laser in Bio-systems, Entity: Faculty of Agricultural

2016 Engineering, UNICAMP, Brazil.

8 hours

Second **PEG530** - Laser, applications and metrology, Engineering Department, UFLA, Brazil.

semester 8 hours

2015

Second Teacher training stage: PED C, GL100, Mathematics I.

semester Entity: FCA UNICAMP

2013

First semester **Teacher training stage: PED C**, *EE881*, Communications principles.

2010 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

- 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 estruturada**, *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

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.

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.

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 activty 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.

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