Fernando Pujaico Rivera

Curriculum Vitae

Personal information

Born	Peru - 17 December 1982
Cellphone	+55 (35) 984071422
E-mail	fernando.pujaico.rivera@gmail.com
RNE	V566622-O
CPF	233.534.528-18
RENACYT Level III	https://servicio-renacyt.concytec.gob.pe/ficha-renacyt/?idInvestigador=35675
Curriculum Lattes	https://buscatextual.cnpq.br/buscatextual/visualizacv.do?id=K4323460H7

Identifiers

ISNI	0000 0004 9156 373X
Orcid	https://orcid.org/0000-0002-4970-2818
Google Scholar	https://scholar.google.com/citations?user=wijGLBIAAAAJ
Web of Science ResearcherID	AAW-9842-2020

Education

2025 **PhD in Electrical Engineering**, *Centro Universitário da Fundação Educacional Inaciana Pe. Sabóia de Medeiros*, FEI, Brazil
Title: Body language classification of patients on the bed using deep learning. **Thesis defended: 2025-06-12**

2014 **PhD in Electrical Engineering (Telecommunications and Telematics)**, *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 (Telecommunications and Telematics)**, *State University of Campinas*, 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**, *National University of 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 **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

2025 **38th Annual Meeting of the Engineering and Urology Society**, *Las Vegas, NV, USA*, `https://engineering-urology.org/am/38EUS_2025.pdf`
Title: Visual explanation of deep learning models for automatic kidney stone detection using multiple ct sources dataset

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

2022 **LI Congresso Brasileiro de Engenharia Agrícola - CONBEA 2022**, *Brasil*, `https://conbea.org.br/anais/publicacoes/conbea-2022/livros-2022/geoma-tica-instrumentac-a-o-e-agricultura-de-precisa-o-giap-1`
Title: Equipamento óptico e portátil para caracterizar a rugosidade do solo de área de erosão

2019 **Anais do XXVIII Congresso da Pós-Graduação**, *Brasil*, `https://prpg.ufla.br/images/congresso/anais_CPG2019.pdf`
Title: Digitalização do dorso humano por meio da visão monocular com projeção de luz estruturada

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

2020 **Digitalização da coluna por meio da visão monocular com projeção de luz estruturada**, *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, 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