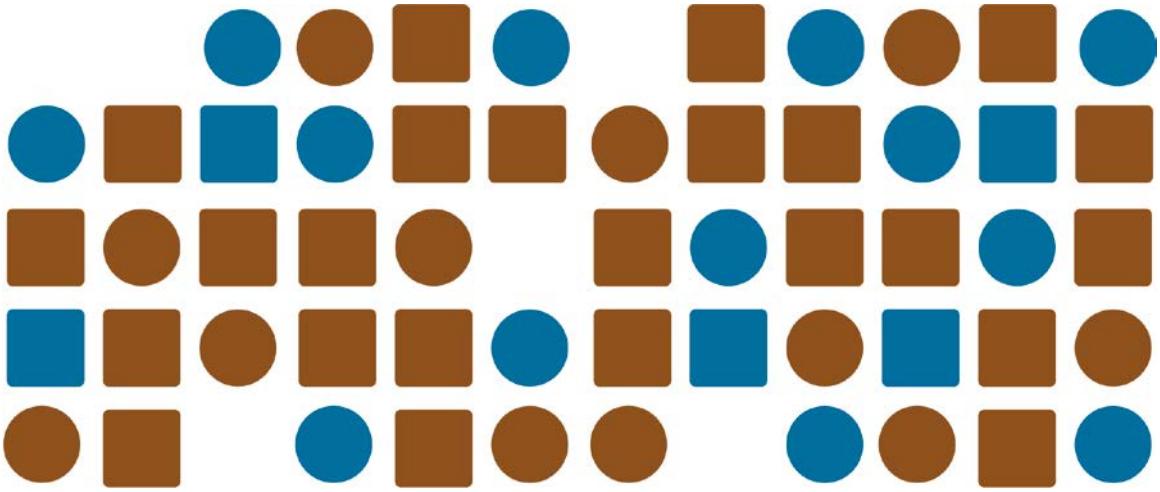


IOC

Institute of Industrial and Control Engineering

Activities Report 2018

UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Institute of Industrial and Control Engineering

Table of contents

1. Organisational structure and governing bodies

Management

Director	ROBERT GRIÑÓ CUBERO
Assistant director	ERNEST BENEDITO BENET
Secretary	JAN ROSELL GRATACÒS
Technical and Management Support Area - UTGAEIB	M. LOURDES DURANY VIDAL

The Board

Management	ROBERT GRIÑÓ CUBERO
Assistant director	ERNEST BENEDITO BENET
Secretary	JAN ROSELL GRATACÒS
Representative of the Control division	DOMINGO BIEL SOLÉ
Representative of the Supply chain and operations management (SCOM) division	AMAIA LUSA GARCÍA
Representative of the Robotics division	RAÚL SUÁREZ FEIJÓO
Technical and Management Support Area - UTGAEIB	M. LOURDES DURANY VIDAL
Representative of teaching and research staff who hold a PhD	LAIA FERRER MARTÍ (from September'18)
Representative of teaching and research staff who do not hold a PhD	Vacancy
Representative of administrative and service staff	LEOPOLD PALOMO AVELLANEDA

The Council

Arias Pujol, Antoni	
Batlle Arnau, Carles	
Basañez Villaluenga, Luís	
Bautista Valhondo, Joaquin	
Benedito Benet, Ernest	Assistant director
Biel Solé, Domingo	Representative of the Control division
Calleja Sanz, Gema	From 1st November 2018
Corominas Subias, Albert	
Domenech Lega, Bruno	
Dòria Cerezo, Arnau	
Durany Vidal, Ma Lourdes	Technical and Management Support Area UTGAEIB
Ferrer Llop, Josep	
Ferrer Martí, Laia	
Fossas Colet, Enric	
García Villoria, Alberto	
Griñó Cubero, Robert	Director
Lusa Garcia, Amaia	Representative of the Supply Chain and Operations Management-SCOM division
Martínez Costa, M. Carme	
Mas Casals, Orestes	
Mateo Doll, Manel	
Montaño Sarria, Andrés Felipe	
Olivella Nadal, Jordi	
Olm Miras, Josep Maria	
Palomo Avellaneda, Leopold	Representative of administrative and service staff
Pastor Moreno, Rafael	
Peña Pitarch, Esteban	
Rosell Gratacòs, Jan	Secretary
Suárez Feijóo, Raúl	Representative of the Robotics division

2. Staff

NAME		DIVISIONS/ SERVICE	CATEGORIES
Akbari	Aliakbar	ROB	BR
Arias Pujol	Antoni	CTL	TU
Arocas Pérez	José	CTL	BR
Basañez Villaluenga	Luis	ROB	EMERITUS
Batlle Arnau	Carles	CTL	TU
Bautista Valhondo	Joaquin	ROB	CU
Benedito Benet	Ernest	SCOM	AG
Biel Solé	Domingo	CTL	TU
Calleja Sanz	Gema	SCOM	AJ
Cardoner Parpal	Rafel	SSR	LT
Claret Robert	Josep Arnau	ROB	BR
Corominas Subias	Albert	SCOM	EMERITUS
Domènech Lega	Bruno	SCOM	LT
Dòria Cerezo	Arnau	CTL	AG
Ferrer Llop	Josep	CTL	CU
Ferrer Martí	Laia	SCOM	AG
Fossas Colet	Enric	CTL	CU
Galleguillos Pozo	Rosa	SCOM	BR
Garcia Hidalgo	Nèstor	ROB	BR
García Villoria	Alberto	SCOM	AG
Griñó Cubero	Robert	CTL	TU
Lusa García	Amaia	SCOM	TU
López González	Alejandro Esteban	SCOM	LT
Martínez Costa	Carme	SCOM	TU
Mas Casals	Orestes	ROB	TU
Mateo Doll	Manuel	SCOM	TU
Miró Valero	Enric	SSR	LT
Montaño Sarria	Andrés F.	ROB	BR

NAME		DIVISIONS/ SERVICE	CATEGORIES
Olivella Nadal	Jordi	SCOM	TU
Olm Miras	Josep M.	CTL	AG
Palomo Avellaneda	Leopold	SSR	LT
Pastor Moreno	Rafael	SCOM	CU
Peña Pitarch	Esteban	ROB	TU
Repecho Del Corral	Victor	CTL	LT
Rosell Gratacòs	Jan	ROB	TU
Rúa Costa	Carles	SCOM	PAL
Shafieijam	Amir	SCOM	BR
Sharafeldeen	Mohammed	ROB	BR
Suárez Feijóo	Raúl	ROB	DI
Taherimashhadi	Mehrsa	SCOM	BR
Ud Din	Muhayy	ROB	BR
Zaplana Agut	Isiah	ROB	BR

PhD Students

NAME		DIVISIONS/ SERVICE	CATEGORIES
Orellana Barcelo	Marcos	SCOM	EV
Portilla Rodriguez	Henry	ROB	EV
Rafiezadeh	Roya	CTL	EV
Rojas De Silva González	Fco. Abiud	ROB	EV

GLOSSARY

DIVISIONS/SERVICE	CTL	Division of Automatic Control
	SCOM	Division Supply Chain&Operations Management
	ROB	Division of Robotics
CATEGORY	AG/TU	Associate professor
	AJ/PAL/PL	Assistant professor
	BR	Research grantholder
	CU	Professor
	DI	Research supervisor
	LT	Technical staff

Visiting Staff

NAME		DIVISIONS	UNIVERSITY
Aldana López	Carlos Iván	ROB	Univ. de Guadalajara - Mèxic
Cobreces	Santiago	CTL	Universidad de Alcalá - Espanya
De Lellis	Pietro	CTL	Univ. Federico II – Itàlia
Del Puerto Flores	Dunstano	CTL	Univ. de Guadalajara - Mèxic
Nuño	Emmanuel	ROB	Univ. de Guadalajara - Mèxic
Roqueiro	Néstor	CTL	Univ. Federale Sta. Catarina - Brasil

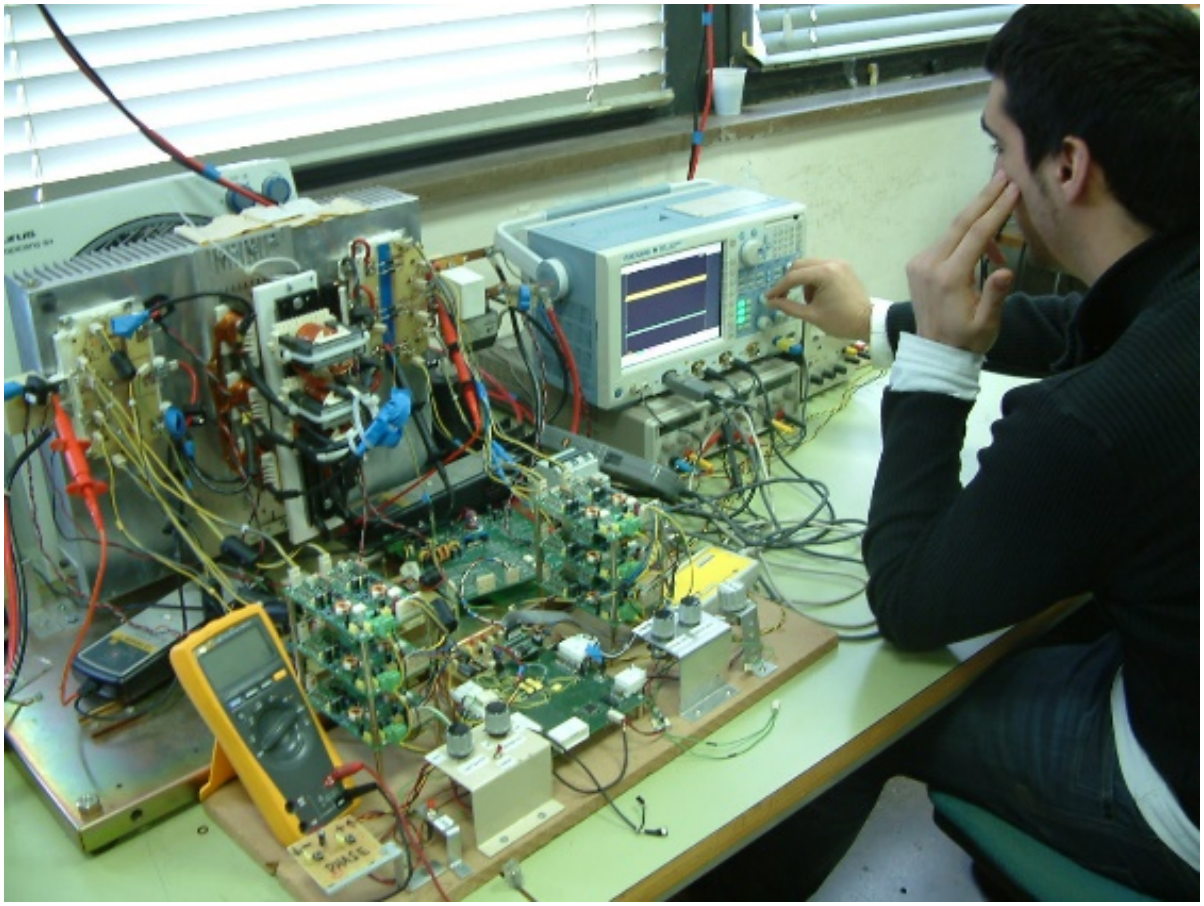
Incoming Students

NAME		DIVISIONS	UNIVERSITY
Bobtsov	Alexey	CTL	ITMO University - Rusian
Choudhary	Aryan Dilip	ROB	Banaras Hindu University - Varanasi

3. Divisions

Research at the IOC is conducted through three divisions:

Division of Automatic Control



The principal projects in this division are set in the following thematic areas: research area of Control Theory, research area of Energy Systems and research area of Automotive Applications.

Head: DOMINGO BIEL SOLÉ

Research fields:

- Advanced linear controllers (Resonant and repetitive control).
- Nonlinear control techniques (Passivity-based control, Adaptive control, Sliding mode control).
- Complex dynamical networks.
- Modelling and control of electronic power systems (generation and conversion).
- Control algorithms for an overall improvement of the vehicle performance.
- Autonomous and cooperative driving applications.

Division of Supply Chain & Operations Management

The Division of Supply Chain and Operations Management covers the design and management of the supply chain, namely production and logistic systems to generate goods and services, as well as the necessary techniques for solving efficiently its derived problems.

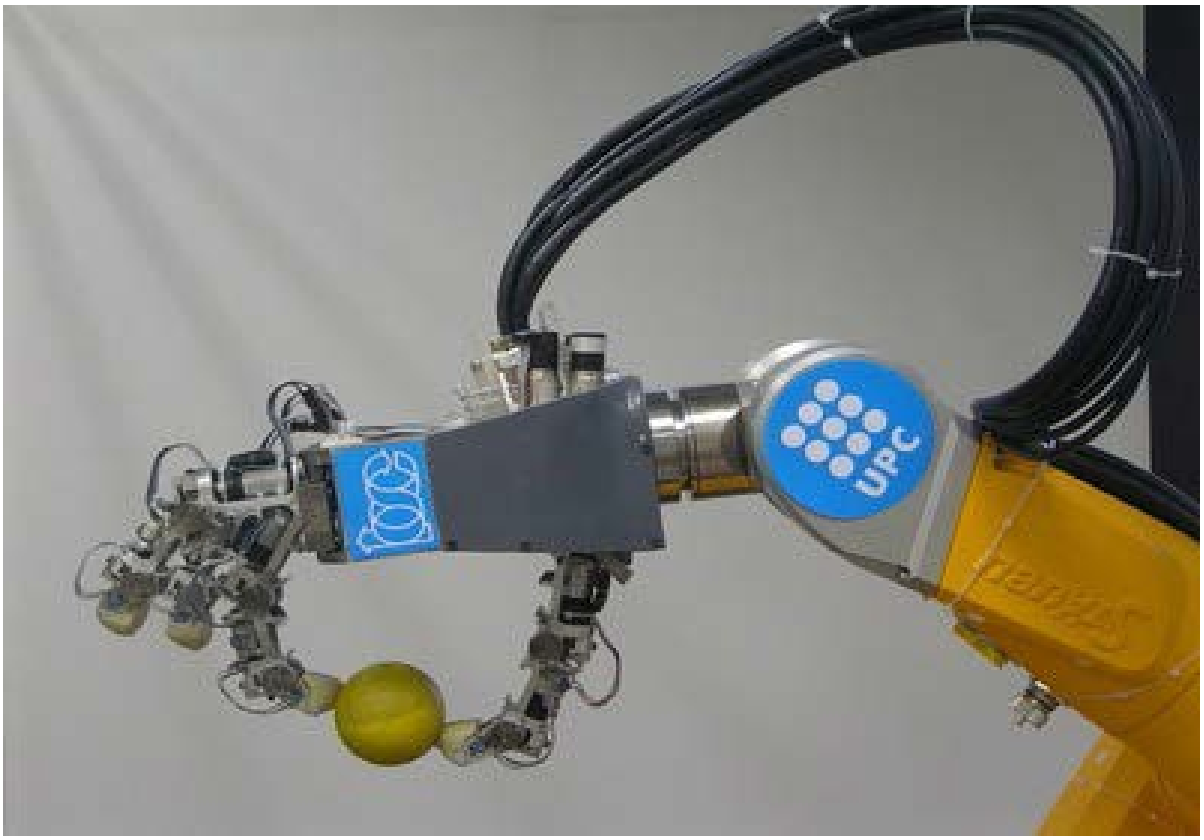
Head: AMAIA LUSA GARCÍA

Research lines:

- Supply Chain management and design
- Operations management
- Scheduling
- Assembly line design and balancing
- Working time planning and scheduling
- LEAN management
- Integrated aggregate planning
- Strategic capacity planning
- Urban logistics
- Sustainability in transportation and distribution
- Rural electrification with renewable energy and sustainable development in isolated areas

Research group linked with the Division: Supply Chain and Operations Management

Division of Robotics



The Division of Robotics of the IOC deals with basic and applied research on different aspects of robotics, either considering the robot as a single machine or integrated with other elements and devices within a robotized system. The research extends to different application fields in both the industrial and service areas.

Head: RAÚL SUÁREZ FEIJÓO

Main fields of activity

- Task and motion planning
- Grasping and dexterous manipulation
- Mobile manipulators
- Robot co-workers
- Human-robot interaction
- Teleoperation and haptic systems
- Control and programming of robots
- Perception systems and sensor integration
- Computer vision
- Simulation of robotized systems
- Industrial applications of robotics
- Service robots

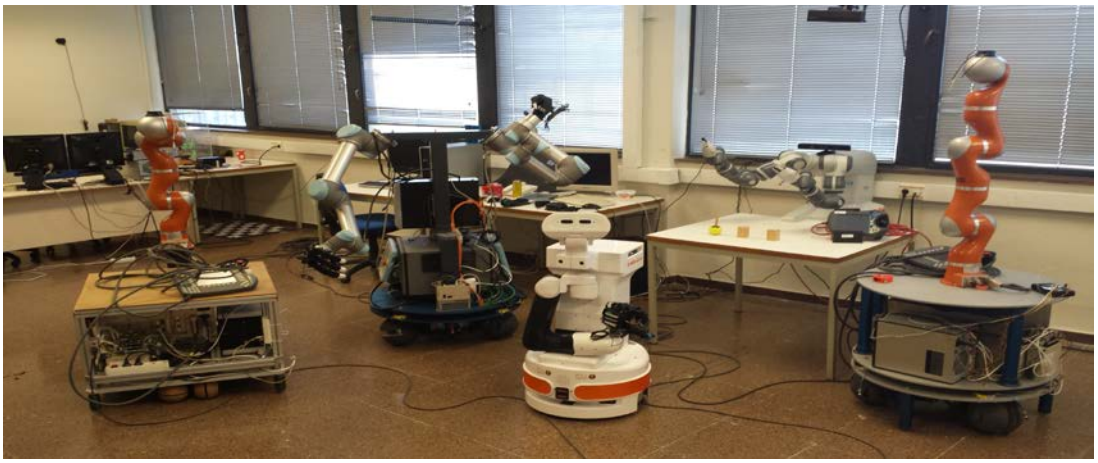
4. Facilities

The IOC is located on the 11th floor of building H of the Barcelona School of Industrial Engineering (ETSEIB).

The Institute has a robotics laboratory; a control and electronics laboratory; a remote control laboratory; a logistics laboratory; a computer network equipped with servers, workstations, PCs and software; a WiFi network; a specialised library with around 6,000 books and numerous journals; a classroom that can hold 25 people; and a meeting room with a digital blackboard and a projector with a capacity for 10 people.

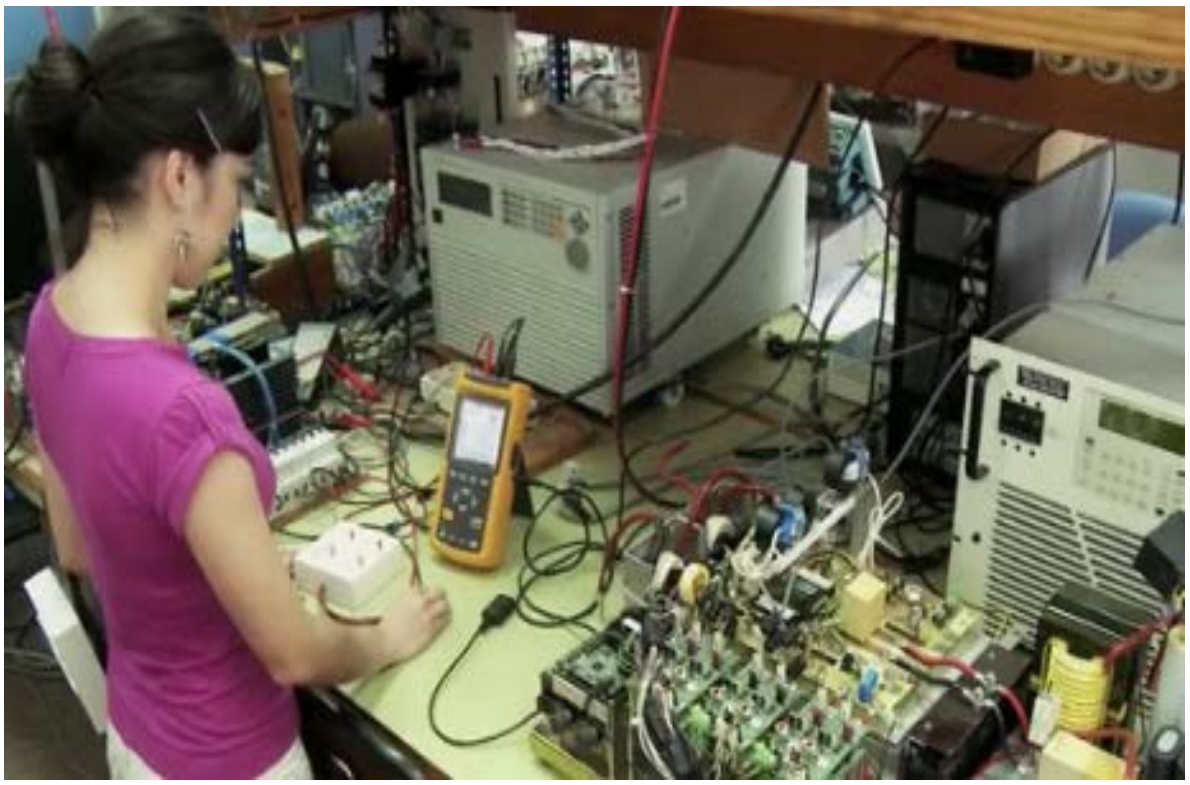
Equipping research laboratories

Robotics Laboratory



- 2 Stäubli TX90 robots, one is mounted on a motorised rail.
- 2 Kuka LWR robots with 7 axes, each one mounted on a mobile platform (BMM1 and BMM2).
- Several grippers and robotic hands: Schunk SAH, Schunk SDH and 3 Allegro hands.
- Haptic devices: Phantom Omni, Phantom Premium 1.5/6DOF and Phantom Premium 1.5/6DOF High force.
- Capture systems such as video cameras, trackers, force sensors, tactile sensors and 3D cameras.
- A 3D projector with the corresponding glasses.
- A bimanual robotic system composed of a two Universal UR5 arms.
- 1 YuMi ABB robot.
- Several servers, PCs, monitors.
- 2 virtual reality glasses Oculus Rift
- 1 Drone DJI Phantom 2 Vision+
- 1 Drone Parrot AR.Drone 2.0
- 1 Pal Robotics TIAGo

Control and Electronic Laboratory



- Oscilloscopes
- Analyzers and signal generators
- Sources and power loads (e.g. sources ac, dc and programmable power load)
- Measuring instrumentation (the multimeter, differential probes, current probes)
- Emulators microprocessors and digital signal processors
- Computers
- The hardware and software for the design and implementation of electronic circuits
- Tools and equipment essential to the realization of small-scale mechanical assemblies
- Thermographic camera

Logistic Laboratory

- 16 computers: 12 which are designed to make computing experiments; the other 4 are reserved for doctoral, masters and designers
- 1 server for more computationally intensive problems
- 16 SAIs
- 7 screens
- 3 switches for keyboards/screens
- Specialized software: IBM ILOG CPLEX Optimization Studio 12.7

5. University masters

Master's Degree in Automatic Control and Robotics

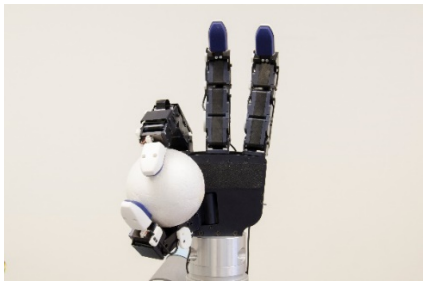
The Master's degree in Automatic Control and Robotics is an official degree adapted to European Higher Education Area (EHEA) offered by the Technical University of Catalonia (UPC) since the academic course 2006-07. The Masters is promoted by the Department of Systems Engineering, Automation and Industrial Informatics (ESAII) and the Institute for Systems and Control Engineering (IOC). It is a research oriented master in the area of Automatic Control and Robotics.

The UPC is considered the first Spanish university in the discipline of Automatic Control and Robotics in the 5th edition (2014) of I-UGR Ranquing over the period 2009-2013. Selected by the Catalunya-La Pedrera Foundation for it's scholarships programme for Masters of Excellence

6. Doctoral degrees

The Institute of Industrial and Control Engineering (IOC) was set up for the purposes of conducting research and training researchers to a high level of specialisation. It is actively involved in teaching master and doctoral degrees.

Doctoral programme in Automatic Control, Robotics and Computer Vision (ARV)



The Doctoral programme in Automatic Control, Robotics and Computer Vision (ARV) emerged in 2006 from the fusion of the Doctoral programme in Advanced Automation and Robotics of the Institute of Industrial and Control Engineering (IOC) and of the Doctoral programme in Control, Vision and Robotics of the Automatic Control Department (ESAII), both with Quality Mention of the Spanish Ministry of Education (MEC). The fusion was fruit of an increasing thematic affinity and convergence between both programmes, and was carried out taking advantage of the opportunity to adapt the programme to the new syllabus of the Official Postgraduate Programmes in the framework of the European Higher Education Area.

The ARV Doctoral programme achieved from the beginning the Quality Mention, from the academic year 2007-2008 until 2010-2011. Then this award was replaced by the Excellence Mention by the Spanish Ministery of Education, with code MEE2011-0453. This mention was awarded from the academic years 2011-2012 until 2013-2014, and the programme ARV always obtained it.

Units involved in the program are:

- Automatic Control Department (ESAII)
- Institute of Industrial and Control Engineering (IOC)

Doctoral Committee for the doctoral degree in Automatic Control, Robotics and Computer Vision (ARV)

- Dr. Suárez Feijóo, Raúl (Coordinator PhD ARV)
- Dra. Alícia Casals Gelpí (before course 2017-18 Dr. Antonio Benito Martínez Velasco)
- Dr. Andreu Català Mallofré (before course 2017-18 Dr. Cecilio Angulo Bahon)
- Dr. Robert Griñó Cubero
- Dr. Rafael Pastor Moreno
- Dr. Vicenç Puig Cayuela
- Dr. Jan Rosell Gratacòs
- Dr. Alberto Sanfeliu Cortés

Doctoral data 2018

A. Coordination program	**RAÚL SUÁREZ FEIJÓO**
B. Number of students	**91** (registration 2018/2019)

Date	12/02/2018
Title	**Vision Based Sensor Substitution in Robotic Assisted Surgery**
Author	MARBÁN GONZÁLEZ, ARTURO
Thesis Director Thesis Codirector	CASALS GELPI, ALICIA FERNÁNDEZ RUZAFA, JOSÉ
Qualification	Excellent

Date	23/03/2018
Title	**Robust Leak Localization in Water Distribution Networks Using Machine Learning Techniques**
Author	SOLDEVILA COMA, ADRIÀ
Thesis Director Thesis Codirector	PUIG CAYUELA, VICENÇ TORNIL SIN, SEBASTIAN
Qualification	Excellent Cum Laude

Date	30/05/2018
Title	**Contribution to reliable control of dynamic systems**
Author	SALAZAR CORTÉS, JEAN CARLO
Thesis Director Thesis Codirector	NEJJARI AKHI-ELARAB, FATIHA SARRATE ESTRUCH, RAMON
Qualification	Notable

Date	19/06/2018
Title	**A template based approach for human action recognition**
Author	CARMONA LEYVA, JOSÉ MARÍA
Thesis Director	CLIMENT VILARÓ, JUAN
Qualification	Excellent

Date	14/09/2018
Title	**Solving Robotic Kinematic Problems: Singularities and Inverse Kinematics**
Author	ZAPLANA AGUT, ISIAH
Thesis Director	BASAÑEZ VILLALUENGA, LUIS
Qualification	Excellent Cum Laude

Date	27/09/2018
Title	**Fault detection and fault tolerant control in wind turbines**
Author	TUTIVÉN GÁLVEZ, CHRISTIAN
Thesis Director Thesis Codirector	RODELLAR BENEDE, JOSÉ JULIÁN VIDAL SEGUI, YOLANDA
Qualification	Excellent

Date	22/10/2018
Title	**Advances in State Estimation, Diagnosis and Control of Complex Systems**
Author	WANG, YE
Thesis Director Thesis Codirector	CEMBRANO GENNARI, M. GABRIELA PUIG CAYUELA, VICENÇ
Qualification	Excellent Cum Laude

Date	06/11/2018
Title	**Sensorimotor exploration: constraint awareness and social reinforcement in early vocal development**
Author	ACEVEDO VALLE, JUAN MANUEL
Thesis Director Thesis Codirector	ANGULO BAHON, CECILIO
Qualification	Excellent Cum Laude

Date	14/11/2018
Title	**A Contribution to the Incorporation of Sociability and Creativity Skills to Computers and Robots**
Author	RAYA GINER, CRISTOBAL
Thesis Director Thesis Codirector	RUIZ VEGAS, FRANCISCO ANGULO BAHON, CECILIO
Qualification	Excellent

Date	04/12/2018
Title	**Physics-based Motion Planning for Grasping and Manipulation**
Author	UD DIN, MUHAY
Thesis Director Thesis Codirector	PEÑA PITARCH, ESTEBAN ROSELL GRATACÒS, JOAN
Qualification	Excellent

Doctoral programme Supply chain and operations management (SCOM)

The aim of the doctoral program SCOM (Supply Chain & Operations Management) is to promote and develop research into the supply chain and thus contribute to improve the economic and environmental efficiency of all kind of organizations.

Currently, the concept of supply chain, which includes and exceeds operations management and logistics, articulates the research on supply, production, distribution and recovery. Although, strictly speaking, the concept of supply chain management includes operations management, the fact of joining them in the name of the PhD program indicates which is the aspect of the SC management in which the program focuses most.

SCOM begins in 2016 with the participation of the academic staff of the Department of Management (OE) and the Institute of Industrial Engineering of Control (IOC) has recognized extensive teaching, research and thesis experience in the monitoring program. Moreover, the participation of these personnel in conferences and research projects and publications in high impact journals, show their own experience of research on the item of SCOM.

Doctoral Committee for the doctoral degree:

- Dr Joaquin Bautista Valhondo
- Dr Albert Corominas Subias
- Dr Laia Ferrer Martí
- Dr Amaia Lusa Garcia
- Dr Rafael Pastor Moreno
- Dr Imma Ribas Vila

Doctoral data 2018

A.	**Coordination program**	**AMAIA LUSA GARCIA**
B.	**Number of students**	**7** (registration 2018/2019)

7. Projects and agreements

Public funding projects

Head researcher	BAUTISTA VALHONDO, JOAQUÍN
Title	Organització de la Producció en Tallers Híbrids
Funding institution	Agència de Gestió d'Ajuts Universitaris i de Recerca (Agaur)
Reference	SGR 314. OPE-PROTHIUS
Start-up date	01/01/2017
Completion date	31/12/2019

Head researcher	BAUTISTA VALHONDO, JOAQUÍN
Title	Factor humano e incertidumbre sobre la secuenciación y el equilibrado en líneas de modelos mixtos
Funding institution	Ministerio de Economía, Industria y Competitividad
Reference	TIN2014-57497-P
Start-up date	01/01/2015
Completion date	31/12/2018

Head researcher	DOMENECH LEGA, BRUNO
Title	Metodologies i aplicatius per a l'elaboració de plans d'electrificació rural i l'avaluació de projectes energètics a l'Amèrica Llatina II
Funding institution	Centre de Cooperació per al Desenvolupament , UPC
Reference	
Start-up date	22/03/2018
Completion date	31/03/2019

Summary

Up to now, we have worked on the development of a methodology to optimise the design of rural electrification projects in developing countries, through decision support models and tools. The methodology minimises project costs, combining wind and photovoltaic technologies, as well as microgrids and individual supplies, while considering social aspects. This project extends research aiming to consider, not only projects, but also regional-scale electrification plans, defining the order in which proceed with communities and the best electrification option. Moreover, we work on the evaluation of case studies identifying key issues and strengths to define good practices that favour sustainability of future projects.

Head researcher	FERRER MARTÍ, LAIA
Title	Planificació de l'electrificació rural amb microxarxes i energies renovables
Funding institution	Agència de Gestió d'Ajuts Universitaris i de Recerca (Agaur)
Reference	
Start-up date	01/06/2018
Completion date	28/02/2019

Head researcher	DÒRIA-CEREZO, ARNAU / GRIÑÓ CUBERO, ROBERT
Title	Advanced control of on-board dc multibus systems in vehicles.
Funding institution	AGENCIA ESTATAL DE INVESTIGACION
Reference	DPI2017-85404-P
Start-up date	01/01/2018
Completion date	31/12/2021

Head researcher	LUSA GARCIA, AMAIA
Title	Gender Equality in Engineering through Communication and Commitment
Funding institution	European Commission
Reference	H2020-741128-GEECCO
Start-up date	01/05/2017
Completion date	31/12/2021

Summary

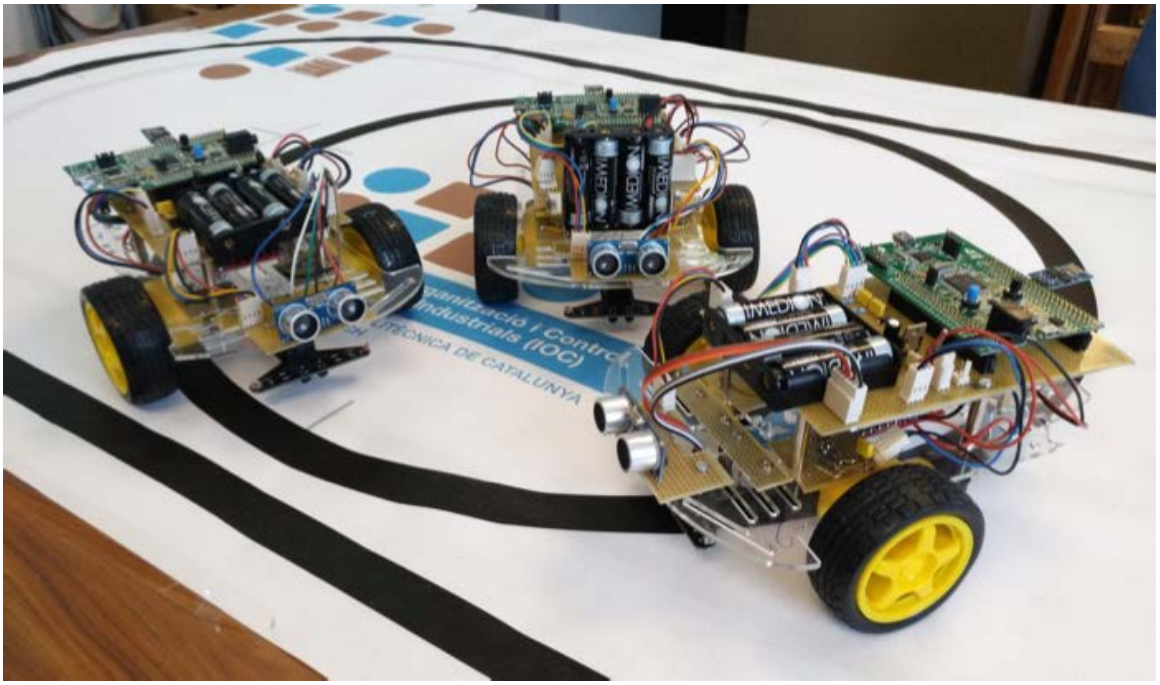
The underrepresentation of women continues to characterise the STEM field (Science, Technology, Engineering, and Mathematics). Whereas in Europe approximately half of the PhD students are female, only 21% of PhD graduates in computing and 25% of PhD graduates in engineering are women. Given the relevance of technologies in our societies an adequate participation of all genders in the STEM field is of outstanding importance. With technologies, we shape structures that have long-term impacts on how people live, work, communicate, travel, and consume. Therefore, the gender dimension in research and innovation, their contexts and their outcomes, is significant. GEECCO is an EU funded project, which brings together a consortium that is characterised by the focus on the STEM field. GEECCO will increase the number of Research Performing Organizations (RPOs) and Research Funding Organizations (RFOs) that start to implement gender equality plans (GEP) pursuing the 3 objectives mentioned in the challenge, namely: (1) Removing barriers to the recruitment, retention and career progression of female researchers; (2) Addressing gender imbalances in decision making processes; (3) Strengthening the gender dimension in research programmes. GEECCO will be a step forward to a new way of establishing tailor-made GEPs in RPOs and implementing the gender dimension in research funding programmes. An effective and efficient dissemination and exploitation strategy has the aim of making the GEECCO approach accessible to other actors.

Head researcher	OLM MIRAS, JOSEP M.
Title	Control Avançat de Sistemes d'Energia.
Funding institution	AGAUR. Agència de Gestió d'Ajuts Universitaris i de Recerca.
Reference	2017 SGR 872
Start-up date	01/01/2017
Completion date	31/12/2020

Summary

This project is aimed at recognizing and funding the research activities of the group Advanced Control of Energy Systems (ACES) by the Generalitat de Catalunya. Already funded in the calls SGR 2005-2008, SGR 2009-2013, and SGR 2014-2016, ACES is a multidisciplinary constituted by engineers, physicists and mathematicians belonging to Electrical Engineering, Electronics Engineering, Automatic Control, and Mathematics Departments of UPC.

The research interests of ACES are mainly focused on the modeling and control of complex systems, as well as on its application to problems related to the electrical grid (generation, conditioning, storing, and managing of electrical energy) and automotive systems. On the one side, the theoretical working lines encompass: internal model principle-based linear control; nonlinear control, including adaptive, sliding, energy-based, and complex networks control; order reduction in large-scale models; nonsmooth systems, and differentially flat systems. On the other side, the applied works deal with power electronics converters, electrical machines, power networks, control of automotive electrical components, vehicle dynamics, traffic flow analysis, cooperative driving, and fuel cells.



Head researcher	ROSELL GRATACÒS, JAN / SUÁREZ FEIJÓO, RAÚL
Title	Robots autónomos diestros como co-trabajadores con operadores humanos.
Funding institution	Ministerio de Economía, Indústria y Competitividad.
Reference	DPI2016-80077-R
Start-up date	30/12/2016
Completion date	29/12/2020

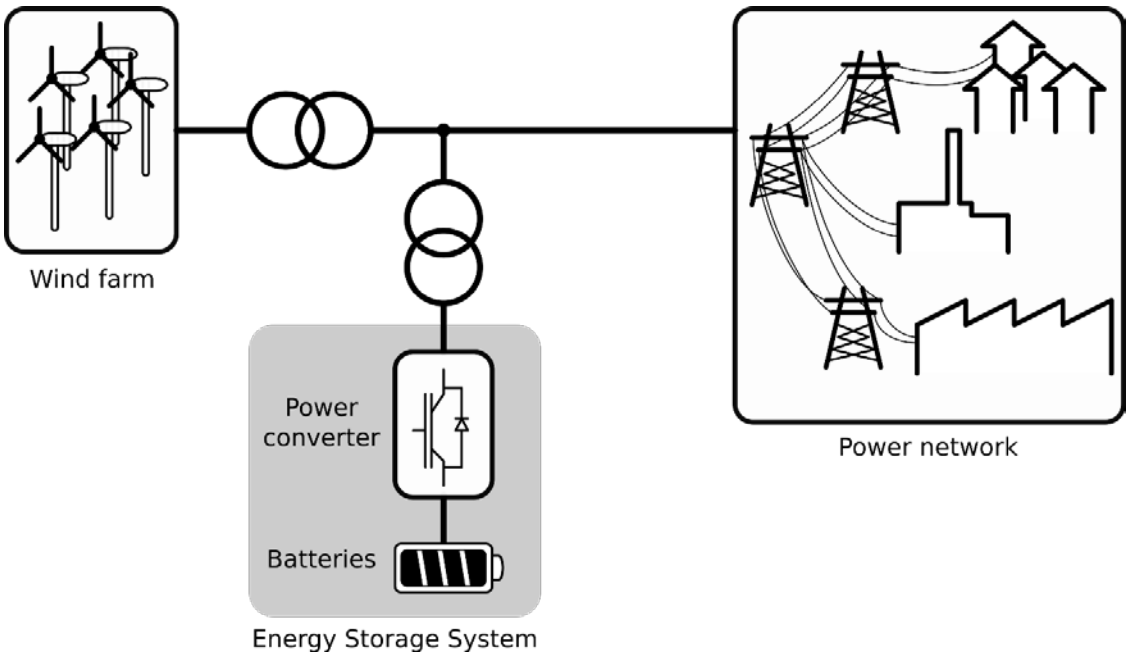
Summary

The robotics field-of-application is constantly growing as the technological advances allow new capabilities and an increment and strength of the already existing ones. Among the new applications, it is worth mentioning, due to their potential significance from the productive and social point of view, those in which the robots work jointly with the humans, originating the concept of "coworker robots". In this type of applications, the robots require some special features. On the one hand, they must have certain level of autonomy and capacity of decision, as their role is no longer doing repetitive tasks in the classical way but on the contrary, they must adapt themselves with swiftness to changing conditions, especially to those produced by the humans in the same workspace. This adaptation implies an interaction with the human operators that constraint the robot movements and actions with the aim of avoiding potential injuries to humans, but without affecting the robot efficiency. In order for the coworker robots to be useful for the human operators, it is necessary that they have an important level of dexterity so that they can perform a number of different actions usually required in the human activities. In this context, the project aims for solutions that increment the performance of the coworker robots to allow their permanent establishment in our society, and, at the same time, facilitate their acceptance by the humans. With this aim, the project will deal with the topics mentioned above, developing algorithms and procedures that make easy the efficient cooperation between coworker robots and humans. Specifically, contributions are expected in relevant topics, as: the increment of the robot capability to autonomously manage the required tasks and the movements to execute them, using ontologies to represent the knowledge; the increment of the dexterous and bimanual manipulation capabilities, monitoring the movements to prevent potential failures; and the improvement of the interaction with the human operators regarding reactive, cooperative and exchange-objects movements, considering approaches based on demonstrations or on teleoperation. All the theoretical developments will be checked and validated experimentally using the systems specifically prepared for it in the project. Besides, as usual in the developments of the group, the mentioned problems will be addressed with the intention of providing general solutions, valid for both industrial and service robotics, taking care of the productive and social components.

Head researcher	BIEL SOLE, DOMINGO
Title	Eines per a la gestionabilitat de les plantes de generació elèctrica amb fonts renovables
Funding institution	ACC10
Reference	RIS3CAT COMRDI 15-1-0043-02
Start-up date	01/03/2016
Completion date	15/10/2018

Summary

Evaluation study of the integration of an available large batteries storage system to a wind farm; adaptation of the Scada system for the management, monitoring and control of the installation; control and optimization of the operation of the installation; adaptation of protection systems for this type of installation; adaptation of the communications to the protocol IEC61850; adaptation of sensors and meters for this type of installation; optimization of the relation between the installation and the rest of the electrical system; analysis and proposals to ensure a good closure of the life cycle of this type of facilities both from the environmental and social point of view.



Head researcher	OLIVELLA NADAL, JORDI
Title	La modularitat dels conjunts de muntatge com a sistema de millora de la productivitat.
Funding institution	Agència de Gestió d'Ajuts Universitaris i de Recerca.
Reference	2015 DI 045
Start-up date	16/02/2016
Completion date	15/02/2019

Head researcher	FERRER MARTÍ, LAIA
Title	Optimización de sistemas de electrificación con energías renovables y microrredes
Funding institution	Ministerio de Economía, Industria y Competitividad.
Reference	ENE2015-67253-R
Start-up date	01/01/2016
Completion date	30/06/2019

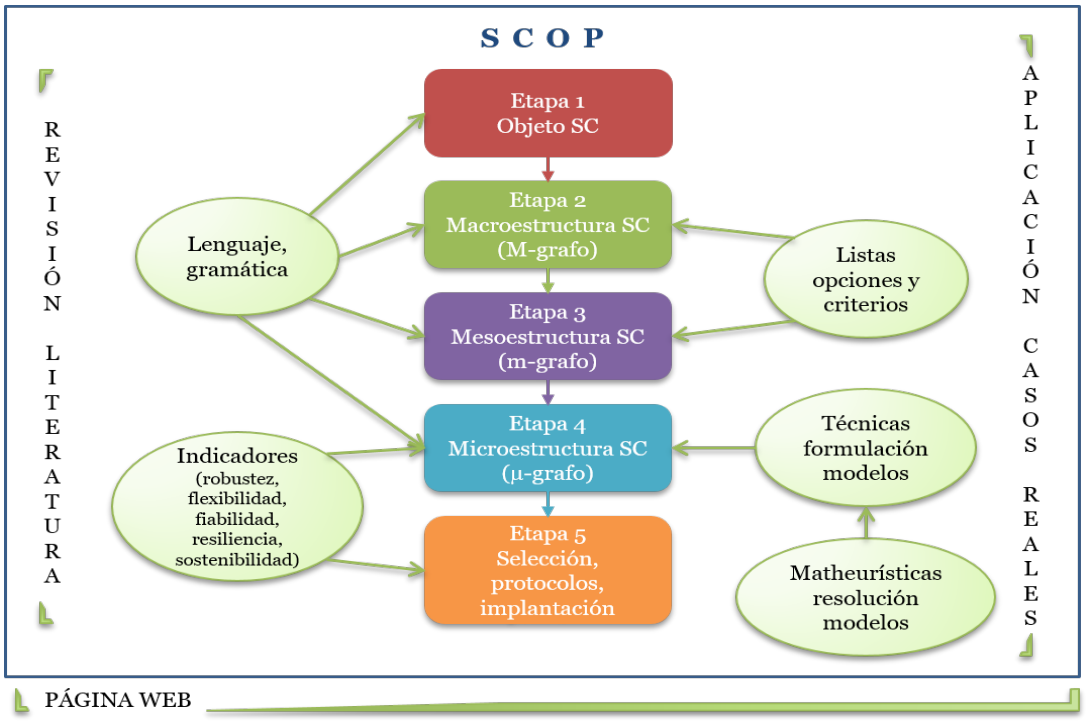
Summary

Electrification systems based on the use of renewable energy sources have proved adequate to provide electricity to isolated communities autonomously and also produce electricity in a sustainable and respectful way with the environment. Nowadays, models and design tools in the literature to design these systems do not consider some of its features and/or key constraints. In the previous project ENE2010 - 15509 (Rural Electrification with Solar and Wind Energy) some of these issues were addressed, and models to design wind and/or solar systems were developed, considering local microgrids. As a continuation and expansion of this project, and to increase its applicability, the overall objective of this proposal, OSEERyM, is to optimize the design of rural electrification systems based on the use of wind, solar and also microhydro energy and bioenergy, with inter-community distribuction grids at a regional scale. In addition, a management system will be design to be in charge of the operation, mantainance and technical and economical sustainability of the project.

Head researcher	LUSA GARCIA, AMAIA
Title	Conceptos, instrumentos, modelos y algoritmos para el diseño de la supply chain.
Funding institution	Ministerio de Economía, Industria y Competitividad.
Reference	DPI2015-67740-P
Start-up date	01/01/2016
Completion date	30/09/2020

Summary

The purpose of this project is to develop tools and concepts for an efficient and correct design of supply chains (SC), under the SCOP method (Supply Chain Outline Process). The design of the SC consists of determining what elements are to be present in the SC and the relationships between them and includes decisions that are highly irreversible once implemented, and with associated significant costs and long-term implications. SCOP comprises five stages: the first one involves the definition of the object of the SC, the analysis of the environment and the formalization of objectives (the decisions made at this stage –such as a lean or an agile SC- determine the subsequent stages); the second, third and fourth respectively correspond to the definitions of the structure of the SC at a macro level (large blocks that comprise it), meso level (product structure and activities taking place in the SC; for each activity an option must be chosen from those available) and micro (includes defining and optimizing, by means of mathematical programming, the relations between the facilities in which the activities can potentially be carried out) level; in the fifth stage the configuration of the SC is selected, the protocols to apply in case of incidents are defined and the implementation of the SC is done. The proposed elements to be developed in this project are closely related, and are inserted into the framework defined in SCOP and help developing and strengthening the method.



Agreements with companies

Head researcher	ROSELL GRATACÒS, JAN
Title	Conveni cotitularitat IDIBELL
Funding institution	FUND.PRIV.INST.INV.BIOMED.BELLVITGE
Reference	
Start-up date	29/02/2012
Completion date	04/07/2032

Head researcher	GARCÍA-VILLORIA, ALBERTO
Title	Eina de planificació de la producció a mitjà i llarg termini de l'empresa IQOXE
Funding institution	INDUSTRIAS QUIMICAS DEL OXIDO DE ET.
Reference	
Start-up date	01/10/2018
Completion date	31/12/2018

Head researcher	BENEDITO BENET, ERNEST
Title	Estudi del procés d'abastiment de peces d'una planta de
Funding institution	F. EE AUTOMATION IBERICA, SL
Reference	
Start-up date	01/06/2018
Completion date	31/12/2018

Head researcher	OLIVELLA NADAL, JORDI
Title	Informe sobre el grau d'integració del centre de treball de FCC a la Zona Franca de Barcelona
Funding institution	FOMENTO DE CONSTRUC.Y CONTRATAS,S.A.
Reference	
Start-up date	24/05/2018
Completion date	30/12/2018

Head researcher	SUÁREZ FEIJÓO, RAÚL
Title	Implementación de un sistema robótico antopomorfo colaborativo para aplicaciones audiovisuales
Funding institution	CREATIVA 360 S0.
Reference	
Start-up date	01/05/2018
Completion date	30/06/2018

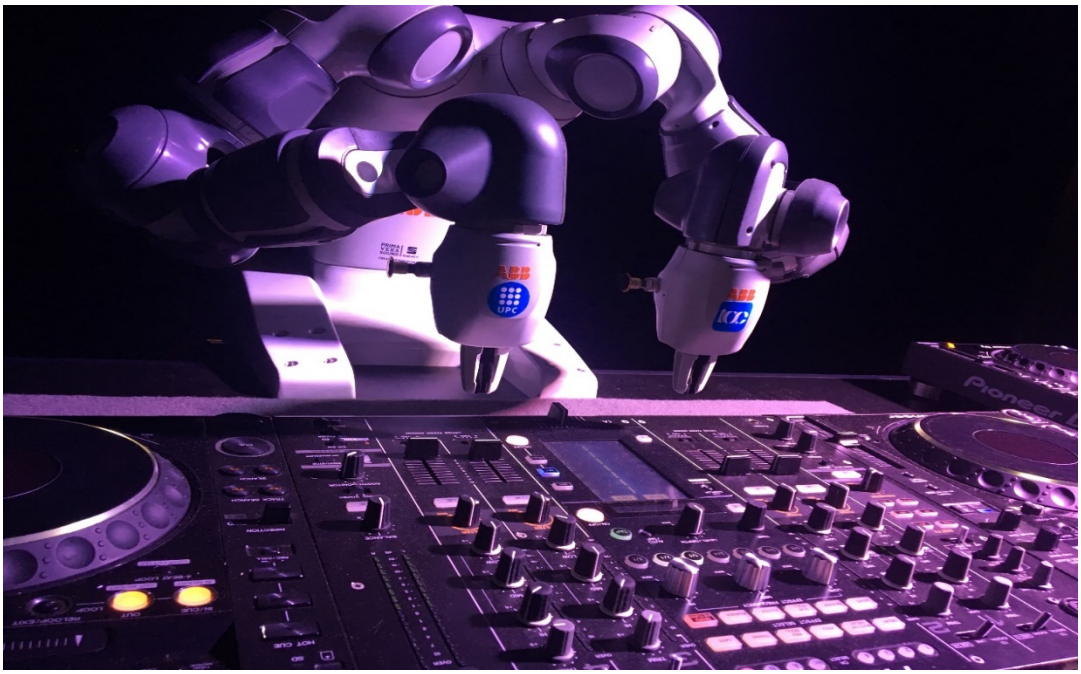
Summary

“Robot Disc-Jockey” at Primavera Sound in Barcelona

The Robotics Division of the Institute of Organization and Control of Industrial Systems (IOC) of the Universitat Politècnica de Catalunya (UPC) has carried out the installation of a “Disc-Jockey robot” in the SEAT Village space, within the framework of the festival Primavera Sound held in Barcelona in June 2018 with the attendance of more than 200,000 people.

Following the proposal of the organizers of combining art and technology in an avant-garde corner of the festival, a bi-arm robot with an anthropomorphic structure was used to act as a Disc-Jockey (DJ) "playing" the favorite indie songs of the festival-goers. The public could choose the songs they wanted to hear from the best tracks of the artists who had performed at the festival for the past 18 years. The chosen themes enter in a queue and, for its execution, the robot acted as a DJ, emulating the actions that a professional DJ performs to mix the songs and making arm movements to encourage the public during the execution of each theme.

The robotics group of the IOC had the advice of a professional DJ, and, from her demonstrations, the movements of the robot were generated to operate a professional mixing console, including the rotation of two deck wheels, the manipulation of the sound controls and the switching of audio channels. The show caused great impact among the public that was pleasantly surprised by the robot's performance.



Head researcher	BIEL SOLE, DOMINGO
Title	Disseny d'algoritmes de control en el procès de soldadura
Funding institution	JBC SOLDERING S.L.
Reference	
Start-up date	19/02/2018
Completion date	31/12/2018

Head researcher	GRIÑÓ CUBERO, ROBERT
Title	Donació/'Dynamic Systems/'
Funding institution	THE MATHWORKS, S.L.
Reference	
Start-up date	01/01/2018
Completion date	31/07/2019

Head researcher	ARIAS PUJOL, ANTONI
Title	Assess d'algororament el disseny i posterior implementació en microprocessadors ismes digitals pel control d'altres prestacions de motors pas a pas.
Funding institution	MICROPAP ENGINEERING SL
Reference	C10722
Start-up date	31/10/2016
Completion date	31/10/2019

Summary

The main goal is the design and further implementation in digital microprocessors of state-of-the-art algorithms to improve the overall performance of the well-known stepper motors. On a second step, the use of a position transducer (typically and encoder) will be considered in order to develop field oriented control and therefore industrially compete with their counterparts (permanent magnet synchronous machines) in order to gain market.
It is also expected to publish the scientific results in prestigious international conferences and high impact factor journals.

Head researcher	GRIÑÓ CUBERO, ROBERT
Title	Diseño y control de un convertidor cc-ca trifásico, aislado galvánicamente, paralelable y de potencia nominal 6 Kva.
Funding institution	PREMIUM, S.A.
Reference	C10599
Start-up date	06/05/2016
Completion date	30/09/2019

Head researcher	OLIVELLA NADAL, JORDI
Title	Desarrollo de tareas sobre aspectos relacionados con la organización y evaluación del funcionamiento de los sistemas universitarios y educativos
Funding institution	FUNDACIÓ CYD
Reference	C10446
Start-up date	15/09/2015
Completion date	30/09/2018

Head researcher	PEÑA PITARCH, ESTEBAN
Title	Aparell per mesurar la força del sol pelvic.
Funding institution	FUNDACIÓ ALTHAIA.
Reference	P201130449
Start-up date	25/03/2011
Completion date	25/03/2031

8. Publications

Journals articles

1. Acosta, J. Á.; Doria-Cerezo, A.; Fossas, E. Stabilisation of state-and-input constrained nonlinear systems via diffeomorphisms: A Sontag's formula approach with an actual application. *International journal of robust and nonlinear control.* Year: 2018. Volume: 28. Number: 13. Pp.: 4032 ~ 4044. Link to text: https://onlinelibrary.wiley.com/doi/abs/10.1002/rnc.4119. DOI:https://doi.org/10.1002/rnc.4119.

2. Akbari, A.; Lagriffoul, F.; Rosell, J. Combined heuristic task and motion planning for bi-manual robots. *Autonomous robots.* Year: 2018. Pp.: 1 ~ 16. Link to text: https://link.springer.com/article/10.1007/s10514-018-9817-3. DOI:https://doi.org/10.1007/s10514-018-9817-3.

3. Aldana López, Carlos Iván; Cruz, E.; Nuño, E.; Basañez, L. Control in the operational space of bilateral teleoperators with time-delays and without velocity measurements¿. *IFAC-PapersOnLine.* Year: 2018. Volume: 51. Number: 13. Pp.: 204 ~ 209. Link to text: https://www.sciencedirect.com/science/article/pii/S2405896318310309. DOI:https://doi.org/10.1016/j.ifacol.2018.07.278.

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5. Anticoi, H.; Guasch, E.; Hamid, S.; Oliva, J.; Alfonso, P.; García-Vallès, M.; Bascompta, M.; Sanmiquel, L.; Escobet, T.; Argelaguet, M.; Escobet, A.; de Felipe, J.J.; Parcerisa, D.; Peña-Pitarch, E. Breakage function for HPGR: mineral and mechanical characterization of tantalum and tungsten ores. *Minerals.* Year: 2018. Volume: 8. Number: 4. Pp.: 1 ~ 15. Convention Funding project: Increasing yield on Tungsten and Tantalum ore production by means of advanced and flexible control on crushing, milling and separation process. Link to text: http://www.mdpi.com/2075-163X/8/4/170. DOI: https://doi.org/10.3390/min8040170.

6. Bautista, J.; Alfaro, R. A case study at the Nissan Barcelona factory to minimize the ergonomic risk and its standard deviation in a mixed-model assembly line. *Progress in Artificial Intelligence. Year: 2018. Volume: 7. Number: 4. Pgs: 327-338. Convention Funding project: Human factor and uncertainty on the sequencing and balancing mixed model lines. Number of citations: 1.Link tol text: https://link.springer.com/article/10.1007%2Fs13748-018-0153-9. DOI:* https://doi.org/10.1007/s13748-018-0153-9.

7. Bautista, J.; Alfaro, R. An expert system to minimize operational costs in mixed-model sequencing problems with activity factor. *Expert systems with applications.* Year: 2018. Volume: 104. Number: 2018. Pp.: 185 ~ 201. *Convention Funding project: Human factor and uncertainty on the sequencing and balancing mixed model lines. Number of citations: 1. Link to text: http://doi.org/10.1016/j.eswa.2018.03.031.*
DOI: https//doi.org/10.1016/j.eswa.2018.03.031.

8. Bautista, J.; Alfaro, R. Mixed integer linear programming models for minimizing ergonomic risk dispersion in an assembly line at the Nissan Barcelona factory. *Dirección y organización. Revista de ingeniería de organización.* Year: 2018. Volume: 65. Number: 2018. Pp.: 72 ~ 89. Convention Funding project: Human factor and uncertainty on the sequencing and balancing mixed model lines. Link to text: *http://www.revistadyo.es/index.php/dyo/article/view/529.*

9. Bautista, J.; Alfaro, R. Mixed integer linear programming models for Flow Shop Scheduling with a demand plan of job types. *Central european journal of operations research.* Year: 2018. Pp.: 1 ~ 19. Convention Funding project: Human factor and uncertainty on the sequencing and balancing mixed model lines. Link to text: https://link.springer.com/article/10.1007%2Fs10100-018-0553-8#citeas. DOI:https://doi.org/10.1007/s10100-018-

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DOI:https://doi.org/10.1007/s13748-018-0144-x.

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https://www.tandfonline.com/doi/abs/10.1080/00207543.2017.1412526.
DOI:https://doi.org/10.1080/00207543.2017.1421526.

13. Chica, M.; Bautista, J.; Armas, J. de. Benefits of robust multiobjective optimization for flexible automotive assembly line balancing. *Flexible Services and Manufacturing Journal.* Year: 2018. Volume: First Online. Pp.: 1~29. Convention Funding project: Human factor and uncertainty on the sequencing and balancing mixed model lines. Number of citations: 3. Link to text: https://link.springer.com/article/10.1007%2Fs10696-018-9309-y#citeas.
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15. Compta, Albert; Ferrer, J.; Peña, M. Perturbed marked reduced forms of invariant subspaces. *Linear algebra and its applications.* Year: 2018. Volume: 559. Pp.: 194 ~ 226. Convention Funding project: RED TEMÁTICA DE ÁLGEBRA LINEAL, ANÁLISIS MATRICIAL Y APLICACIONES. Link to text: https://www.sciencedirect.com/science/article/abs/pii/S0024379518304427.

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24. Llort, N.; Lusa, A.; Martinez, M.; Mateo, M. A decision support system and a mathematical model for strategic workforce planning in consultancies. *Flexible Services and Manufacturing Journal.* Year: 2018. Volume 31. Number: 2. Pp.: 497 ~ 523. Link to text: https://link.springer.com/article/10.1007/s10696-018-9321-2. DOI:https://doi.org/10.1007/s10696-018-9321-2.

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Conference publications

1. Bautista, J.; Alfaro, R. A GRASP algorithm to optimize Operational Costs and Regularity of Production in mixed- model sequencing problems with forced interruption of operations. XVIII Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA 2018): Granada, Spain: october 23-26, 2018: proceedings. Place of publication: Granada, Espanya. Editorial: Universidad de Granada. Year: 2018. Pp.: 613 ~ 613. ISBN/ISSN: 978-84-09-05643-9. Link to text: https://sci2s.ugr.es/caepia18/proceedings/proceedings.php.

2. Bautista, J.; Chica, M.; Cordón, O.; Damas, S. Equilibrado robusto de una línea de motores mixtos con atributos temporales, espaciales y ergonómicos. XVIII Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA 2018): Granada, Spain: october 23-26, 2018: proceedings. Place of publication: Granada. Espanya. Editorial: Universidad de Granada. Year: 2018. Pp.: 626 ~ 631. ISBN/ISSN: 978-84-09-05643-9. Link to text: https://sci2s.ugr.es/caepia18/proceedings/proceedings.php

3. Benedito, E.; Doria-Cerezo, A.; Kunusch, C.; Olm, Josep M. Traffic flow-oriented design and analysis of an adaptive cruise control system. 2018 IEEE International Symposium on Circuits and Systems (ISCAS): proceedings: 27-30 May 2018: Florence, Italy. Place of publication: Florència. Year: 2018. ISBN/ISSN: 978-1-5386-4881-0. Link to text: https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8334884.

4. Benedito, E.; Doria-Cerezo, A. Influence of cooperative-controlled driving in the traffic flow. 2018 IEEE International Conference on Industrial Technology (ICIT): Lyon, France: February 19-22, 2018: proceedings. Place of publication: Lyon, France. Editorial: Institute of Electrical and Electronics Engineers (IEEE). Year: 2018. Pp.: 1795 ~ 1800. ISBN/ISSN: 978-1-5386-4053-1. Link to text: https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8342303.

5. Biel, D.; Scherpen, J. Voltage regulation with power curtailment in a single-phase grid-connected PV inverter. 2018 IEEE International Symposium on Circuits and Systems (ISCAS): proceedings: 27-30 May 2018: Florence, Italy. Place of publication: Florència. Editorial: Institute of Electrical and Electronics Engineers (IEEE). Year: 2018. Pp.: 1 ~ 5. ISBN/ISSN: 978-1-5386-4881-0. Link to text: https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8334884.

6. Calleja, G.; Vila, M.; Torrez, H.; Sauleda, A. A flipped classroom experience in management learning. EDULEARN18 proceedings: 10th International Conference on Education and New Learning Technologies: Mallorca, Spain, 2-4 July, 2018. Place of publication: Palma de Mallorca, Espanya. Year: 2018. Pp.: 7081 ~ 7089. ISBN/ISSN: 978-84-09-02709-5.

7. Calleja, G.; Asenjo, J.; Olivella, J. Aprendizajes activos para el emprendimiento: Experiencias en el contexto universitario catalán. 3er Congrés d'Economia i Empresa de Catalunya. El capital humà de Catalunya: dotació i reptes. Barcelona, Juny 2017 - Maig 2018. Place of publication: Barcelona, Espanya. Year: 2018. Pp.: 501 ~ 524. ISBN/ISSN: 978-84-09-04052-0.

8. Domenech, B.; Ferrer-Martí, L.; Hidalgo, G.; Pastor, Rafael. Diseño de proyectos de electrificación rural para comunidades indígenas de la Región Amazónica de Ecuador. Actas del 11no. Congreso Internacional de Educación Superior. Place of publication: La Habana, Cuba. Year: 2018. Pp.: 83 ~ 83.

9. Dominguez, M.; Kowalski, L.; Monge, O.; Olm, Josep M.; Navarrete, E.; Llobet, E.; Pons, J. Understanding noise- shaping in sigma-delta controls of surface potential for MOX gas sensors. Proceedings of the 2018 International Symposium on Nonlinear Theory and its Applications (NOLTA 2018): Palau de Congressos de Tarragona,Tarragona, Spain: September 2-6, 2018. Place of publication: Tarragona, Espanya. Editorial: Institute of Electronics, Information and Communications Engineers (IEICE). Year: 2018. Pp.: 275 ~ 278.

10. Doria-Cerezo, A.; Olm, Josep M.; Benedito, E.; Biel, D. A variable structure-based algorithm for adaptive cruise control. 2018 15th International Workshop on Variable Structure Systems (VSS): Graz, Austria: July 9-11, proceedings. Place of publication: Graz, Austria. Editorial: Institute of Electrical and Electronics Engineers (IEEE). Year: 2018. Pp.: 37 ~ 42. ISBN/ISSN: 978-1-5386-6439-1. Link to text: https://ieeexplore.ieee.org/document/8460313.

11. Ferrer-Martí, L.; Hidalgo, G.; Domenech, B.; Pastor, Rafael. Design of electrification projects for communities in the Amazon Region of Ecuador. EWG-ORD Workshop: OR for sustainable development: establishing policy and measuring goal attainment: Madrid (Spain), 5-6 July 2018: a EURO 2018 satellite event. Place of publication: Madrid, Espanya. Year: 2018. Pp.: 1 ~ 6. Link to text: https://www.nkd-group.com/EWGORD- 2018/EWGORD%202018%20Proceedings.pdf.

12. García, N.; Suarez, R.; Rosell, J. Planning hand-arm grasping motions with human-like appearance. 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS): Towards a robotic society: October, 1-5, 2018, Madrid, Spain, Madrid Municipal Conference Centre. Place of publication: Madrid, Espanya. Editorial: Institute of Electrical and Electronics Engineers (IEEE). Year: 2018. Pp.: 3517 ~ 3522. ISBN/ISSN: 978-1-5386-8094-0. Link to text: https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8574473.

13. Ghezzi, M.; Doria-Cerezo, A.; Olm, Josep M. Yaw moment MRAC with optimal torque vectoring for a four in- wheel motor EV. 2018 IEEE International Conference on Industrial Technology (ICIT): Lyon, France: February 19- 22, 2018: proceedings. Place of publication: Lyon, France. Editorial: Institute of Electrical and Electronics Engineers (IEEE). Year: 2018. Pp.: 1820 ~ 1825. ISBN/ISSN: 978-1-5386-4053-1. Link to text: https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8342303.

14. Kingeski, L.; Olivella, J. Estudantes internacionais e o ciclo económico: o caso dos estudantes latino-americanos na Espanha. Congresso Internacional de Administraçao. Place of publication: Ponta Grossa, Brazil. Year: 2018. ISBN/ISSN: 1983-7089.

15. Kingeski, L.; Olivella, J. International academic mobility: the attraction factors of Brazilians students in Spain. 4 th International Conference on Higher Education Advances (HEAd'18). Place of publication: València, Espanya. Editorial: Universidad Politécnica de Valencia. Year: 2018. Pp.: 1403 ~ 1411. ISBN/ISSN: 978-84-9048-690-0. Link to text: http://ocs.editorial.upv.es/index.php/HEAD/HEAD18.

16. Lerma, E.; Costa-Castelló, R.; Griño, R.; Sanchis, C. Implementación de controladores en Arduino mediante Simulink. Proceedings of the XXXIX Jornadas de Automática. Place of publication: Badajoz, Espanya. Year: 2018.

17. Mateo, M.; Anich, N. Supply chain risk management in the pharmaceutical sector. ILS 2018 - Information Systems, Logistics and Supply Chain, Proceedings. Year: 2018. Pp.: 35 ~ 43.

18. Montaño, A.; Suarez, R. Manipulación de objetos desconocidos analizando localmente su forma para optimizar las fuerzas de prensión. Actas de las XXXIX Jornadas de Automática. Place of publication: Badajoz, Espanya. Year: 2018. Pp.: 276 ~ 282. ISBN/ISSN: 978-84-09-04460-3.

19. Montaño, A.; Suarez, R. Improving grasping forces during the manipulation of unknown objects. 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS): Towards a robotic society: October, 1-5, 2018, Madrid, Spain, Madrid Municipal Conference Centre. Place of publication: Madrid, Espanya. Editorial: Institute of Electrical and Electronics Engineers (IEEE). Year: 2018. Pp.: 3490 ~ 3495. ISBN/ISSN: 978-1-5386-8094-0. Link to text: https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8574473.

20. Moya, I.; Bautista, J.; Chica, M.; Damas, S.; Cordón, O. Metaheurísticas constructivas para Car Sequencing Problem con flotas de vehículos especiales. XVIII Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA 2018): Granada, Spain: october 23-26, 2018: proceedings. Place of publication: Granada, Espanya. Editorial: Universidad de Granada. Year: 2018. Pp.: 614 ~ 619. ISBN/ISSN: 978-84-09-05643-9. Link to text: https://sci2s.ugr.es/caepia18/proceedings/proceedings.php.

21. Peña-Pitarch, E.; Ticó, N.; A. Al Omar; Alcelay, J. I. Comparison finger angles after stroke vs healthy hand. AHFE 9th International Conference on Applied Human Factors and Ergonomics, July 21-25, 2018, Orlando, Florida, USA. Place of publication: Orlando, FL, United States of America. Year: 2018. Pp.: 1 ~ 1.

22. Quintana, D.; Sanz, V.; Costa-Castelló, R.; Batlle, C. Uso de pilas de combustible PEM de alta temperatura en una aplicación de cogeneración para aplicaciones de confort. Proceedings of the XXXIX Jornadas de Automática. Place of publication: Badajoz, Espanya. Year: 2018. Pp.: 584 ~ 590.

23. Repecho, V.; Biel, D. Rotor position estimation at zero speed in a sliding mode controlled PMSM. 2018 15th International Workshop on Variable Structure Systems (VSS): Graz, Austria: July 9-11, proceedings. Place of publication: Graz, Austria. Editorial: Institute of Electrical and Electronics Engineers (IEEE). Year: 2018. Pp.: 102 ~ 107. ISBN/ISSN: 978-1-5386-6439-1. Link to text: https://ieeexplore.ieee.org/document/8460313.

24. Ribas, I.; Lusa, A.; Mateo, M.; Corominas, A. Outline for distribution network design. actas 12th International Conference on Industrial Engineering and Industrial Management XXII Congreso de Ingeniería de Organización. Place of publication: Girona, Espanya. Year: 2018.

25. Rosell, J.; Suarez, R.; Garcia, N. Modeling human-likeness in approaching motions of dual-arm autonomous robots. Proceedings of the 2018 IEEE International Conference on Simulation, Modeling, and Programming for Autonomous Robots. Place of publication: Brisbane, Australia. Editorial: Institute of Electrical and Electronics Engineers (IEEE). Year: 2018. Pp.: 91 ~ 96. ISBN/ISSN: 978-1-5386-5973-1.

26. Sarr, A.; Bahri, I.; Diallo, D.; Arias, A. Génératrice à réluctance variable connectée au réseau alternatif monophasé pour une application éolienne. Proceedings of the SYMPOSIUM DE GENIE ELECTRIQUE. Year: 2018. Pp.: 1 ~ 6.

Books

1. Olivella, J. *Technology evaluation for entrepreneurs.* Editorial: Bookboon.com. Year: 2018. ISBN: 978-87-403- 2360-3.

Book chapters

1. Bautista, J.; Alfaro, R. A GRASP algorithm to optimize operational costs and regularity of production in mixed- model sequencing problems with forced interruption of operations. Advances in Artificial Intelligence. CAEPIA 2018. Lecture Notes in Computer Science, vol 11160. Springer, Cham. Editorial: Springer. Year: 2018. Pp.: 319 ~ 329. ISBN: 978-3-030-00374-6.

2. Bautista, J.; Alfaro, R.; Batalla, C. Minimizing lost-work costs in a mixed-model assembly line. Closing the gap between practice and research in industrial engineering. Editorial: Springer. Year: 2018. Pp.: 213 ~ 221. ISBN: 978-3-319-58408-9.

3. Bautista, J.; Batalla, C.; Alfaro, R. Comparative models for minimizing ergonomic rirsk in assembly LInes. Closing the gap between practice and research in industrial engineering. Editorial: Springer. Year: 2018. Pp.: 223 ~ 230. ISBN: 978-3-319-58408-9.

4. Bautista, J.; Fortuny-Santos, J. Time-based conditions for synchronized procurement in Douki Seisan. Closing the gap between practice and research in industrial engineering. Editorial: Springer. Year: 2018. Pp.: 231 ~ 238. ISBN: 978-3-319-58408-9.

5. Beßler, D.; Pomarlan, M.; Akbari, A.; Ud Din, M.; Diab, M.; Rosell, J.; Bateman, J.; Beetz, M. Assembly planning in cluttered environments through heterogeneous reasoning. KI 2018: Advances in Artificial Intelligence: 41st German Conference on AI, Berlin, Germany, September 24–28, 2018, Proceedings. Editorial: Springer. Year: 2018. Pp.: 201 ~ 214. ISBN: 978-3-030-00111-7.

6. Calleja, G.; Olivella, J.; Vinyals, J. Project management. Micro MBA: Theory and practice. Editorial: De Gruyter. Year: 2018. Pp.: 51 ~ 83. ISBN: 978-3-11-048190-7.

7. Calleja, G.; Vila, M.; Torrez, H.; Sauleda, A. Enhancing engagement in management learning: a flipped classroom experience. EDULEARN18 Proceedings. 10th International Conference on Education and New Learning Technologies. Mallorca, Spain. 2-4 July, 2018. Editorial: International Association of Technology, Education and Development (IATED). Year: 2018. Pp.: 7081 ~ 7089. ISBN: 978-84-09-02709-5.

8. Calleja, G.; Asenjo, J.; Olivella, J. Aprendizajes activos para el emprendimiento: Experiencias en el contexto universitario catalán. El capital humà de Catalunya: Dotació i reptes. Editorial: Col·legi d'Economistes de Catalunya. Year: 2018. Pp.: 501 ~ 524. ISBN: 978-84-09-04052-0.

9. Kingeski, L.; Olivella, J. Estudantes internacionais e o ciclo econômico: o caso dos estudantes latino-americanos na Espanha. Tópicos em Administração - Vol. 2. Editorial: Darly Fernando Andrade. Year: 2018. Pp.: 155 ~ 163. ISBN: 978-85-93729-59-1.

10. Olivella, J.; Bordonau, J.; Calleja, G.; Velo, E. How do energy engineers of the future think. Analysis of master students' proposals. Renewable Energies. Editorial: Springer. Year: 2018. Pp.: 33 ~ 49. ISBN: 978-3-319-45362-0.

9. Seminars from external researches

1. Professor Vladimir Filaretov
   Far Eastern Federal University. Russia
   "Development of the control systems for robots (underwater vehicles and multilink manipulators)"
   October 8, 2018

2. Professor Sanchoy Das
   New Jersey Institute of Technology. USA
   "Fast Fulfillment: The Machine that Changed Retailing"
   April 5, 2018 and April 6, 2018

10. Prizes and awards

1. Rewarded: Bautista, J.; Mateo, M.; De La Torre, R. Name of award (edition): BEST PAPER AWARD in the area of Operations Research, Modelling and Simulation. XXII CIO 2018 - 12th ICIEIM: "Assignment of Volunteers in a sport event. Case Restricted Fitness by Cut-off mark". Year: 2018. Grounds/work acknowledged: Artículo: Assignment of Volunteers in a sport event. Case Restricted Fitness by Cut-off mark. Date of resolution: 12/07/2018. Result: First prize. Awarding body: Asociación para el Desarrollo de Ingeniería de Organización.

2. Rewarded: Garcia, N.; Suarez, R.; Rosell, J. Name of award (edition): ICROS Award for IROS2018 Best Application Paper. Year: 2018. Grounds/work acknowledged: N. García, R. Suárez and J. Rosell. "Planning Hand-Arm Grasping Motions with Human-Like Appearance". IEEE/RSJ International Conference on Intelligence Robots and Systems (IROS 2018), Madrid, Spain, October 1-5, 2018. Date of resolution: 04/10/2018. Result: Finalist. Awarding body: Institute of Control, Robotics and Systems.

3. Rewarded: Moya, I.; Bautista, J.; Chica, M.; Damas, S.; Cordón, O. Name of award (edition): Premio al mejor trabajo presentado en XIII Congreso Español en Metaheurísticas y Algoritmos Evolutivos y Bioinspirados (XIII MAEB 2018): "Metaheurísticas constructivas para Car Sequencing Problem con Flotas de vehículos especiales". Year: 2018. Grounds/work acknowledged: Mejor trabajo. Date of resolution: 26/10/2018. Result: First prize. Awarding body: Asociación Española para la Inteligencia Artificial.

11. Extracurricular activities

Executive en Lean Supply Chain Management. Direcció d'Operacions I Logística - Master's degree. Face-to-face.

Academic management: Rúa Costa, Carles

Presentation

16th year

Traditional functions in companies such as production, distribution, planning or logistics have evolved with the change in economic cycles. The productive function has adapted to the new needs of markets, incorporating new trends such as Lean Manufacturing¿ and embracing quality control, training or staff motivation as part of its tasks. Likewise, logistics have also changed, and the concept Integrated Logistics has come to comprise all the value chain between the customer and the supplier, as well as the flow of information and materials.

Integrated management of the distribution chain, production and supplies is now known as Supply Chain Management. The emergence of logistics has forced governments to work on improving and updating infrastructures roads, railway, ports and airports and this, together with staff training and research and innovation as key aspects to increase the level of competitiveness in the business fabric.

This Masters Degree aims to be unique and exclusive, a reference point for all professionals aiming to develop their career in the areas of logistics, distribution, supplies and, in general, Year aspect relating to the supply chain management and design. To make this possible, the course has included prestigious professionals from the main European universities (CRANFIELD) and leading schools in specific areas (European Short Sea Shipping School). For this Masters we also have the collaboration of managers from the leading logistics companies in Spain, who will transmit their experiences to the students.

AIMS

- TO PUT INTO QUESTION THE CURRENT ORGANISATIONAL AND MANAGEMENT SYSTEMS IN THE LOGISTICS CHAIN.
- TO STRATEGICALLY ANALYSE, ORIENT AND DEFINE THE ENTIRE LOGISTICS CHAIN AND ALL OF ITS DIFFERENT SECTORS, IMPLEMENTING AND ADAPTING NEW TECHNOLOGIES TO BOOST COMPANIES LOGISTICS SERVICES.
- TO DESIGN AND IMPLEMENT NEW SYSTEMS AND METHODOLOGIES TO IMPROVE THE MANAGEMENT OF THE RELATIONSHIPS AMONG PROVIDERS, BUSINESSES, OPERATORS AND END CLIENTS.
- TO EFFECTIVELY MANAGE PERSONNEL TEAMS THAT NEED TO COLLABORATE WITH THE CULTURAL CHANGE IMPLIED IN IMPLANTING AN INTEGRATED STRATEGY OF SUPPLY CHAIN MANAGEMENT

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http://www.talent.upc.edu/cat/professionals/presentacio/codi/203200/executive-lean-supply-chain-management-direccio-operacions-logistica/