



José Machado

Nationality: Portuguese **Date of birth:** 14/10/1972 **Gender:** Male

Phone number: (+351) 253510223 **Phone number:** (+351) 936383006

Email address: jmachado@dem.uminho.pt **Skype:** jmachado72

Website: <https://orcid.org/0000-0002-4917-2474>

Website: <https://www.scopus.com/authid/detail.uri?authorId=55936466500>

Website: <https://scholar.google.com/citations?user=c1it2qwAAAAJ&hl=pt-PT&oi=sra>

Work: Campus of Azurem, 4800-058 Guimarães (Portugal)

ABOUT ME

José Machado. Concluded Habilitation Title in February 2019 at University of Minho, Portugal. He received his PhD degree in Mechanical Engineering – Automation, from University of Minho, Portugal and, in simultaneous, from Ecole Normale Supérieure de Cachan, France, in 2006. He is Deputy Director of METRICs Research Center and Assistant Professor at Mechanical Engineering department of University of Minho. He has authored, or co-authored, more than 220 refereed journal and conference proceedings papers. He coordinates and has coordinated - and participated as collaborator - in several Research and Technology Transfer Projects on Mechatronics and Automation domains. His main interests are related with Industry 4.0, more specifically, on the design and development of Cyber-Physical Systems; design and analysis of dependable controllers for obtaining dependable mechatronic systems; and mechatronic systems design with special focus on manufacturing industry and medical or biomedical applications, wellbeing and/or rehabilitation. He is member of IEEE and member of IFAC.

WORK EXPERIENCE

Assistant Professor with Habilitation

University of Minho [09/02/2019 – Current]

Address: Guimarães (Portugal)

- Teaching;
- Research;
- Extension (Industry and Society)

Assistant Professor

University of Minho [01/07/2006 – 08/02/2019]

Address: Guimarães (Portugal)

- Teaching;
- Research;
- Extension (Industry and Society)

Lecturer

University of Minho [08/05/2001 – 30/06/2006]

Address: Guimarães (Portugal)

- Teaching;
- Research;
- Extension (Industry and Society)



Junior Lecturer

University of Minho [18/12/1997 – 07/05/2001]

Address: Guimarães (Portugal)

- Teaching;
- Research;
- Extension (Industry and Society)

Technical Manager

IMA – Indústria Metalomecânica do Ave Lda [01/05/1997 – 18/12/1997]

Address: Santo Tirso (Portugal)

- Responsible for Technical decisions;
- Responsible for Production;
- Responsible for Quality Management;

Responsible for Technical Development

ETMA – Empresa Técnica de Metalurgia Lda [01/04/1996 – 30/04/1997]

Address: Braga (Portugal)

Concerning Company activity:

- Responsible for Technical Design;
- Responsible for Technical Drawing;
- Responsible for Technical Production;

Responsible for Technical Development

Sarotos Metalúrgicos SA [01/10/1995 – 31/03/1996]

Address: Braga (Portugal)

Concerning Company activity:

- Responsible for Technical Design;
- Responsible for Technical Drawing;
- Responsible for Technical Production;

Professional Stage

MAQUISIS – Máquinas e Sistemas Automáticos SA [01/03/1995 – 30/09/1995]

Address: Braga (Portugal)

Industrial Practice for Conclusion of Licence Degree

EDUCATION AND TRAINING

Habilitation Title

University of Minho [08/02/2019]

Address: Braga (Portugal)

Formal Verification of Control Specification of Discrete Event Systems

PhD in Mechanical Engineering

University of Minho [30/06/2006]

Address: Guimarães (Portugal)

Level in EQF: EQF level 8

Influence de la prise en compte d'un modèle du processus en verification formelle des systèmes à événements discrets



Double Diploma (Portugal and France):
PhD in Co-tutelle with École Normale Supérieure de Cachan

PAPCC - "MSc Equivalent"

University of Minho [07/05/2001]

Address: Guimarães (Portugal)

Level in EQF: EQF level 7

Conceptualization and Realization of Operational Control of Industrial Discrete Event Systems

License Degree

University of Minho [29/09/1995]

Address: Guimarães (Portugal)

Level in EQF: EQF level 6

License Degree in Mechanical Engineering

High School

Instituto Nun'Alvares [30/06/1990]

Address: Santo Tirso (Portugal)

Level in EQF: EQF level 5

General Studies:
- Branch "Sciences"

LANGUAGE SKILLS

Mother tongue(s): **Portuguese**

Other language(s):

English

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

French

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

COMMUNICATION AND INTERPERSONAL SKILLS

Communication and interpersonal skills

Good oral and written communication and interpersonal skills.
High commitment to team working on both national and international level, in multicultural environments, gained through my work experience abroad.
Excellent skills in Education (teaching and training).

JOB-RELATED SKILLS

Job-related skills

- Supervision of 1 Post.Docs;

- Supervision (past and present) of 10 PhD students (5 already concluded);



- Supervision (past and present) of over 70 MSc students;
- IEEE Member;
- IFAC Member;

ORGANISATIONAL SKILLS

Organisational skills

Management tasks:

- Secretary of Scientific Council of School of Engineering of University of Minho (since 2022 to present);
- Member of Scientific Council of School of Engineering of University of Minho (since 2015 to present)
- Member of the Council of School of Engineering of University of Minho (since 2013 to present)
- Deputy Director of MEtRICs Research Center: <http://www.metrics.pt/> (since 2013 to present);
- Deputy Director of Mechanical Engineering Department of School of Engineering of University of Minho: <http://dem.uminho.pt/> (2016 - 2017);

Coordinator of Doctoral Studies:

- Director of PhD Programme in Mechanical Engineering (since 2022 to present);
- Director of PhD Programme in Biomedical Engineering (2019 - 2020);

Coordinator of MSc Studies:

- Coordinator of MSc branch of MSc Programme in Mechanical Engineering - Branch *Mechatronic Systems* (since 2022 to present);
- Proponent of MSc Programme in Mechanical Engineering - Branch *Mechatronic Systems* (2021);
- Coordinator of Specialization *Mechatronic Systems* in integrated MSc Programme in Mechanical Engineering (2013 - 2021);
- Proponent of Specialization *Mechatronic Systems* in Integrated MSc Programme in Mechanical Engineering (2012);



Director of Laboratory:

Director of Laboratory of Mechatronics from Mechanical Engineering Department of School of Engineering of University of Minho (since 2016 to present)

INVITED TALKS

Invited Talks - Abroad

- [1] **Title:** *Development of Dependable Controllers in the Context of Machines Design*
Organization: Technical University of Liberec, Keynote Speech on the context of ICMD'13 - International Conference of Machine Design Department
Place: Liberec, República Checa
Period: 10-12 September, 2013

- [2] **Title:** Simulation and Formal Verification for Improving Safety of PLC Programs
Organization: University of Debrecen, Keynote Speech on the context of Electrical Engineering and Mechatronics conference EEMC'16
Place: Debrecen, Hungary
Period: 17-19 de March, 2016

- [3] **Title:** Mechatronic Systems Design and Technology Transfer to Industry – Experience at University of Minho
Organization: University of Liberec, on the context of a Workshop about Technology Transfer to Industry
Place: Liberec, Chzech Republic
Period: 21 de November, 2017

- [4] **Title:** Rehabilitation and Wellbeing: development of assistive mechatronic devices
Organization: Technical University of Iasi, Keynote Speech on the context of ACME'2018 International Conference
Place: Iasi, Romania
Period: 07 de June, 2018

- [5] **Title:** Production Systems on the context of I4.0
Organization: Poznan University of Technology, Keynote Speech on the context of International Conference MANUFACTURING-2019
Place: Poznan, Poland
Period: 20 de May, 2019



- [6] **Title:** Mechatronic medical assistive devices – paradigms on design tasks considering final purposes
Organization: Sumy State University, Keynote Speech on the context of DSMIE-2019 International Conference
Place: Lutsk, Ukraine
Period: 12 of June, 2019
- [7] **Title:** Cyber-Physical Systems and Industry 4.0
Organization: InnoPark Konya Technology Development Zone, Keynote Speech on the context of 1st International Symposium of Implementations of Digital Industry and Management of Digital Transformation
Place: Konya, Turkey
Period: 25 of June, 2019
- [8] **Title:** Manufacturing Systems in I 4.0 Context
Organization: Department of Mechanical Engineering of Malaviya national Institute of Technology Jaipur In association with NIT Uttarakhand & NIT Warangal, Keynote Speech on the context of ICEM'2020 - International Conference on Evolution in Manufacturing
Place: Jaipur, India, (*performed online because pandemic Covid-19*)
Period: 11 of December, 2020

Invited Talks - Portugal

- [1] **Title:** Sistemas Pneumáticos e Eletropneumáticos
Organization: Unidade Curricular "Automação" do Mestrado Integrado em Engenharia Eletrónica e de Computadores da Universidade do Minho
Place: Universidade do Minho, Guimarães
Period: May, 2007
- [2] **Title:** O desenvolvimento da Automação
Organization: Unidade Curricular "Integradora IV" do Mestrado Integrado em Engenharia Mecânica da Universidade do Minho
Place: Universidade do Minho, Guimarães
Period: April, 2008

PUBLICATIONS

Overview about publications and performance

Published:

- over 10 books;
- over 12 book chapters;
- over 60 papers in WoS indexed journals;
- over 70 papers in Scopus indexed journals;
- over 95 papers in WoS indexed conferences;
- over 140 papers in Scopus indexed conferences;



H Index:

14 (Web of Science),

21 (Scopus),

22 (Google Scholar)

Editorial Activity

Published Books and Book Chapters

Published journal papers in WoS indexed journals

Published journal papers in Scopus indexed journals

Published conference papers in WoS indexed conferences

Published conference papers in Scopus indexed conferences

RESEARCH AND DEVELOPMENT PROJECTS - AS COORDINATOR (OR CO-COORDINATOR):

SCAPS – Safe Control of Automated Production Systems

[1] **Title:** SCAPS – Safe Control of Automated Production Systems

Role: Coordinator and Responsible Scientific Researcher

Funding Entity: Portuguese Foundation for Science and Technology - FCT

Reference: POCI/EME/61425/2004

Global amount: 33 k€

Period: 2005-2008

Abstract: There is currently a scientific cooperation with the Laboratoire Universitaire de Recherche en Production Automatisée (LURPA) of the École Normale Supérieure (ENS) of Cachan that made possible the cooperation of these institutions in this project. The doctoral work was based on the study of the influence of using models of the operative part in the formal verification of the command of discrete event controlled systems, namely in the formal verification of Programmable Logic Controllers (PLC's) programs. Since this work is completely innovative in this area, it is not exhausted in itself and can be complemented by the introduction of the "time" factor in the models of the operative part. With the introduction of this factor, the set of properties that will be possible to verify will be substantially enlarged, hence the proposition of this project whose main objective is to define this type of properties and to what extent this test can constitute an added value in the tasks of formal verification of the command of automated systems and, from a broader point of view, to what extent these systems are safer. In an attempt to create UMinho's own competences in this domain, this project is presented, which relies on the experience already acquired by the elements of the DEM and with the direct collaboration of one of the members of the DI of this University, who has already acquired competences in the field of formal verification and also in the use of crucial IT tools for the success of this project. In addition, the collaboration of LURPA elements as internationally renowned external consultants is considered. For the feasibility of this project, it is essential, in addition to the appropriate skills of the elements that integrate it, the acquisition of software that allows the elaboration of more complete and robust models of the operating part (DYMOLA software) and also of a computer machine with high computing capacity (minimum 4.0Gbytes of RAM). The use of timed models implies the aforementioned IT needs, due to their complexity. In the concrete work related to this project, the entire system to be analyzed – controller, operative part and some properties described with finite automata – will be modeled as timed finite automata. Other properties that are described by algebraic expressions will be translated into temporal logic. The UPPAAL model checker will be used for formal verification.



HMIEXCEL – Critical R&D around the development and production cycle of advanced multimedia solutions for the car

[2] **Title:** HMIEXCEL – Critical R&D around the development and production cycle of advanced multimedia solutions for the car

Role: Co-Coordinator and Co-Responsible Scientific Researcher by the *task L ID&T 12 – < Interpretation and operationalization of emotional requirements in strengths and courses of keyboard touches>*

Funding Entity: FEDER, Operational Program Competitiveness Factors

Global Funding: 19,3 M€, global project funding (UMinho – *Bosch Car Multimedia*); being the component of the University of Minho of 7,2 M€.

Period: 2013-2015

Abstract: The most important design parameters for actuators (keys) on a keyboard are the forces and strokes usually described through a force versus stroke diagram that always presents some form of hysteresis. Although there are some recommendations that gather consensus, this matter is highly dependent on the tastes or preferences of the person responsible for the product design. Within the scope of the HMIEXCEL project, we previously mentioned our interest in analyzing the usability of new haptic technologies, with the aim of overcoming problems of accessibility and distraction of the new touchscreen keyboards. With the Kansei methodology, it is intended to go beyond the simple validation of technology, and understand and quantify the key characteristics of keyboards. In a configurable touchscreen dashboard like the one that will be built, it is extremely important to understand the style of feedback to be given to the user.

BindTronic - Automated punch and bind Mechatronic machine

[3] **Title:** BindTronic - Automated punch and bind Mechatronic machine

Role: Co-Coordinator and Co-Responsible Scientific Researcher

Funding Entity: ACCO BRANDS PORTUGUESA, LDA e QREN; Individual Project n. 2013/38644

Global Funding: 95 k€, to UMinho, from a global funding amount of 350 k€.

Period: 2013-2015

Abstract: The BindTronic project aims to develop an innovative solution for automated punching and binding of individual sheets, using a plastic comb, which will complement more traditional binding systems such as stapling or gluing. It is intended to carry out an innovative project that aims to fill some of the main gaps that exist in current equipment (manual and electric) with a more universal and differentiating solution than the existing one. This will consist of software and hardware components, endowed with some intelligence, capable not only of guaranteeing the correct perforation, but also of automating the plastic comb binding process, until now with an automated offer that was very incipient or even non-existent in its range. of costs. The solution to be developed seeks an innovative and never before developed mechatronics platform, where the results of the resulting research activities will, in the near future, be duly explored, applying the knowledge base obtained to the range of ACCO catalog products with new methods. and mechanisms. In order to make this possible, it is necessary to innovate in several areas, from the system for separating the leaves to be subjected to drilling, the mechatronic drilling system, as well as the assisted feeding of the leaves in the plastic comb, passing through the provision of a innovative electronic interface and modular software solution. The Mechanics Department will be responsible for the multidisciplinary team that will aim at the development of innovative proposals in terms of mechatronization in an integrated way, seeking with the scientific knowledge of integrated manufacturing (eg advanced modeling or industrial automation) assisting the technical capacity of ACCO engineering.

Bosch – P27: Noise Reduction on sensors

[4] **Title:** Bosch – P27: Noise Reduction on sensors

Role: Co-Coordinator and Co-Responsible Scientific Researcher

Funding entity: COMPETE 2020

Global Funding: 55 M€ -Total; 450 k€ to research line P27.

Period: 2015-2018



Abstract: The Noise Reduction on Sensors Project included in the R&DT Program in collaboration between Bosch BrgP and UMinho, called Innovative Car HMI. The Innovative Car HMI Program results from two applications, INNOVCAR and iFactory, which are understood by the funding entity as Projects. However, their size, complexity and uncertainty led the two consortium entities, Bosch BrgP and UMinho, to operationalize them as a single R&DT Programme. The Innovative Car HMI program consists of 30 projects, with P27 being one of these projects. The Noise Reduction on Sensors project has the following main objectives: i) Development of a new design concept for mechanical components in steering sensors, in order to significantly reduce noise transmission; and b) Development of a new mechanical process for the reduction/elimination of component noise. This project intends to act on the noise sources of vehicle components that Bosch BrgP produces, such as mechanical components with rotation sensors. Advanced acoustic and vibration analysis techniques will be used to modulate the noise produced by direction sensors as an initial case study, which should then allow the definition of a mechanical development process to eliminate noise in other products and components. The works carried out will generate opportunities to reduce the weight of the vehicle's structural materials as well as the passive acoustic treatment of these materials and, therefore, a decrease in their specific cost and a reduction in fuel consumption. This project intends to develop: i) New design concept of mechanical components to modulate the noise in direction sensors caused by the rotation of mechanical components (initial case study); ii) Mechanical development process to eliminate noise in other products and components; and iii) Catalog of noise sources and respective solutions.

STITCHED - Innovative Stitching Solutions: advanced stapling solutions and devices

[5] **Title:** STITCHED - Innovative Stitching Solutions: advanced stapling solutions and devices

Role: Coordinator and Responsible Scientific Researcher

Funding Entity: Portugal 2020 – Competitiveness and Internationalization Operational Program

Global Funding: 110 k€ to the UMinho/TecMinho, from a global funding amount of 762 k€.

Period: 2018-2020

Abstract: The STITCHED Project aims to develop innovative solutions for stapling sheets, based on the stapler-stapler binomial, that is, it aims at a disruptive solution either oriented to the stapler itself or complemented with the device that applies it. The intention is to carry out a pioneering project that, by adding technical characteristics that add value to the solution to be found, will allow the reformulation of the range of products made available by ACCO, eventually complementing the manual aspect with an automated solution of the aforementioned binomial. With the STITCHED project, it is intended to create more universal, innovative and differentiating solutions than what currently exists in the guarantee of aggregation of sheets of paper. In both innovative solutions, manual and assisted, the intention is to explore the application of advanced components in sheet metal, capable not only of guaranteeing the correct use of equipment and consumables, as well as improving the surface properties of the entire stapling process. In the case of mechatronic staplers, which aim to assist the most demanding user, innovation is also intended in terms of sensing and surfaces with advanced properties, making them to some extent active and intelligent.

Pickup & placement improvement

[6] **Title:** Pickup & placement improvement.

Funding Entity: COMPETE 2020

Role: Coordinator and Responsible Scientific Researcher (*Corresponding to one of the Research Lines of the Project Bosch-3: P48*)

Global amount: 50 M€: 1,8M€ to the Research Project P48; 800 k€ to the UMinho

Period: 2019-2021

Abstract: For an SMT (Surface Mount Equipment) equipment to work efficiently and accurately place the components, it is necessary that it has adequate nozzles and that they are of good quality. Nozzles are the first and last element of an SMT equipment to touch all placed components. They are responsible for moving tens of thousands of these components every hour. If the equipment is not able to consistently grip the components during transport, many problems in terms of defects and non-conformities may exist in the produced parts. For the gripping, transport and placement steps, the standard used is the use of vacuum through the nozzle. However, the loss of vacuum is often responsible for defective products as the nozzle is no longer able to hold



the component or loses it during transport. One of the main reasons for lower suction or total loss of vacuum is that the quality of the nozzles is not maintained throughout the entire production process. The quality and structure of the nozzle must match the component to be placed. The same applies to worn nozzles that have insufficient surface tension to hold the components, often due to the quality of the material used in the manufacture of the nozzle itself. In this context, there are several factors where the nozzles contribute to the rejection of parts, from an incorrect selection or a non-specific nozzle design for the component in question, worn edges that do not allow a correct gripping of the components and/or degradation of the discs of reflection, even materials that are not the most suitable in terms of robustness and that require constant maintenance or replacement. As such, a specific development of nozzles, which tries to optimize these problems, together with more general issues of the operation of SMT equipment, is a need that is intended to be filled by exploring all the challenges and including new technologies in the process. ; scientific survey, definition, modeling, simulation and finally evaluation and manufacture of nozzles (prototypes).

iFixturing - New generation of Intelligent Testing Systems

[7] **Title:** iFixturing - New generation of Intelligent Testing Systems

Role: Coordinator and Responsible Scientific Researcher

Funding Entity: Portugal 2020 – FEDER

Global amount: 420 k€ to the UMinho, from a global funding amount of 1,2 M€.

Period: 2019-2023

Abstract: The iFixturing Project aims to develop state-of-the-art technologies to improve its products: the ICT PCB test system; contemplating as technical objectives the development of new products and tools to support the production of these systems (fixtures, test programs) as well as for the significant improvement of its manufacturing process. These solutions will make it possible to enable the testing system with a higher level of automation, which will reduce manual intervention and increase the quality and precision of the system, as well as guarantee the repeatability of the products (fixtures), in addition to allowing the reduction of its production time and cost for the company, also favoring its competitive profile in the market. It is also intended to implement the I4.0 concepts in the systems to be developed.

DigiIndustry - Digitization and automation of industrial processes

[8] **Title:** DigiIndustry - Digitization and automation of industrial processes

Role: Coordinator and Responsible Scientific Researcher

Funding Entity: IAPMEI, I.P. - Agency for Competitiveness and Innovation (Mobilizing Agendas / PRR – PRODUTECH R3)

Global amount: 1,7 M€ to the UMinho, from a global funding amount of 34,7 M€

Period: 2022-2025

Abstract: Digitization of manufacturing will be able to enable true continuous digital synchronization and therefore will change production paradigms. Digitization, as a paradigm, aims to respond to certain challenges in the wood processing industry, such as: many product references showing the increasing customization of the product, greater complexity in the production of increasingly smaller series. In this project-transforming project, we have the following global objectives: (1) Automating a set of processes, in order to make the production of wood pellets more efficient and effective; (2) Automatic, flexible, adaptive and intelligent management of warehouses, with the challenge of lifting loads of more than 8 tons to 30 meters in height with a cadence of 18 batches/hour of entry and 25 lots/hour of exit; (3) Energy decarbonization, through the development of an intelligent system for dynamic adjustment of electricity consumption, namely, presenting criteria for optimizing the scheduling and sequencing of production. For the first global objective, we have several specific objectives, such as: (1.1) Integration/Interoperability of the flows/processes of the lines and factories that make up, namely in the wood industry, the development of raw boards and placement of coating; (1.2) Integration of information, such as: production planning, ordering, product and equipment; (1.3) Sensorization of equipment, known as physical natives, both in in; (1.4) optimization algorithms for production scheduling and sequencing; (1.5) simulation model and representation of industrial processes, namely sequencing between planning and production. For the second objective, we have the following specific objectives: (2.1) Design and development of a customized automatic storage system for lines/factories; (2.2) Simulation of the functioning of the automatic,



flexible and adaptive Storage System; (2.3) Development of an innovative metallic structure for the Warehouse with profiles adapted to the specific characteristics of the products; (2.4) Development of an innovative stacker crane dedicated to the Storage System; and (2.5) Development of the software that supports the automatic storage system, with predictive capacity and to interoperate with the remaining computer systems. Finally, in the third global objective we have the following specific objective, (3.1) development of an intelligent system for dynamic adjustment of electricity consumption.

PRODUTECH DIGITAL INNOVATION HUB (European Project)

[9] **Title:** PRODUTECH DIGITAL INNOVATION HUB (European Project)

Role: Coordinator and Responsible Scientific Researcher of the team of University of Minho

Funding Entity: European Commission (50%) and IAPMEI, I.P. - Agency for Competitiveness and Innovation (50%) under the financing of the Digital Innovation Hubs (PID)

Global amount: 341,7 k€ to the UMinho, from a global funding amount of 6,0 M€

Period: 2022-2025

Abstract: As a European Digital Innovation Hub, PRODUTECH DIH's mission is to promote the digitization of the manufacturing industry, through a consistent and coherent dual intervention aimed at both production technologies and manufacturing sectors, enhancing the role that production technologies assume in transformation digital and green of the various sectors of the manufacturing industry. Gathering a critical mass of capacities, infrastructures, competences, capacities and unique associated services, and having a solid relational capital with the ecosystem of stakeholders, a history of European intervention and of corridors with other EDIHs, PRODUTECH DIH articulates, supplies and puts to the provision of industry and relevant stakeholders, a coherent set of support services within the 4 main functions assigned to the European Digital Innovation Hubs: Test before you invest, Skills and training, Support to find investments and Streamlining the innovation ecosystem and networking. PRODUTECH DIH is a consortium of 19 organisations, bringing together the Portuguese cluster of production technologies for the manufacturing industry, a science park/incubator, industry sectoral technology centres, research and technology organizations and higher education and professional training organisations, with multiple locations in Portugal, acting as multipliers of digital capabilities and as access points to the hub, the European Network of IHLs, relevant stakeholders, such as the Enterprise Europe Network, and initiatives, and providing key support services, within the areas foreseen by the Program Digital Europe, for the digital and green transformation of industry. PRODUTECH DIH offers a solid unique value proposition: (1) consistent consortium for the digital and green transformation of the industry, (2) capacity and ambition for European intervention and (3) a synergistic strategic intervention Local-Regional-National-European.

RESEARCH AND DEVELOPMENT PROJECTS - AS EXTERNAL ADVISOR:

Use of timed finite automata for formal verification of real-time software models

[1] **Title:** Use of timed finite automata for formal verification of real-time software models

Role: Project Consultant

Funding Entity: Institute of Aeronautics and Space (IAE), Brazil

Global amount: Unknown value. The IAE (Brazil) is a military institution and certain administrative details of the Project are unknown. In this project, the IAE financed the travel and stay of the signatory, whenever he went to São José dos Campos, within the scope of the project.

Period: 2010-2011

Abstract: Introduce and familiarize the IAE "Formal Methods" team with the use of model-checking, acquiring expertise to model critical parts of the on-board software of the Brazilian Satellite Launch Vehicle (VLS), through a network of timed finite automata and the subsequent automatic verification of this model. The technology to be developed comprises an optimized model of part of the on-board software that will use the UPPAAL tool to verify its real-time properties.



RESEARCH AND DEVELOPMENT PROJECTS - AS RESEARCH TEAM MEMBER:

REVVIS – Meeting of Specialists in Software Verification and Validation

[1] **Title:** REVVIS – Meeting of Specialists in Software Verification and Validation

Role: Reseracher

Funding Entity: CYTED

Global amount: 120 k€

Period: 2007 - 2010

Abstract: REVVIS brings together a large number of Ibero-American specialists involved in Research, Development and Innovation projects dedicated to Software Verification and Validation (SW V&V) with a view to promoting the exchange of knowledge, disseminating best practices and project results, carry out technology transfer and generally increase the quality of Software projects through the generalization of the use of SW V&V. Coordinator: Henrique Madeira (University of Coimbra). Other participating groups: University of Coimbra CISUC (Portugal); Recife Center for Studies and Advanced Systems (Brazil); Critical Software S.A. (Portugal); EMBRAER – Empresa Brasileira de Aeronáutica S.A. (Brazil); Esuela Superior Politécnica del Litoral (Ecuador); Institute of Aeronautics and Space – General Command of Space Technology (Brazil); Institute of Systems and Computer Engineering of Porto (Portugal); National Institute for Space Research (Brazil); Superior Polytechnic Institute José António Echeverría – Center for System Engineering Studies (Cuba); Technological Institute of Aeronautics (Brazil); University Cooperation Office (Spain); Pontifical Catholic University of Peru (Peru); SoftwCare SL (Spain); University of Castilla-la-Mancha (Spain); University of the Republic (Uruguay); Universidad del Cauca (Colombia); National University of Rosario (Argentina); University of La Coruña (Spain); University of Minho (Portugal); University of Porto – Faculty of Engineering (Portugal); State University of Campinas (Brazil); Federal University of Rio Grande do Sul (Brazil). URL: <http://revvis.dei.uc.pt/>

WALC - WALC - Web Assisted Laboratory for Teaching Control Engineering

[2] **Title:** WALC - WALC - Web Assisted Laboratory for Teaching Control Engineering

Role: Researcher

Funding Entity: Portuguese Foundation for Science and Technology - FCT

Reference: PTDC/ESC/68069/2006

Global amount: 70 k€

Period: 2008 - 2010

Abstract: In the area of teaching Automation and Control, an area in constant technological evolution, the EEUM departments that directly intervene in its teaching, decided to join efforts and physical and human resources, in order that all students who need knowledge in this area can benefit of an integrated tool. This tool should allow access to the various physical means of testing and simulation (several laboratories from various departments) in a simple and profitable way, taking into account the optimization of existing physical resources and others that may be acquired. In this context, the project team proposes to provide a space in a Web environment, for pedagogical use at undergraduate level and also at the most advanced level of postgraduate studies, of a virtual and remote laboratory applied to the teaching of Automation and Control in Engineering (WALC - Web Assisted Laboratory for Control). WALC will allow, for the teaching of Automation, not only the choice by the user, the engineering problem to be solved, but also, in a remote way, to operate and control the chosen system, allowing to test your own automation program. All problems can be simulated through graphic animations according to pre-defined specifications. WALC will allow, for the teaching of Control, the choice of the engineering problem to be solved and the type of control to be implemented. Control problems are described by algebraic differential equations. WALC, as the didactic tool that it proposes to be, will encompass and allow the user to test various numerical methods in solving such equations, creating synergies between the various skills acquired throughout the academic course. Numerical results will be used in the graphical simulation. For some engineering problems, remote monitoring and control of the respective experimental installation will be available. Due to the constant developments and technological advances in this area, the WALC laboratory will be dynamic, allowing the addition of new practical cases (physical test and simulation benches and also new programs associated with them). Practical problems, and available numerical methods, will be completely



defined, described and grounded in theoretical support. The user, during his learning path, needs to test the acquired knowledge in order not only to self-evaluate his progress but also to identify any difficulties. Thus, WALC will provide, step by step, a set of randomly generated questions, allowing the user to self-evaluate. WALC will be available in Portuguese and English in order to embrace the national and international academic community.

Technical applications of non-needed fabrics

[3] **Title:** Technical applications of non-needed fabrics

Role: Researcher

Funding Entity: Groz Beckert company

Global amount: 150 k€

Period: 2009-2010

Abstract: Development of equipment for the production of non-needed fabrics, taking into account that the equipment must be versatile, due to the pressing need to adapt to new textile products. In the first phase, a needle must be developed for application in this type of production equipment, taking into account the adjustment of the characteristics of the needle machine with new and necessary operating parameters; in a second phase, this needle machine (taking into account the respective operating parameters - must be properly tested and validated in the laboratory; in a third phase, the application of this technology must be extended to application in industrial production equipment. The development of this equipment should have taking into account the re-engineering of current needle production equipment, which is expected to have a capacity for rapid change in response to the technical production requirements imposed by the new applications that the products may require. Taking into account a very summarized view of the steps to be taken to this project, the list of tasks associated with this project is presented below: State of the art on equipment of this type; Research of national and international patents related to systems of this type and, in parallel, the definition of the engineering parameters involved in the production process, namely forces, velocities, accelerations, inertia of some components ones,...; Creation of 3D models, integrating the values studied and defined in the previous point for certain parameters; Needle design, manufacture and development; Laboratory tests and validation of the prototype; Extrapolation of the technology developed in the previous points to industrial production equipment.

REPHYS: Remote Laboratory for Physiological Systems: A didactic learning environment

[4] **Title:** REPHYS: Remote Laboratory for Physiological Systems: A didactic learning environment

Role: Researcher

Funding Entity: Portuguese Foundation for Science and Technology - FCT

Reference: PTDC/CPE-PEC/122329/2010

Global amount: 82 k€

Period: 2010-2014

Abstract: Remote labs have been developed to support student learning and to reduce equipment costs. Increasingly, laboratories play an important role in engineering education, as they allow the connection between theory and practice. In fact, there is no need to change teaching strategies and methodologies. Remote labs allow access to all students anytime, anywhere because they are available over the Internet. This project is based on the development of an innovative laboratory in the field of bioengineering: RePhyS. RePhyS will be a remote laboratory for use in biomedical and physiological study systems in undergraduate and graduate courses. The user will be able to interact with the system parameters, and will be able to control some system variables. This new laboratory will allow to produce, visualize and analyze, in real time, the results of practical experiments, in order to improve the students' learning activity, and it will provide an enriched computing environment for sharing results and collaborations.

Bosch – P24: Autonomous Milk-Runs

[5] **Title:** Bosch – P24: Autonomous Milk-Runs

Role: Researcher

Funding Entity: COMPETE 2020



Global amount: 55 M€ -Total; 500 k€ to the reserach line P24.

Period: 2015-2018

Abstract: The Innovative Car HMI program consists of 30 projects, with P24 being one of them. This Project implies developing a software system capable of interoperating with the logistics and raw material tracking systems, implies integrating sensors and actuators in the autonomous vehicle, designing navigation algorithms, and assessing the level of efficiency of the new solution, comparing -a with the current system. The adequacy of the new solution to other environments must also be evaluated. In order to achieve this objective, it is also necessary to respond to a series of challenges: i) For autonomous navigation and vehicle tracking functions, it will be necessary to use a positioning system for indoor environments that simultaneously provides large coverage areas, high acuity and real-time update (time intervals in the order of a few seconds). These requirements are very demanding in view of the technology currently available even in the laboratory, so efforts will be made to design and evaluate hybrid solutions that integrate techniques based on fixed infrastructure with information obtained through on-board sensors and data fusion techniques; ii) Autonomous navigation is still a challenge because it involves solving a complex optimization problem: the objective of efficiency in the movement of raw materials has to be combined with the mechanisms for tracking materials; iii) The study of the static and dynamic behavior of the system requires the static and dynamic study of the set (vehicle + cargo), taking into account its stability during operation. In this domain, it is intended to develop a study of the static and dynamic behavior of the aforementioned set, with regard to its static and dynamic balance and the definition of its velocity and acceleration ramps, taking into account associated masses and inertias, in the various phases of work: loading, transporting and unloading of products; iv) The integration of parts and components requires the adoption of an efficient mechatronic design methodology that allows obtaining or materializing the defined requirements. In this way, the application of the concepts associated with a correct mechatronic project are essential in order to be able to integrate all the concepts developed and required in the previous R&D objectives; and v) The autonomous material handling system will be seen as a component of a broader system that includes the Bosch BrgP general information system.

RCS: Refined Cast Steel - Development of cast steels by refining process and optimizing the incorporation of residues

[6] **Title:** RCS: Refined Cast Steel - Development of cast steels by refining process and optimizing the incorporation of residues

Role: Reseracher

Funding Entity: COMPETE 2020 - POCI-01-0247-FEDER-003330

Budget to the UMinho: 392 K€

Period: 2016-2018

Abstract: This project intends to develop the production process of cast steel with controlled levels of impurities, optimizing the incorporation of residues in its manufacture. It is intended to develop the possibility of producing cast stainless steel and carbon steel, in the first case with control of the carbon content, in the second with control of the sulfur and phosphorus contents and the respective non-metallic inclusions. These steels, already produced in the steel industry, are still very difficult to obtain in foundries (with the desired levels of quality), therefore, in this project, an attempt is made to develop methodologies for decarburization and desulphurization/dephosphorization, which make it feasible to procedure. To this end, the introduction of products made from waste will be sought, as useful reagents for the high temperature process to obtain these results. On the other hand, efforts will be made to optimize the incorporation of metallic residues in the process, in order to reduce production costs. The project includes a development phase of a system for insufflating gases and powdered materials, its construction and testing on a pilot scale, with a view to validating the methodology to be developed.

PW4E – Plastic Wastes for Energy.

[7] **Título:** PW4E – Plastic Wastes for Energy.

Role: Reseracher

Funding Entity: National Innovation Agency

Budget to the UMinho: 223 k€



Period: 2019-2021

Abstract: The project intends to develop equipment to value mixed polymeric residues, using pyrolysis technology. The residues to be used are plastics contaminated with chlorine, residual fractions from the mechanical biological treatment of urban solid waste and also the residue from the fragmentation of end-of-life vehicles. The process to be developed considers two pyrolysis stages, one to remove chlorine and other halogens, another to obtain a synthesis gas and a carbon-rich fuel

PRIDOP – Innovation in die-casting and Process Optimizations

[8] **Title:** PRIDOP – Innovation in die-casting and Process Optimizations

Role: Reseracher

Funding Entity: Portugal 2020 – FEDER

Global amount: 349 k€ to the UMinho, from a global amount of 1,75 M€.

Period: 2019-2023

Abstract: The current trend in the automotive area is to produce products of greater technical complexity involving, among other factors, the need for greater reliability and miniaturization of components. The PRIDOP project, designed to respond to these important challenges, is made up of two R&D lines around the development of new solutions for the casting of metallic parts with high dimensional and geometric accuracy. The innovations include the improvement of casting parameters for components to allow obtaining parts with complex geometry and, at the same time, with greater control of their microstructure and metallurgical health. For this, it will be necessary to develop solutions for: Thermal analysis of molds using thermal simulation tools; New liquid metal treatment process, through the application of ultrasound technology; New optimized mold manufacturing project, through additive manufacturing (AM) technology, with cooling systems suitable for parts with complex geometries.

PATENTS

Patents

[1] **Authors:** Bezerra, K.; **Machado, J.**; Carvalho, V.; Matos, D.; Soares, F.

Drawing or Model n° 3310,2013.

Tipo de produto: Design.

Patent: *Equipment for Blood Analysis. Design/Model registration application No. 3310 with priority date of July 15, 2013; Registration granted on December 4, 2013.*

[2] **Authors:** **Machado, J.**; Bezerra, K.; Carvalho, V.; Matos, D.; Soares, F.; Ferraz, A.

Product: Universal Liquid Mixer.

Kind of Product: Design;

Nature of Product: Device.

Patent: *Movement System For Mixing Liquids. Patent application No. 107064, with priority date of July 15, 2013, granted on January 21, 2015, published in the official industrial property bulletin No. 47/2015 of January 21, 2015; application for definitive conversion of international patent G01N21/07 (2006.01), with priority date of July 15, 2013. Effective date on July 15, 2015.*

[3] **Authors:** Ventura, C.; Mendonça, J.; **Machado, J.**; Sousa, J.; Figueiredo, L.

Produt: Paper punching and binding system.

Kind of Product: Design;

Nature of Product: Device.



Patent: *Paper punching and binding system. Provisional patent application for National Invention No. 108647, approved on 12/31/2020, published in the official industrial property bulletin on 01/06/2021.*

[4] **Authors:** Miranda, C.; Sampaio, Á.; Pontes, A.; Veiga, J.; Silva, L.; Lima, S.; **Machado, J.**; Meireles, J.; Malheiro, M. T.; Gonçalves, A.; Quintela, J.; Faria, R.; Soares, R.; Pimenta, T.; Pinhão, M.

Product: Nozzle for application on existing Pick-up and Placement machines in PCB assembly lines.

Kind of Product: Design;

Nature of Product: Device / Component.

Patent: *Nozzles design for surface mount technologies, manufacturing method and assembly process. German provisional patent application, nº 2021/7554, submitted on 04/11/2021.*

RECOGNITION BY SCIENTIFIC COMMUNITY

Editorial Board Member of International Scientific Journals:

[1] *International Journal of Imaging and Robotics* (desde 2016) - SCOPUS indexed – Q4 Scimago; <http://www.ceser.in/ceserp/index.php/iji/pages/view/eb-ijir>

[2] *International Journal of Mechatronics and Applied Mechanics* (desde 2017) - SCOPUS indexed – Q4 Scimago; <https://ijomam.com/editorial-board/>

[3] *Smart Science* (desde 2018) - SCOPUS indexed – Q2 Scimago; <https://www.tandfonline.com/action/journalInformation?show=editorialBoard&journalCode=tsma20>

[4] *Journal of Engineering Sciences* (desde 2019) – Not Indexed in Scimago; <https://jes.sumdu.edu.ua/editorial-board/>

[5] *Journal of Mechatronics and Robotics* (desde 2019) – Not Indexed in Scimago; <https://thescipub.com/jmr/editors>

[6] *Applied Sciences MDPI* (desde 2019) – Q2 Scimago; <https://www.mdpi.com/journal/applsci/editors>

[7] *Machines MDPI* (desde 2019) – Q2 Scimago; <https://www.mdpi.com/journal/machines/editors>

[8] *Automation MDPI* (desde 2020) – Not Indexed in Scimago; <https://www.mdpi.com/journal/automation/editors>

[9] *TiAM - Assembly Techniques and Technologies* (desde 2021) – Not Indexed in Scimago; <https://tiam.prz.edu.pl/editorial-board>

[10] *Applied Computer Science* (desde 2021) – Q3 in Scimago;



http://www.acs.pollub.pl/index.php?option=com_content&view=article&id=399&Itemid=116

- [11] Journal of Asian Scientific Research (since 2022) – Not Indexed in Scimago;
<http://www.aessweb.com/journals/5003>

Reviewer of International Scientific Journals:

- [1] *IEEE Transactions on Automation Science and Engineering* (since 2009)
- [2] *IEEE Transactions on Control Systems Technology* (since 2011)
- [3] *IEEE Transactions on Industrial Informatics* (since 2011)
- [4] *Applied Mathematical Modelling* (since 2012)
- [5] *International Journal of Embedded Systems* (since 2012)
- [6] *Journal of Process Control* (since 2012)
- [7] *International Journal of Advanced Robotic Systems* (since 2012)
- [8] *Measurement* (since 2013)
- [9] *MIT Pesence* (since 2013)
- [10] *Annual Reviews in Control* (since 2014)
- [11] *Engineering Computations* (since 2014)
- [12] *ANNALS of Faculty Engineering Hunedoara - International Journal of Engineering* (since 2014)
- [13] *ACTA TECHNICA CORVINIENSIS - Bulletin of Engineering* (since 2014)
- [14] *European Journal of Engineering Education* (since 2015)
- [15] *Neural Computing and Applications* (since 2015)
- [16] *ACTA POLYTECNICA* (since 2016)
- [17] *International Journal of Imaging and Robotics* (since 2016)



- [18] *Annual Review in Control* (since 2016)
- [19] *Computers and Industrial Engineering* (since 2016)
- [20] *DYNA Engineering Journal* (since 2016)
- [21] *Mechanism and Machine Theory* (since 2016)
- [22] *International Journal of Mechatronics and Applied Mechanics* (since 2017)
- [23] *Management and Production Engineering Review* (since 2017)
- [24] *Sensors* (since 2017)
- [25] *Applied Sciences MDPI* (since 2019)
- [26] *Machines MDPI* (since 2019)
- [27] *Automation MDPI* (since 2020)
- [28] TiAM - Assembly Techniques and Technologies (since 2021)
- [29] Applied Computer Science (since 2021)

General-Chair (or Co-Chair) of International Scientific Conferences

- [1] **Title:** ICIE'2020 - International Conference Innovation in Engineering (**General Conference Chair**)
Place: Universidade do Minho, Guimarães
Period: 28-30 of June, 2021

- [2] **Title:** ICIE'2022 - International Conference Innovation in Engineering (**General Conference Chair**)
Place: Universidade do Minho, Guimarães
Period: 28-30 of June, 2022

- [3] **Title:** ISPEM'2023 - Fourth International Conference on Intelligent Systems in Production Engineering and Maintenance (**General Conference Co-Chair**)
Place: Wrocław University of Science and Technology, Poland
Period: 14-15 of September, 2023

Member of Organizing Committees of International Scientific Conferences

- [1] **Title:** IEEE ENBENG'2013 - IEEE 3rd Portuguese Meeting in Bioengineering
Place: Universidade do Minho, Braga



Period: 20-23 of February, 2013

[2] **Title:** EUCOMES 2014 - 5th European Conference on Mechanism Science

Place: Guimarães, Portugal

Period: 16 - 20 of September, 2014

[3] **Title:** CONTROLO'2016 - 12th Portuguese Conference on Automatic Control

Place: Guimarães, Portugal

Period: 14 - 16 of September, 2016

[4] **Title:** Regional HELIX 2018 (**Place Conference Chair**)

Place: Guimarães, Portugal

Period: 27 - 29 of June, 2018

[5] **Title:** ICIE'2020 - International Conference Innovation in Engineering (**Place Conference Chair**)

Place: Universidade do Minho, Guimarães

Period: 28-30 of June, 2021

[6] **Title:** ICIE'2022 - International Conference Innovation in Engineering (**Place Conference Chair**)

Place: Universidade do Minho, Guimarães

Period: 28-30 of June, 2022

[7] **Title:** FAIM'2023 - International Conference on Flexible Automation and Intelligent Manufacturing

Place: Porto, Portugal

Period: 18 - 22 of June, 2023

Reviewer of International Scientific Conferences (2009 - 2013)

[1] *ICEE'2009 - International Conference on Engineering Education*

[2] *COBEM'2009 - 20th International Congress on Mechanical Engineering*

[3] *IFAC - INCOM'2009 - 13th IFAC Symposium on Information Control Problems in Manufacturing*

[4] *IFAC - DCDS'2009 - 2nd IFAC Workshop on Dependable Control of Discrete Systems*

[5] *IEEE - ICECCS'2009 - 14th IEEE International Conference on Engineering of Complex Computer Systems*

[6] *IEEE - ICCAS-SICE'2009 - International Conference on Control and Automation Systems.*

[7] *IEEE - ISIE'2010 - IEEE International Symposium on Industrial Electronics*



- [8] *IFAC – IMS'2010 - 10th IFAC Workshop on Intelligent Manufacturing Systems*
- [9] *IEEE - INDIN'2010 – 8th International Conference on Industrial Informatics*
- [10] *MECAHITECH'2010 - 2nd International Conference on Innovations, Recent Trends and Challenges in Mechatronics, Mechanical Engineering and New High-Tech Products Development*
- [11] *IEEE - INDIN'2011 – 9th International Conference on Industrial Informatics*
- [12] *IFAC - DCDS'2011 – 3rd IFAC Workshop on Dependable Control of Discrete Systems*
- [13] *MECAHITECH'2011 – 3rd International Conference on Innovations, Recent Trends and Challenges in Mechatronics, Mechanical Engineering and New High-Tech Products Development*
- [14] *IFAC 2011 - 18th IFAC World Congress, IFAC 2011*
- [15] *IFAC TDS'2011 - 12th IFAC Workshop on Time Delay Systems*
- [16] *ImViReLL'12 - The 1st Conference on the Impact of Virtual, Remote and Real Logistics Labs*
- [17] *MECAHITECH'2012 – 4th International Conference on Innovations, Recent Trends and Challenges in Mechatronics, Mechanical Engineering and New High-Tech Products Development*
- [18] *SAAEI 2012 – Seminário Annual de Automação, Eletrónica Industrial e Instrumentação*
- [19] *IECON'2013 – 39th Annual Conference of the IEEE Industrial Electronics Society*
- [20] *IEEE / IFAC - DCDS'2013 – 4th IEEE / IFAC Workshop on Dependable Control of Discrete Systems*
- [21] *IEEE-ICIT'2013 - IEEE International Conference on Industrial Technology*
- [22] *ICNAAM'2013 - 11th International Conference on Numerical Analysis and Applied Mathematics*
- [23] *MECAHITECH'2013 – 5th International Conference on Innovations, Recent Trends and Challenges in Mechatronics, Mechanical Engineering and New High-Tech Products Development*
- [24] *IMS'2013 – 11th International Workshop on Intelligent Manufacturing Systems*
- [25] *IEEE - INDIN'2013 – 11th International Conference on Industrial Informatics*



[26] *LADC'2013 – 6th Latin-American Symposium on Dependable Computing*

[27] *NER'2013 - 6th International IEEE/EMBS Conference on Neural Engineering*

[28] *IEEE ENBENG'2013 - IEEE 3rd Portuguese Meeting in Bioengineering*

Reviewer of International Scientific Conferences (2013 - 2020)

[29] *MECAHITECH'2014 – 6th International Conference on Innovations, Recent Trends and Challenges in Mechatronics, Mechanical Engineering and New High-Tech Products Development*

[30] *IFAC WC 2014 - 19th IFAC World Congress, IFAC 2014*

[31] *EUCOMES'2014 - 5th European Conference on Mechanism Science*

[32] *ACME'2014 – 6th International Conference on Advanced Concepts in Mechanical Engineering*

[33] *CECNet 2014 - 4th International Conference on Electronics, Communications and Networks*

[34] *IEEE Conference ISPA 2015*

[35] *2015 IFToMM World Congress*

[36] *CECNet 2015 - 4th International Conference on Electronics, Communications and Networks*

[37] *IFAC - DCDS'2015 – 4nd IFAC Workshop on Dependable Control of Discrete Systems*

[38] *INCOM'2015 - IFAC Symposium on Information Control in Manufacturing*

[39] *IROS'2015 - IEEE/RSJ International Conference on Intelligent Robots and Systems*

[40] *ROBOT'2015 - Second Iberian Robotics Conference*

[41] *12th IFAC Workshop on Intelligent Manufacturing Systems (IMS 2016)*

[42] *IEEE - INDIN'2016 – 14th International Conference on Industrial Informatics*

[43] *2016 IEEE International Power Electronics and Motion Control Conference (PEMC)*

[44] *5th International Conference on Smart Cities and Green ICT Systems - SMARTGREENS 2016*



- [45] *IEEE - INDIN'2017 – 15th International Conference on Industrial Informatics*
- [46] *CoDIT'2017 - International Conference on Control, Decision and Information Technologies*
- [47] *24th ICE/IEEE ITMC'2017*
- [48] *ICOMECYME' 2017 - International Conference of Mechatronics and Cyber-Mixmechatronics*
- [49] *MANUFACTURING'2017*
- [50] *Regional HELIX 2018*
- [51] *ACME'2018 – Advanced Concepts in Mechanical Engineering*
- [52] *DSMIE-2018: International Conference on Design, Simulation, Manufacturing: The Innovation Exchange*
- [53] *25th ICE/IEEE ITMC'2018*
- [54] *CoDIT'2018 - International Conference on Control, Decision and Information Technologies*
- [55] *ICOMECYME' 2018 - International Conference of Mechatronics and Cyber-Mixmechatronics*
- [56] *CoDIT'2019 - International Conference on Control, Decision and Information Technologies*
- [57] *InterPartner-2019: 1st Grabchenko's International Conference on Advanced Manufacturing Processes*
- [58] *MANUFACTURING'2019*
- [59] *ICOMECYME' 2019 - International Conference of Mechatronics and Cyber-Mixmechatronics*
- [60] *Regional HELIX 2019*
- [61] *DSMIE-2019: International Conference on Design, Simulation, Manufacturing*
- [62] *25th ICE/IEEE ITMC'2019*
- [63] *DSMIE-2020: International Conference on Design, Simulation, Manufacturing: The Innovation Exchange*
- [64] *ICOMECYME' 2020 - International Conference of Mechatronics and Cyber-Mixmechatronics*



[65] *ICIE'2020 – International Conference Innovation in Engineering*

[66] *InterPartner-2020: 2nd Grabchenko's International Conference on Advanced Manufacturing Processes*

Reviewer of International Scientific Conferences (2021 to present)

[67] *DSMIE-2021: International Conference on Design, Simulation, Manufacturing: The Innovation Exchange*

[68] *ICoRSE' 2021 - International Conference of Reliable Systems Engineering*

[69] *InterPartner-2021: 3rd Grabchenko's International Conference on Advanced Manufacturing Processes*

[70] *MANUFACTURING'2022*

[71] *ICIE'2022 – International Conference Innovation in Engineering*

[72] *DSMIE-2022: International Conference on Design, Simulation, Manufacturing: The Innovation Exchange*

[73] *InterPartner-2022: 4rth Grabchenko's International Conference on Advanced Manufacturing Processes*

[74] *ICoRSE' 2022 - International Conference of Reliable Systems Engineering*

CV - José Machado

25/11/2022

José Machado