Systems and Automation Engineering
# Master of Science

Departament of Automatics

Federal University of Lavras - UFLA
School of Engineering

https://sigaa.ufla.br/sigaa/public/programa/apresentacao.jsf?lc=pt_BR&id=1801
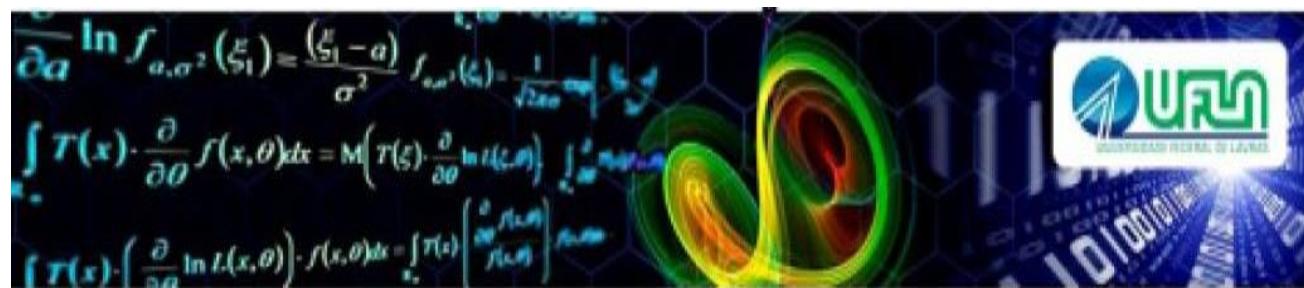
Coordination team and Social media

- **RICARDO RODRIGUES MAGALHAES: COORDINATOR**
- **FELIPE OLIVEIRA E SILVA: VICE COORDINATOR**

Instagram: https://www.instagram.com/ppgesisa/

Facebook: https://www.facebook.com/ppgesisa.ufla.1

LinkedIn: https://www.linkedin.com/in/ppgesisa-ufla-537a4021a/

Systems and Automation Engineering

- Focus on interdisciplinary research on theories, methods, and applications involving modeling, design, implementation, and analysis of physical and virtual systems, e.g. industrial, mechatronic, intelligent, agricultural, and embedded systems.

- Research areas
  - Intelligent Systems
  - Automation and Instrumentation

Intelligent Systems

- Topics
  - Artificial Neural Networks
  - Fuzzy Sets and Systems
  - Evolutionary Computation and Optimization
  - Dynamical Systems Identification and Control
  - Pattern Recognition
  - Numeric Methods
  - Evolutionary algorithms
  - Embedded Systems

Automation and Instrumentation

- Topics
  - Signal Processing
  - Image Processing and Machine Vision
  - Signal Statistics
  - Optical Metrology
  - Pattern Recognition
  - Instrumentation
  - Voice and Video Coding
  - Quality Assessment of Voice and Video Signals

Team

- ## Intelligent Systems
  - ▫ Bruno Henrique Groenner Barbosa (brunohb@ufla.br)
  - ▫ Danton Diego Ferreira (danton@ufla.br)
  - ▫ Silvia Costa Ferreira (silvia.ferreira@ufla.br)
  - ▫ Wilian Soares Lacerda (lacerda@ufla.br)

- ## Automation and Instrumentation
  - ▫ Daniel Augusto Pereira (danielpereira@ufla.br)
  - ▫ Demóstenes Z. Rodriguez (demostenes.zegarra@ufla.br)
  - ▫ Felipe Oliveira e Silva (felipe.oliveira@ufla.br)
  - ▫ Ricardo Rodrigues Magalhães (ricardorm@ufla.br)
  - ▫ Roberto Alves Braga Jr. (robertobraga@ufla.br)
  - ▫ Sandro Pereira da Silva (sandro.silva@ufla.br)

  - ## Pós-doc
  Vinicius Manhaes Gabriel de Brito Cavalcanti (vinicius.cavalcanti@gmail.com)

Researching areas

Bruno Henrique Groenner Barbosa

Doc: Electrical Eng. - UFMG, 2009
MSc: Electrical Eng. - UFMG, 2006
BEng: Control and Automation Eng. - UFMG, 2003

Areas: Modelling of Dynamical Systems and Soft-sensors
        Computational Intelligence and Optimization
        Pattern Recognition
        Systems' Automation
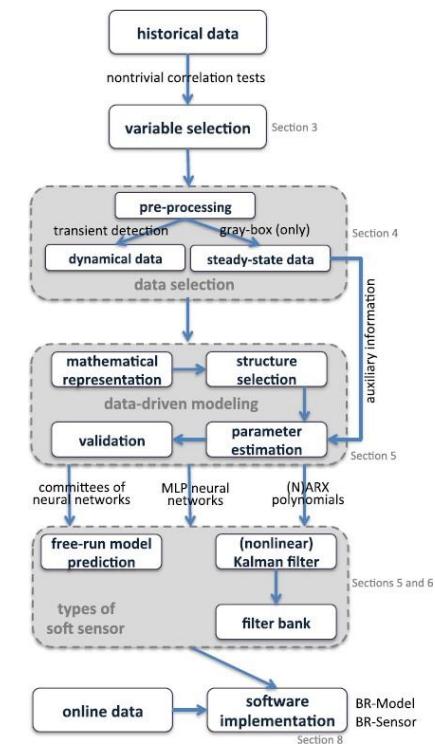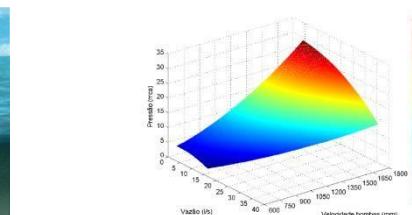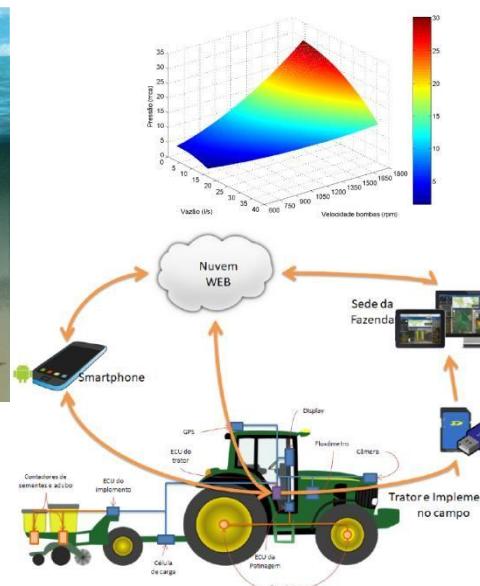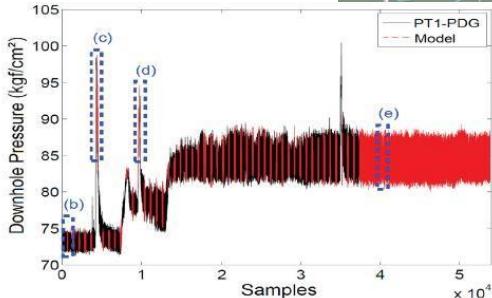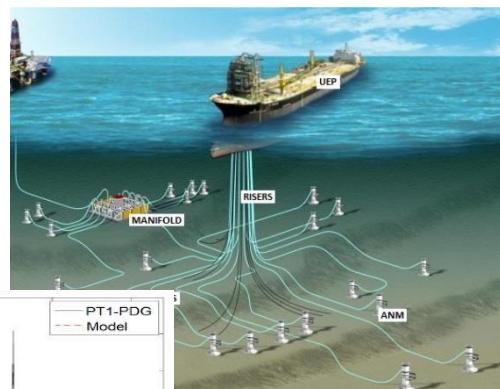
Daniel Augusto Pereira

Post-Doc: Fault Tolerant Control – University of Lille, France, 2017
Doc: Mechanical Eng. – UNICAMP, 2014
MSc: Mechanical Eng. – UNICAMP, 2008
BEng: Automation and Control Eng. – UNICAMP, 2005

Areas: Control of Dynamical Systems
       Fault Diagnosis
       Fault Tolerant Control
       Active Vibration Control
   Structural Health Monitoring
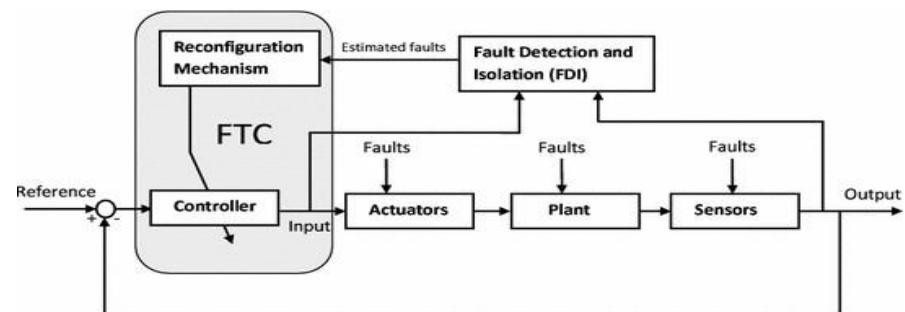
Danton Diego Ferreira

Post-Doc: Signal processing for Smart Grids – UFJF, 2014
Doc: Electrical Eng. - COPPE/Poli/UFRJ, 2010
MSc: Electrical Eng. - UFJF, 2007
BEng: Electrical Eng. - UFSJ, 2000

Areas: Computational Intelligence
        Power Quality Monitoring
        Biomedical Signals
        Pattern Recognition

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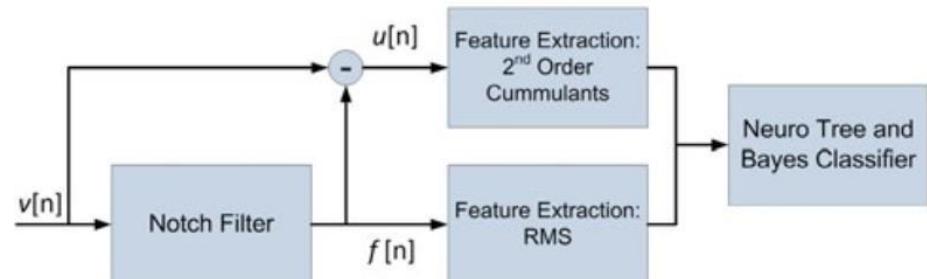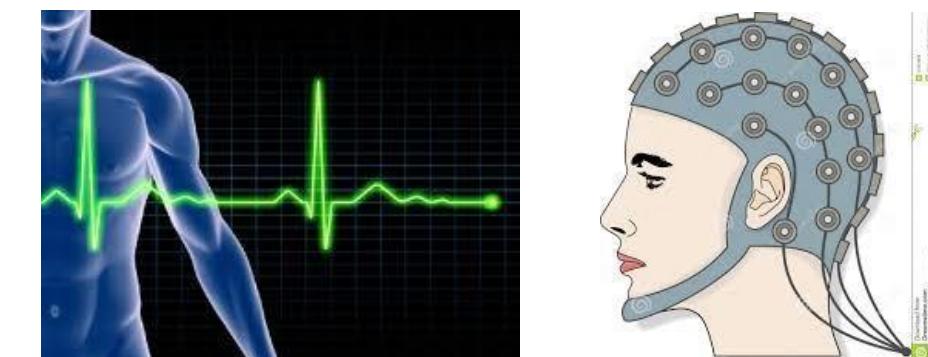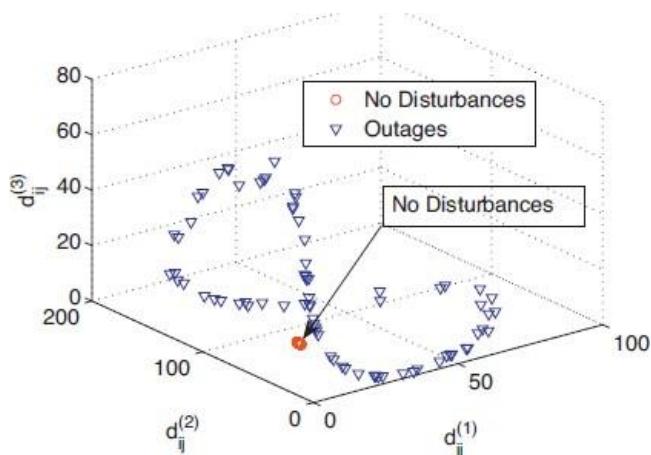
Demóstenes Zegarra Rodríguez

Post-Doc: Q&U Lab – Technical University of Berlin, Germany, 2018
Doc: Electrical Eng. - USP, 2013
MSc: Electrical Eng. - USP, 2009
BEng: Electronic Eng. – PUC/Peru, 2000

Areas of work: Digital Signal Processing
Quality Assessment of Voice and Video Signals
Quality of Experience - QoE
Communication Systems
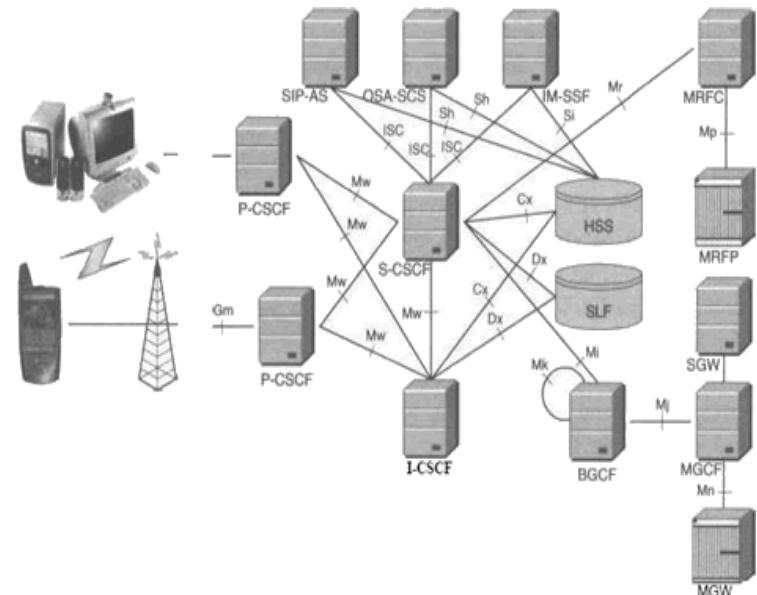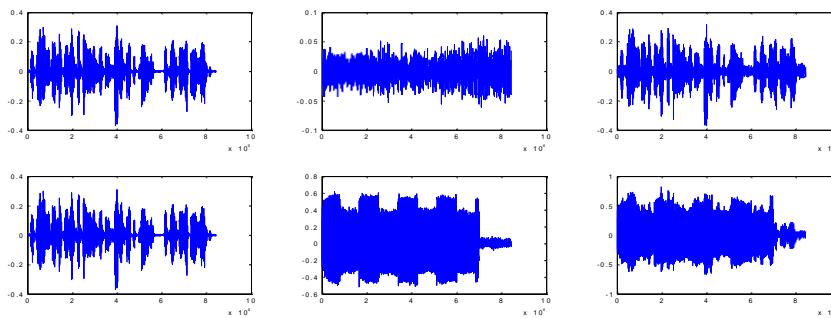
Felipe Oliveira e Silva

Post-Doc: Electrical Eng. – UCR, EUA, 2019
D.Sc.: Aeronautical and Mechanical Eng. – ITA, Brazil, 2016
M.Sc.: Systems Eng. – INSA-CVL, France, 2013
BEng: Automatic Control Eng. – UNIFEI, Brazil, 2012

Areas: Guidance, Navigation and Control (GNC) Systems
Global Navigation Satellite Systems (GNSS)
Sensor Fusion
Instrumentation
Robotics
Hydro-Pneumatic Systems
Precision Agriculture (PA)

Ricardo Rodrigues Magalhães

Post-Doc: Biomechanics – University of Liverpool, UK, 2014
Doc: Industrial Eng - UFBA, 2011
MSc: Mechatronics Eng. - UFBA, 2008
BEng: Mechanical Eng. – CEFET/MG, 2000

Areas: Manufacturing Engineering
        Product Development
        Finite Elements Modelling
        Stress Analysis
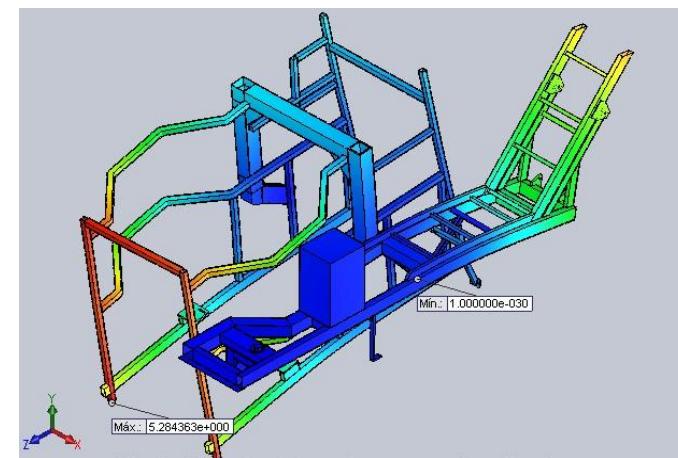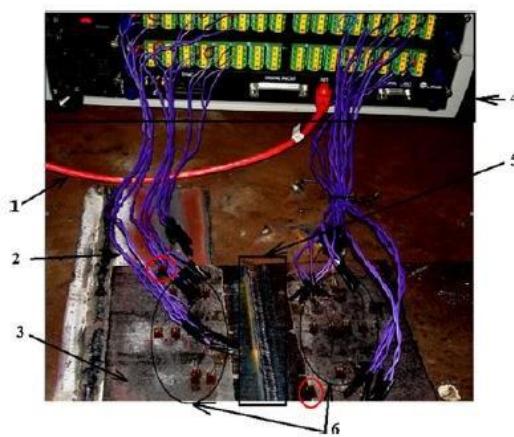
Roberto Alves Braga Júnior

Post-Docs: Image Analysis – BIOSS, Scotland, 2005, 2008 e 2011
Doc.: Agricultural Eng. – UNICAMP, 2000
MSc: Electrical Eng. – UFMG, 1994
BEng: Electrical Eng. – UFMG, 1991

Areas: Optical Metrology
        Dynamic Laser Speckle
        Interferometry
        Signal and Image Analysis
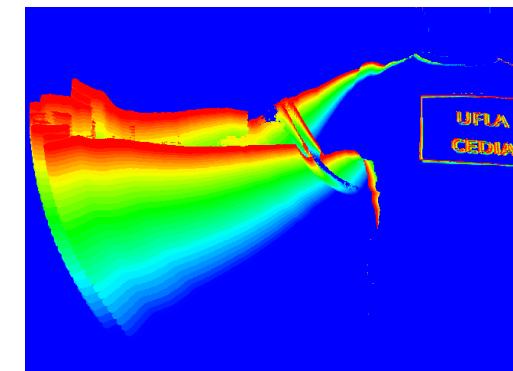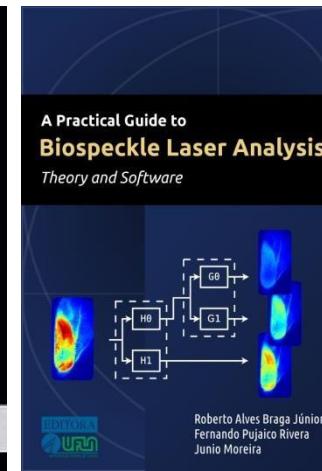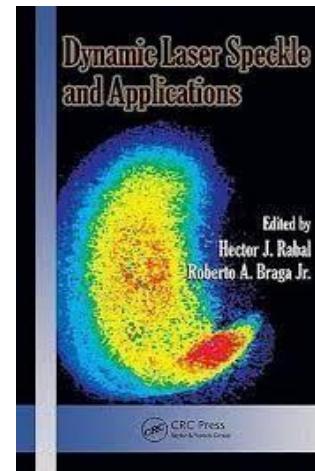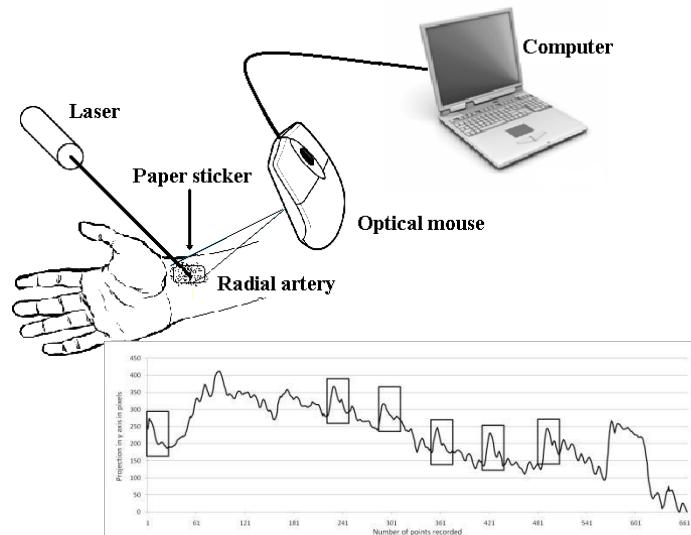
Sandro Pereira da Silva

Doc: Mechanical Eng - USP, 2015
MSc: Mechanical Eng. - UFSJ, 2010
Clinical Psychologist – WC, 2007
MBA: Industrial Management – FGV, 2005
Specialist: Production Management – FEI, 2003
BEng: Civil Eng. – UBSP, 2001
23 years industrial experience of P&D

Areas: Manufacturing Engineering
        Process and Product Development
        Assistive Technology
        Intelligent Equipment Development of Biomedical area

Sílvia Costa Ferreira

Doc.: Electrical Eng. – UNIFEI, 2016
MSc: Electrical Eng. – UNIFEI, 2012
BEng: Control and Automation Eng. – UNIFEI, 2011

Areas: Power Electonics and Industrial Control
Signal Processing and Adaptive Filters
Power Quality and Electric Power Systems
Renewable Energy and Distributed Generation Systems
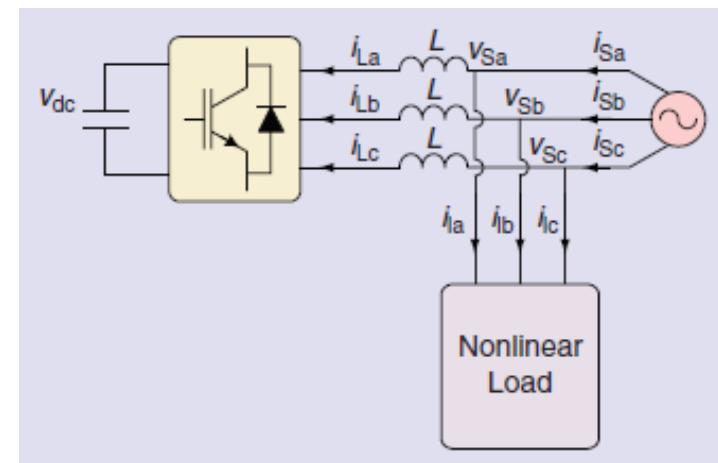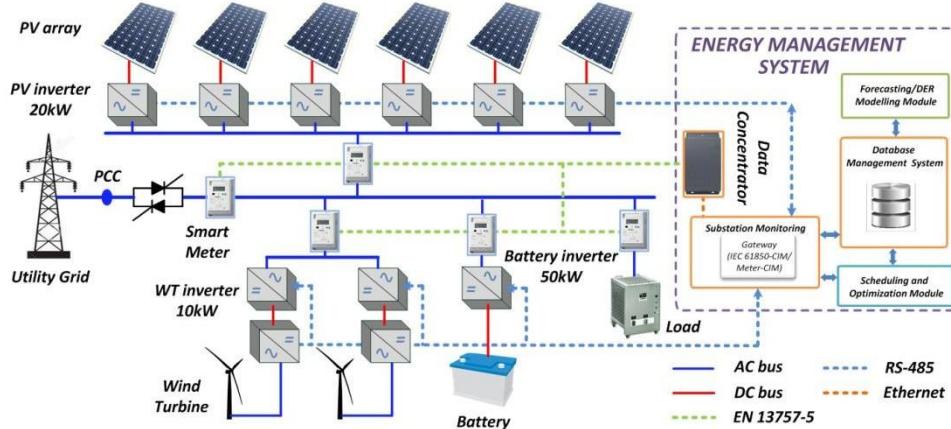
Wilian Soares Lacerda

Doc.: Computer Eng. – UFMG, 2006
MSc: Electrical Eng. – UFMG, 1994
BEng: Electrical Eng. – UFMG, 1991

Areas: Computational Intelligence
      Embedded Systems Hardware e Software
      Field Programmable Gate Array
      Digital and Analogical Electronics
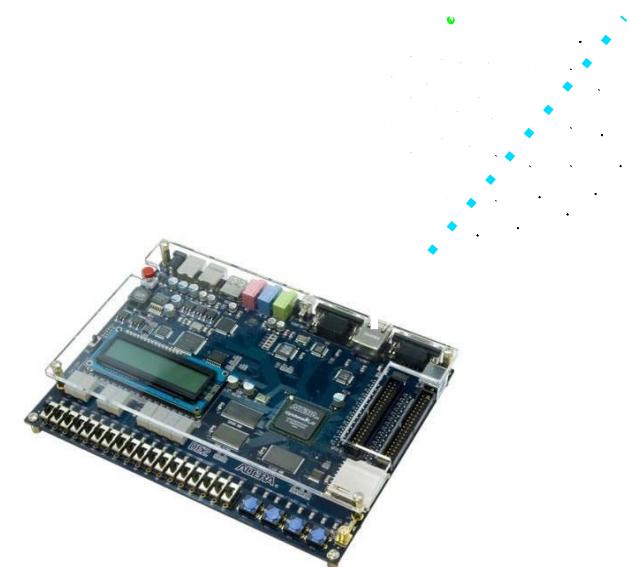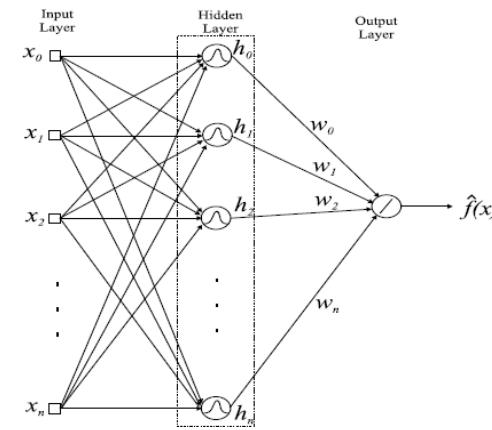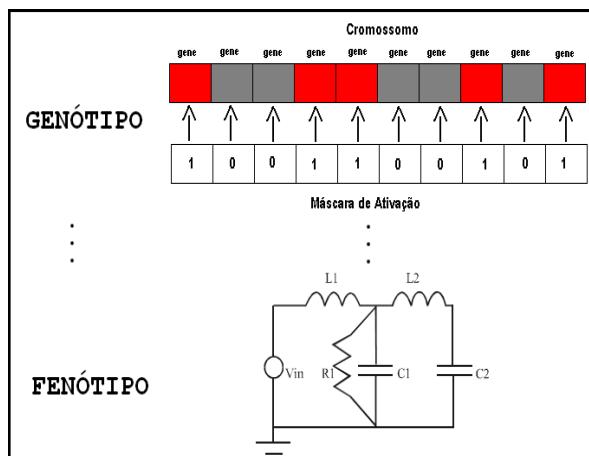
• P & D current projects

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Coordinator                              (R$)
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Coordinator	(R$)
Danton Diego Ferreira	209.280,00
Bruno Henrique Groenner Barbosa	149.510,00
Demóstenes Zegarra Rodriguez	75.673,71
Felipe Oliveira e Silva (#1)	1.115.794,34
Felipe Oliveira e Silva (# 2)	887.945,60
Ricardo Rodrigues Magalhães	389.740,00

- Publications quality (2017-2021)

Researcher	Q1	Q2	Q3	Q4
Danton Diego Ferreira	10	6	1	6
Bruno Henrique Groenner Barbosa	10	3	0	3
Demóstenes Zegarra Rodriguez	9	8	4	-
Roberto Alves Braga Júnior	9	4	5	4
Ricardo Rodrigues Magalhães	3	2	-	5
Felipe Oliveira e Silva	3	3	-	-
Daniel Augusto Pereira	2	-	1	2
Silvia Costa Ferreira	2	1	-	2
Sandro Pereira da Silva	1	-	2	0
Wilian Soares Lacerda	-	-	1	2

source: https://incites.clarivate.com/

MSc Program Outline

- Usually requires a period from 18 to 24 months
- Comprises 30 credits
  - A credit corresponds to 15 hours of class over a 15-week semester – this excludes unsupervised activities
  - Courses fit into three groups
    - Key (12 credits)
    - Area core (12 credits)
    - Elective (6 credits)

Key courses (12 credicts)

Required subjects	Credits	Semester
INSTRUMENTAL ENGLISH	2	First
Bibliographic Research and Scientific Communication	2	First
Seminars	1	Second
Oriented Project	4	Second
Qualifying Exam	1	Second
Dissertation	2	3rd or 4th

Core subjects	Credits
ADVANCED NAVIGATION SYSTEMS	4
INTRODUCTION TO THE FEM FOR STRESS ANALYSIS	4
FUNDAMENTALS OF NAVIGATION SYSTEMS	4
Pattern Recognition	4
QUALITY OF EXPERIENCE ASSESSMENT IN MULTIMEDIA SERVICES	4
SPECIAL TOPICS IN SYSTEMS ENGINEERING AND AUTOMATION I	2
SPECIAL TOPICS IN SYSTEMS ENGINEERING AND AUTOMATION II	4

- **Strategies for the current and next years**

- Improve the infrastructure for teaching, research and extension of PPGESISA;

- Increase the number of publications in high impact journals in Engineering IV;

- Improve the national and international visibility of PPGESISA;

- Intensify the PPGESISA ex-students follow-up;

- Increase founding number for students. Currently this number is 9 (nine), being

  FAPEMIG (3) and CAPES (6).

Thank you!

Questions

or

suggestions ?