



Jorge Emilio Júlvez Bueno

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Jorge Emilio Júlvez Bueno

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Current professional situation

Employing entity: University of Zaragoza **Type of entity:** University
Department: Computer Science and Systems Engineering, School of Engineering and Architecture
Professional category: Full Professor
City employing entity: Zaragoza, Spain
Start date: 15/02/2023
Type of contract: Civil servant **Dedication regime:** Full time
Primary (UNESCO code): 120300 - Computer Sciences; 120305 - Automated manufacturing systems; 120710 - Network flow; 240300 - Biochemistry
Identify key words: Artificial intelligence; Petri networks; Hibrid systems; Control of biosystems and bioprocessings

Previous positions and activities

	Employing entity	Professional category	Start date
1	Universidad de Zaragoza	Associate Professor	01/09/2018
2	University of Cambridge	Research associate	01/10/2016
3	University of Cambridge	Marie Curie fellow	01/10/2014
4	Universidad de Zaragoza	Associate Professor	01/01/2012
5	Universidad de Zaragoza	Assistant professor	21/09/2010



	Employing entity	Professional category	Start date
6	Universidad de Zaragoza	Teaching assistant (PhD)	29/09/2008
7	Universitat Politècnica de Catalunya	PostDoc "Juan de la Cierva"	14/11/2005
8	Universidad de Zaragoza	Teaching assistant	18/02/2005
9	Universidad de Zaragoza	PhD Student	01/01/2001
10	Electronic Data Systems (EDS)	Systems Engineer	02/08/1999

- 1** **Employing entity:** Universidad de Zaragoza
Professional category: Associate Professor
Start-End date: 01/09/2018 - 01/03/2023
Type of entity: University
Duration: 2 years
- 2** **Employing entity:** University of Cambridge
Professional category: Research associate
Start-End date: 01/10/2016 - 30/09/2018
Type of entity: University
Duration: 2 years
- 3** **Employing entity:** University of Cambridge
Professional category: Marie Curie fellow
Start-End date: 01/10/2014 - 30/09/2016
Type of entity: University
Duration: 2 years
- 4** **Employing entity:** Universidad de Zaragoza
Professional category: Associate Professor
Start-End date: 01/01/2012 - 31/12/2014
Type of entity: University
Duration: 2 years
- 5** **Employing entity:** Universidad de Zaragoza
Professional category: Assistant professor
Start-End date: 21/09/2010 - 12/06/2012
Type of entity: University
Duration: 1 year - 8 months - 20 days
- 6** **Employing entity:** Universidad de Zaragoza
Professional category: Teaching assistant (PhD)
Start-End date: 29/09/2008 - 28/09/2010
Type of entity: University
Duration: 1 year - 11 months - 20 days
- 7** **Employing entity:** Universitat Politècnica de Catalunya
Professional category: PostDoc "Juan de la Cierva"
Start-End date: 14/11/2005 - 30/09/2008
Type of entity: University
Duration: 3 years
- 8** **Employing entity:** Universidad de Zaragoza
Professional category: Teaching assistant
Start-End date: 18/02/2005 - 30/09/2005
Type of entity: University
Duration: 7 months - 2 days
- 9** **Employing entity:** Universidad de Zaragoza
Professional category: PhD Student
Start-End date: 01/01/2001 - 31/12/2003
Type of entity: University
Duration: 3 years
- 10** **Employing entity:** Electronic Data Systems (EDS)
Professional category: Systems Engineer
Start-End date: 02/08/1999 - 31/12/2000
Type of entity: Business
Duration: 1 year - 6 months



Education

University education

1st and 2nd cycle studies and pre-Bologna degrees

University degree: Higher degree

Name of qualification: Ingeniero en Informática

Degree awarding entity: Universidad de Zaragoza **Type of entity:** University

Date of qualification: 16/09/1998

Doctorates

Doctorate programme: Ingeniería de sistemas e informática

Degree awarding entity: Universidad de Zaragoza **Type of entity:** University

City degree awarding entity: Zaragoza, Aragon, Spain

Date of degree: 11/04/2005

DEA awarding entity: Universidad de Zaragoza

Date DEA was awarded: 12/03/2003

Date of certificate: 11/04/2005

Thesis title: Algebraic Techniques for the Analysis and Control of Continuous Petri nets

Thesis director: Manuel Silva Suárez

Thesis co-director: Laura Recalde Frisón

Obtained qualification: Sobresaliente cum Laude

Attended advanced, improvement and innovative teacher training and new technology courses and seminars focused on improving teaching

- 1 Title of course/seminar:** Discurso académico oral en inglés
Goals of the course/seminar: Proporcionar técnicas para producir un discurso académico oral en inglés
Organising entity: Universidad de Zaragoza **Type of entity:** University
Duration in hours: 20 hours
End date: 06/06/2011
- 2 Title of course/seminar:** Coaching estratégico
Goals of the course/seminar: Conocer herramientas para la transformación y mejora continua profesional
Organising entity: Universidad de Zaragoza **Type of entity:** University
Duration in hours: 8 hours
End date: 24/02/2011
- 3 Title of course/seminar:** Técnicas para potenciar la comunicación y participación de los alumnos en el aula
Goals of the course/seminar: Presentar métodos efectivos de comunicación con los alumnos
Organising entity: Universidad de Zaragoza **Type of entity:** University
Duration in hours: 9 hours
End date: 21/02/2011



- 4** **Title of course/seminar:** Aprender a fijarse metas: nuevos estilos motivacionales
Goals of the course/seminar: Realizar propuestas para mejorar el clima motivacional del aula
Organising entity: Universidad de Zaragoza **Type of entity:** University
Duration in hours: 3 hours
End date: 19/01/2010
- 5** **Title of course/seminar:** Metodología participativa en la Universidad. Estrategias de participación del alumnado
Goals of the course/seminar: Desarrollar y aprender estrategias que promuevan la participación del alumnado
Organising entity: Universidad de Zaragoza **Type of entity:** University
Duration in hours: 6 hours
End date: 15/01/2010
- 6** **Title of course/seminar:** La adquisición de competencias de lectura y escritura de textos académicos
Goals of the course/seminar: Analizar dificultades comunes de los estudiantes en la lectura de textos académicos
Organising entity: Universidad de Zaragoza **Type of entity:** University
Duration in hours: 4 hours
End date: 11/01/2010
- 7** **Title of course/seminar:** Docencia e investigación en ingeniería
Goals of the course/seminar: Investigar e innovar sobre la práctica docente
Organising entity: Universidad de Zaragoza **Type of entity:** University
Duration in hours: 2 hours
End date: 11/02/2009
- 8** **Title of course/seminar:** El valor del profesor y el sentido de enseñar
Goals of the course/seminar: Conocer el sentido y función formadora del proceso educativo
Organising entity: Universidad de Zaragoza **Type of entity:** University
Duration in hours: 2 hours
End date: 20/01/2009
- 9** **Title of course/seminar:** La investigación en el aula
Goals of the course/seminar: Experimentar y enriquecer el repertorio didáctico
Organising entity: Universidad de Zaragoza **Type of entity:** University
Duration in hours: 4 hours
End date: 16/01/2009

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
German		A1	A1	A1	B1
Polish		A1	C1	C1	B1
French		C1	A1	A1	B1
Italian		C1	C1	C1	A1
English		C2	C2	C2	C2



Teaching experience

General teaching experience

- 1** **Type of teaching:** Official teaching
Name of the course: Lenguajes, Gramáticas y Autómatas
Type of programme: Engineering **Type of teaching:** Laboratory work
University degree: Ingeniería Informática
End date: 15/09/2011
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 168
Entity: Universidad de Zaragoza **Type of entity:** University
- 2** **Type of teaching:** Official teaching
Name of the course: Redes de Petri estocásticas: técnicas de análisis
Type of programme: Doctorate **Type of teaching:** In person theory
University degree: Ingeniería Informática
End date: 15/09/2010
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 10
Entity: Universidad de Zaragoza **Type of entity:** University
- 3** **Type of teaching:** Official teaching
Name of the course: Estructuras de datos y algoritmos
Type of programme: Engineering **Type of teaching:** Laboratory work
University degree: Ingeniería Informática
End date: 15/09/2009
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 60
Entity: Universidad de Zaragoza **Type of entity:** University
- 4** **Type of teaching:** Official teaching
Name of the course: Programación concurrente
Type of programme: Engineering **Type of teaching:** Laboratory work
University degree: Ingeniería Informática
End date: 15/09/2009
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 30
Entity: Universidad de Zaragoza **Type of entity:** University
- 5** **Type of teaching:** Official teaching
Name of the course: Programación 1
Type of programme: Engineering **Type of teaching:** Laboratory work
University degree: Ingeniería Informática
End date: 15/09/2007
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 45



Entity: Universitat Politècnica de Catalunya

Type of entity: University

6 **Type of teaching:** Official teaching
Name of the course: Sistemas automáticos
Type of programme: Engineering
University degree: Ingeniería Industrial
End date: 15/09/2005
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 63
Entity: Universidad de Zaragoza

Type of teaching: Laboratory work

Type of entity: University

7 **Type of teaching:** Official teaching
Name of the course: Sistemas de eventos discretos
Type of programme: Engineering
University degree: Ingeniería Industrial
End date: 15/09/2005
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 15
Entity: Universidad de Zaragoza

Type of teaching: In person theory

Type of entity: University

8 **Type of teaching:** Official teaching
Name of the course: Compiladores I
Type of programme: Engineering
University degree: Ingeniería Informática
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 193
Entity: Universidad de Zaragoza

Type of teaching: In person theory

Type of entity: University

9 **Type of teaching:** Official teaching
Name of the course: Modelos abstractos de cálculo
Type of programme: Engineering
University degree: Ingeniería Informática
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 15
Entity: Universidad de Zaragoza

Type of teaching: In person theory

Type of entity: University

10 **Type of teaching:** Official teaching
Name of the course: Programación paralela
Type of programme: Engineering
University degree: Ingeniería Informática
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 280
Entity: Universidad de Zaragoza

Type of teaching: Laboratory work

Type of entity: University

11 **Type of teaching:** Official teaching
Name of the course: Tecnología de programación
Type of programme: Engineering
University degree: Ingeniería Informática
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 60
Entity: Universidad de Zaragoza

Type of teaching: Laboratory work

Type of entity: University



- 12** **Type of teaching:** Official teaching
Name of the course: Modelos formales en bioinformática
Type of programme: Master's degree **Type of teaching:** In person theory
University degree: Ingeniería Informática
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 45
Entity: Universidad de Zaragoza **Type of entity:** University

Experience supervising doctoral thesis and/or final year projects

- 1** **Project title:** Modelado y control de sistemas de tráfico mediante redes flexibles
Type of project: Work leading to an ASD
Entity: Universidad de Zaragoza **Type of entity:** University
Student: Carlos Cunchillos Andicoberry
Obtained qualification: Notable
Date of reading: 05/10/2021
- 2** **Project title:** Análisis y simulación de modelos metabólicos de E. Coli para la producción de citramalato
Type of project: Work leading to an ASD
Entity: Universidad de Zaragoza **Type of entity:** University
Student: Violeta Gracia Román
Obtained qualification: Sobresaliente
Date of reading: 05/07/2021
- 3** **Project title:** Optimisation of the production of bioproducts in Escherichia coli
Type of project: Work leading to an ASD
Entity: Universidad de Zaragoza **Type of entity:** University
Student: Jorge Lázaro Ibáñez
Obtained qualification: Sobresaliente
Date of reading: 27/07/2020
- 4** **Project title:** Cálculo de puntos críticos en redes metabólicas microbianas
Type of project: End of course project
Entity: Universidad de Zaragoza **Type of entity:** University
Student: Alexandru Ioan Oarga Hategan
Obtained qualification: Sobresaliente
Date of reading: 10/12/2019
- 5** **Project title:** Optimising production of citramalate based on the E. coli kinetic and stoichiometric models
Type of project: Work leading to an ASD
Entity: University of Cambridge **Type of entity:** University
Student: Arin Wongprommoon
Obtained qualification: Sobresaliente
Date of reading: 11/06/2018
- 6** **Project title:** Computation of tight flux bounds in metabolic networks
Type of project: Work leading to an ASD
Entity: University of Cambridge **Type of entity:** University
Student: Anargyros Anargyros



Obtained qualification: Sobresaliente
Date of reading: 13/06/2017

- 7** **Project title:** Structural Analysis of the Metabolic Network of E. coli
Type of project: Work leading to an ASD
Entity: University of Cambridge **Type of entity:** University
Student: Lucy Mair
Obtained qualification: Sobresaliente
Date of reading: 13/06/2017
- 8** **Project title:** Fluidization of Petri nets to improve the analysis of Discrete Event Systems
Type of project: Doctoral thesis
Co-director of thesis: Manuel Silva Suárez
Entity: Universidad de Zaragoza **Type of entity:** University
Student: María Estíbaliz Fraca Santamaría
Obtained qualification: Sobresaliente cum laude
Date of reading: 27/05/2015
- 9** **Project title:** Portal web de soporte a la gestión científica y administrativa de un organismo público de investigación
Type of project: End of course project
Entity: Universidad de Zaragoza **Type of entity:** University
Student: José María Pérez Grao
Obtained qualification: Sobresaliente
Date of reading: 30/09/2013
- 10** **Project title:** Performance Analysis and Resource Optimisation of Critical Systems Modelled by Petri Nets
Type of project: Doctoral thesis
Co-director of thesis: José Merseguer Hernáiz
Entity: Universidad de Zaragoza **Type of entity:** University
Student: Ricardo Julio Rodríguez Fernández
Obtained qualification: Sobresaliente cum laude
Date of reading: 24/06/2013
European doctorate: Yes
Quality recognition: Yes **Date of award:** 20/10/2011
- 11** **Project title:** Redes de Petri híbridas adaptativas: alcanzabilidad y ausencia de bloqueos
Type of project: Work leading to an ASD
Co-director of thesis: Manuel Silva Suárez
Entity: Universidad de Zaragoza **Type of entity:** University
Student: María Estíbaliz Fraca Santamaría
Obtained qualification: Sobresaliente
Date of reading: 20/09/2011
- 12** **Project title:** Identificación de cuellos de botella en circuitos asíncronos
Type of project: End of course project
Entity: Universidad de Zaragoza **Type of entity:** University
Student: Luis Jesus Jorge Salcines
Obtained qualification: Sobresaliente
Date of reading: 14/05/2010



Student tutorials

- 1 Name of the programme:** Educational aid
Entity: University of Cambridge
Frequency of the activity: 1
Type of entity: University
- 2 Name of the programme:** Mobility programme
Entity: Universidad de Zaragoza
Frequency of the activity: 1
Type of entity: University

Participation in innovative teaching projects

- 1 Project title:** Evaluación, seguimiento y coordinación de las asignaturas de Algoritmia y Computación en el Grado en Ingeniería Informática
Type of participation: Others
Time of working relationship: For a limited time
Funding entity: Universidad de Zaragoza
Start-End date: 09/2012 - 07/2013
Type of entity: University
Duration: 9 months
- 2 Project title:** Coordinación de la Implantación de las Asignaturas de Algoritmia y Computación en el Grado en Ingeniería Informática (PIIDUZ-11-3-462)
Type of participation: Others
Time of working relationship: For a limited time
Funding entity: Universidad de Zaragoza
Start-End date: 09/2011 - 07/2012
Type of entity: University
Duration: 9 months

Other activities/achievements not included above

- 1 Description of the activity:** Calificación 'positiva destacada' de la labor docente curso 2018/2019
Organising entity: Universidad de Zaragoza
End date: 15/09/2019
Type of entity: University
- 2 Description of the activity:** Calificación 'positiva destacada' de la labor docente curso 2012/2013
Organising entity: Universidad de Zaragoza
End date: 15/09/2013
Type of entity: University
- 3 Description of the activity:** Calificación 'positiva destacada' de la labor docente curso 2011/2012
Organising entity: Universidad de Zaragoza
End date: 15/09/2012
Type of entity: University
- 4 Description of the activity:** Calificación 'positiva destacada' de la labor docente curso 2010/2011
Organising entity: Universidad de Zaragoza
End date: 15/09/2011
Type of entity: University
- 5 Description of the activity:** Profesor en el tutorial 'Fluid and Hybrid Petri nets' de la International Conference on Application and Theory of Petri Nets (ICATPN) 2011
City of activity: Newcastle, United Kingdom



Organising entity: International Conference on Application and Theory of Petri Nets (ICATPN) 2011
End date: 24/06/2011

Type of entity: Conferencia internacional

6 Description of the activity: Profesor en DISC PhD School on 'Control of Discrete-Event Systems- Automata and Petri nets'

City of activity: Cagliari, Italy

Organising entity: Proyecto de Investigación Europeo DISC 2007, FP7-ICT-2007-2

End date: 10/06/2011

Type of entity: Proyecto de investigación

7 Description of the activity: Calificación 'positiva destacada' de la labor docente curso 2009/2010

Organising entity: Universidad de Zaragoza

End date: 15/09/2010

Type of entity: University

8 Description of the activity: Calificación 'positiva destacada' de la labor docente curso 2008/2009

Organising entity: Universidad de Zaragoza

End date: 15/09/2009

Type of entity: University

9 Description of the activity: Coordinador de Máster en Ingeniería Informática

Organising entity: Universidad de Zaragoza

Type of entity: University

Scientific and technological experience

Research and development groups/teams

1 Name of the group: Cambridge Systems Biology Centre

Aims of the group: Investigación

Type of collaboration: Co-authorship of publications

Affiliation entity: University of Cambridge

Start date: 01/10/2014

Type of entity: University

Duration: 4 years

2 Name of the group: Instituto de Investigación en Ingeniería de Aragón (I3A)

Affiliation entity: Universidad de Zaragoza

Start date: 29/09/2008

Type of entity: University

Duration: 5 years

3 Name of the group: ALgorithms, Bioinformatics, COmplexity and formal Methods (ALBCOM)

Affiliation entity: Universitat Politècnica de Catalunya

Start date: 14/11/2005

Type of entity: University

Duration: 3 years

4 Name of the group: Grupo de Ingeniería de Sistemas de Eventos Discretos (GISED)

Aims of the group: Investigación en el campo de los sistemas de eventos discretos

Affiliation entity: Universidad de Zaragoza

Start date: 01/01/2001

Type of entity: University

Duration: 10 years



Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

- 1** **Name of the project:** PID2020-113969RB-I00 DETECCIÓN Y MITIGACION DE VULNERABILIDADES EN SISTEMAS CRITICOS
Geographical area: National
Entity where project took place: Instituto Universitario de Investigación en Ingeniería de Aragón - Universidad de Zaragoza
Name principal investigator (PI, Co-PI....): Jorge Júlvez Bueno
Nº of researchers: 6
Funding entity or bodies: MINISTERIO DE CIENCIA E INNOVACION
Start-End date: 01/09/2021 - 31/08/2025 **Duration:** 48 months
Total amount: 64.009 €
- 2** **Name of the project:** ConBioChem: Continuous bio-production of commodity chemicals
Entity where project took place: University of Cambridge
City of entity: Cambridge, United Kingdom
Name principal investigator (PI, Co-PI....): Stephen G. Oliver
Nº of researchers: 12
Funding entity or bodies: Biotechnology & Biological Sciences Research Council (UK) **Type of entity:** Public Research Body
Start-End date: 01/10/2016 - 30/09/2021
Total amount: 3.500.000 €
- 3** **Name of the project:** RTI2018-098543-B-I00. ModEl and Data-driven RESilience Engineering for complex dynamic systems
Geographical area: National
Entity where project took place: Instituto Universitario de Investigación en Ingeniería de Aragón - Universidad de Zaragoza
Name principal investigator (PI, Co-PI....): Simona Bernardi 1; José Merseguer Hernáiz
Nº of researchers: 6
Funding entity or bodies: MINISTERIO DE CIENCIA E INNOVACION
Start-End date: 01/01/2019 - 31/12/2020 **Duration:** 36 months
- 4** **Name of the project:** 7FP - Marie Curie Fellowship (IEF)
Entity where project took place: University of Cambridge
City of entity: Cambridge, United Kingdom
Name principal investigator (PI, Co-PI....): Stephen G. Oliver
Nº of researchers: 1
Funding entity or bodies: Comisión Europea **Type of entity:** 7FP
Start-End date: 01/10/2014 - 30/09/2016



- 5** **Name of the project:** DPI2010-20413. ANALISIS Y CONTROL DE GRANDES SISTEMAS DE EVENTOS DISCRETOS DISTRIBUIDOS
Geographical area: National
Entity where project took place: Instituto Universitario de Investigación en Ingeniería de Aragón - Universidad de Zaragoza
Name principal investigator (PI, Co-PI....): Manuel Silva
Nº of researchers: 7
Funding entity or bodies: MINISTERIO DE CIENCIA E INNOVACION
Start date: 01/01/2011 **Duration:** 36 months
Total amount: 88.000 €
- 6** **Name of the project:** FUNDACION ARAID 2010. MODELADO Y VERIFICACION DE SISTEMAS DE SOFTWARE CRITICOS
Geographical area: Regional
Entity where project took place: Instituto Universitario de Investigación en Ingeniería de Aragón - Universidad de Zaragoza
Name principal investigator (PI, Co-PI....): Jorge Júlvez
Nº of researchers: 3
Funding entity or bodies: FUNDACION ARAGON I+D
Start date: 01/10/2010 **Duration:** 25 months
Total amount: 18.000 €
- 7** **Name of the project:** IDENTIFICAZIONE, RICOSTRUZIONE DELLO STATO E DIAGNOSI DI SISTEMI AD EVENTI DISCRETI MEDIANTE RETI DI PETRI (CRP1_101)
Geographical area: National
Entity where project took place: Università degli studi di Cagliari
Name principal investigator (PI, Co-PI....): Carla Seatzu
Nº of researchers: 4
Funding entity or bodies: Región de Cerdeña (Italia)
Start date: 01/09/2010 **Duration:** 36 months
Total amount: 6.000 €
- 8** **Name of the project:** DISTRIBUTED SUPERVISORY CONTROL OF COMPLEX PLANTS
Geographical area: European Union
Entity where project took place: Escuela de Ingeniería y Arquitectura - Universidad de Zaragoza
Name principal investigator (PI, Co-PI....): Manuel Silva
Nº of researchers: 5
Funding entity or bodies: UNION EUROPEA
Start date: 01/09/2008 **Duration:** 36 months
Total amount: 192.000 €
- 9** **Name of the project:** TIN2007-66523. MÉTODOS FORMALES Y ALGORITMOS PARA EL DISEÑO DE SISTEMAS (FORMALISM)
Geographical area: National
Entity where project took place: Universitat Politècnica de Catalunya **Type of entity:** University

**Funding entity or bodies:**

MINISTERIO DE CIENCIA E INNOVACION

Start date: 01/01/2007**Duration:** 60 months**Total amount:** 821.000 €**10 Name of the project:** DPI2003-06376. REDES DE PETRI CONTINUAS E HIBRIDAS: MODELADO, ANALISIS Y SINTESIS.**Entity where project took place:** Escuela de Ingeniería y Arquitectura - Universidad de Zaragoza**Name principal investigator (PI, Co-PI...):** Manuel Silva**Nº of researchers:** 8**Funding entity or bodies:**

D.G.I. (MCyT)

Start date: 01/12/2003**Duration:** 36 months**Total amount:** 55.300 €**R&D non-competitive contracts, agreements or projects with public or private entities****1 Name of the project:** Contract as Research Associate**Degree of contribution:** Researcher**Nº of researchers:** 1**Funding entity or bodies:**

University of Cambridge

Type of entity: University**City funding entity:** Cambridge, United Kingdom**Start date:** 01/10/2016**Duration:** 2 years**2 Name of the project:** Contract as Marie Curie Fellow**Degree of contribution:** Researcher**Nº of researchers:** 1**Funding entity or bodies:**

University of Cambridge

Type of entity: University**City funding entity:** Cambridge, United Kingdom**Start date:** 01/10/2014**Duration:** 2 years**Results****Industrial and intellectual property****Title registered industrial property:** "Matlab Third Party Product. The MathWorks Connections Program" with the software tool "SimHPN: A Matlab toolbox for Hybrid Petri nets"**Inventors/authors/obtainers:** Jorge Júlvez Bueno; Cristian Mahulea**Entity holder of rights:** Universidad de Zaragoza**Nº of application:** Z-342-10**Country of inscription:** Spain, Aragon**Date of register:** 19/08/2010



Scientific and technological activities

Scientific production

Publications, scientific and technical documents

- 1** A. Oarga; B. P. Bannerman; J. Júlvez. CONTRABASS: exploiting flux constraints in genome- models for the detection of vulnerabilities scale. Bioinformatics. 39 - 2, Oxford, 2023.

Type of production: Scientific paper
Position of signature: 3

Total no. authors: 1
Impact source: ISI

Format: Journal
Degree of contribution: Author or co-author of article in journal with external admissions assessment committee
- 2** J. Lazaro; G. Jansen; Y. Yang; M.A. Torres-Acosta; G. Lye; S.G. Oliver; J. Júlvez. Combination of Genome-Scale Models and Bioreactor Dynamics to Optimize the Production of Commodity Chemicals. Frontiers in Molecular Biosciences. 9, Frontiers, 2022. Available on-line at: <<https://www.frontiersin.org/articles/10.3389/fmolb.2022.855735/full>>.

Type of production: Scientific paper
Position of signature: 7

Total no. authors: 7
Impact source: ISI

Format: Journal
Degree of contribution: Author or co-author of article in journal with external admissions assessment committee
- 3** B. P. Bannerman; J. Júlvez; A. Oarga; T. L. Blundell; P. Moreno; R.A. Floto. Integrated human/SARS-CoV-2 metabolic models present novel treatment strategies against COVID-19. Life Science Alliance. 4 - 10, pp. e202000954. EMBO Press, 2021. Available on-line at: <<https://doi.org/10.26508/lsa.202000954>>.

Type of production: Scientific paper
Position of signature: 2

Total no. authors: 5
Impact source: ISI

Format: Journal
Degree of contribution: Author or co-author of article in journal with external admissions assessment committee
- 4** J. Júlvez; S.G. Oliver. A unifying modelling formalism for the integration of stoichiometric and kinetic models. Journal of The Royal Society Interface. 17 - 169, pp. 20200341. 2020. Available on-line at: <[10.1098/rsif.2020.0341](https://doi.org/10.1098/rsif.2020.0341)>.

Type of production: Scientific paper
Position of signature: 1

Total no. authors: 2
Impact source: ISI
Impact index in year of publication: 3.748
Position of publication: 19

Format: Journal
Degree of contribution: Author or co-author of article in journal with external admissions assessment committee
Category: MULTIDISCIPLINARY SCIENCES
Journal in the top 25%: No
No. of journals in the cat.: 71



- 5** J. Júlvez; S.G. Oliver. Steady State Analysis of Flexible Nets. IEEE Transactions on Automatic Control. 65 - 6, pp. 2510 - 2525. IEEE, 2020. Available on-line at: <10.1109/TAC.2019.2931836>.
Type of production: Scientific paper
Position of signature: 1
Total no. authors: 2
Impact source: ISI
Impact index in year of publication: 5.625
Position of publication: 30
Format: Journal
Degree of contribution: Author or co-author of article in journal with external admissions assessment committee
Category: ENGINEERING, ELECTRICAL & ELECTRONIC
Journal in the top 25%: Yes
No. of journals in the cat.: 266
- 6** J. Júlvez; Stephen G Olivez. Flexible Nets: A modeling formalism for dynamic systems with uncertain parameters. DISCRETE EVENT DYNAMIC SYSTEMS-THEORY AND APPLICATIONS. 29 - 3, pp. 367 - 392. Springer, 2019. Available on-line at: <https://doi.org/10.1007/s10626-019-00287-9>.
Type of production: Scientific paper
Position of signature: 1
Total no. authors: 2
Impact source: ISI
Impact index in year of publication: 0.932
Position of publication: 170
Format: Journal
Degree of contribution: Author or co-author of article in journal with external admissions assessment committee
Corresponding author: Yes
Category: Mathematics applied
Journal in the top 25%: No
No. of journals in the cat.: 260
- 7** J. Júlvez; S.G. Oliver. Modeling, analyzing and controlling hybrid systems by Guarded Flexible Nets. Nonlinear Analysis: Hybrid Systems. 32, pp. 131 - 146. Elsevier, 2019. Available on-line at: <https://doi.org/10.1016/j.nahs.2018.11.004>.
Type of production: Scientific paper
Position of signature: 1
Total no. authors: 2
Impact source: ISI
Impact index in year of publication: 5.881
Position of publication: 2
Format: Journal
Degree of contribution: Author or co-author of article in journal with external admissions assessment committee
Category: MATHEMATICS, APPLIED
Journal in the top 25%: Yes
No. of journals in the cat.: 260
- 8** J. Júlvez; D. Dikicioglu; S.G. Oliver. Handling variability and incompleteness of biological data by flexible nets: a case study for Wilson disease. npj Systems Biology and Applications. 4 - 1, Nature Publishing Group, 2018. Available on-line at: <https://doi.org/10.1038/s41540-017-0044-x>.
Type of production: Scientific paper
Position of signature: 1
Total no. authors: 3
Impact source: ISI
Format: Journal
Degree of contribution: Author or co-author of article in journal with external admissions assessment committee
- 9** E. Fraca; J. Júlvez; M. Silva. Fluid approximation of Petri net models with relatively small populations. DISCRETE EVENT DYNAMIC SYSTEMS-THEORY AND APPLICATIONS. 27 - 3, pp. 525 - 546. Springer, 2017. Available on-line at: <https://doi.org/10.1007/s10626-017-0238-9>.
Type of production: Scientific paper
Position of signature: 2
Total no. authors: 3
Impact source: ISI
Format: Journal
Degree of contribution: Author or co-author of article in journal with external admissions assessment committee
Category: Mathematics applied



Impact index in year of publication: 1.444
Position of publication: 63

Journal in the top 25%: Yes
No. of journals in the cat.: 252

- 10** J. Júlvez. A straightforward method to compute average stochastic oscillations from data samples. BMC Bioinformatics. 16 - 1, pp. 1 - 17. Elsevier, 2015. Available on-line at: <<https://doi.org/10.1186/s12859-015-0765-z>>.

Type of production: Scientific paper
Position of signature: 1

Format: Journal

Degree of contribution: Author or co-author of article in journal with external admissions assessment committee

Total no. authors: 1

Impact source: ISI

Category: Mathematical and computational biology

Impact index in year of publication: 2.435

Journal in the top 25%: Yes

Position of publication: 10

No. of journals in the cat.: 56

- 11** E. Fraca; J. Júlvez; M. Silva. Hybrid and Hybrid Adaptive Petri Nets: on the computation of a Reachability Graph. Nonlinear Analysis: Hybrid Systems. 16, pp. 24 - 39. Elsevier, 2015. Available on-line at: <<https://doi.org/10.1016/j.nahs.2014.11.005>>.

Type of production: Scientific paper
Position of signature: 2

Format: Journal

Degree of contribution: Author or co-author of article in journal with external admissions assessment committee

Total no. authors: 3

Impact source: ISI

Category: Mathematics applied

Impact index in year of publication: 3.192

Journal in the top 25%: Yes

Position of publication: 3

No. of journals in the cat.: 254

Source of citations: Google Scholar

Citations: 3

- 12** J. Júlvez; S. Di Cairano; A. Bemporad; C. Mahulea. Event-Driven Model Predictive Control of Timed Hybrid Petri Nets. INTERNATIONAL JOURNAL OF ROBUST AND NONLINEAR CONTROL. 24 - 12, pp. 1724 - 1742. Wiley, 2014. Available on-line at: <<https://doi.org/10.1002/rnc.2958>>.

Type of production: Scientific paper
Position of signature: 1

Format: Journal

Total no. authors: 4

Impact source: ISI

Category: Mathematics applied

Impact index in year of publication: 3.232

Journal in the top 25%: Yes

Position of publication: 1

No. of journals in the cat.: 257

- 13** L. Wang; C. Mahulea; J. Júlvez; M. Silva. ON/OFF strategy based minimum-time control of continuous Petri nets. Nonlinear Analysis: Hybrid Systems. 12, pp. 50 - 65. Elsevier, 2014. Available on-line at: <<https://doi.org/10.1016/j.nahs.2013.11.007>>.

Type of production: Scientific paper
Position of signature: 3

Format: Journal

Degree of contribution: Author or co-author of article in journal with external admissions assessment committee

Total no. authors: 4

Impact source: ISI

Category: Mathematics applied

Impact index in year of publication: 2.375

Journal in the top 25%: Yes

Position of publication: 9

No. of journals in the cat.: 257

Source of citations: Google Scholar

Citations: 7



- 14** E. Fraca; J. Júlvez; M. Silva. On the fluidization of Petri nets and marking homothety. *Nonlinear Analysis: Hybrid Systems*. 12, pp. 3 - 19. Elsevier, 2014. Available on-line at: <<https://doi.org/10.1016/j.nahs.2013.11.002>>.
Type of production: Scientific paper **Format:** Journal
Position of signature: 2 **Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee
Total no. authors: 3
Impact source: ISI **Category:** Mathematics applied
Impact index in year of publication: 2.375 **Journal in the top 25%:** Yes
Position of publication: 9 **No. of journals in the cat.:** 257
Source of citations: Google Scholar **Citations:** 9
- 15** H. Apaydin-Ozkan; C. Mahulea; J. Júlvez; M. Silva. A Control Method for Distributed Continuous Mono-T-Semiflow Petri nets. *INTERNATIONAL JOURNAL OF CONTROL*. Sep(2013), pp. 1 - 18. Taylor & Francis, 2013.
Type of production: Scientific paper **Format:** Journal
Position of signature: 3
Total no. authors: 4
Impact source: ISI
Impact index in year of publication: 1.00 (2012)
- 16** L. Wang; C. Mahulea; J. Júlvez; M. Silva. Minimum-time Decentralized Control of Choice-Free Continuous Petri Nets. *Nonlinear Analysis-Hybrid Systems*. 7 - 1, pp. 39 - 53. 2013.
Type of production: Scientific paper **Format:** Journal
Position of signature: 3
Total no. authors: 4
Impact source: ISI
Impact index in year of publication: 1.685
- 17** R. Rodríguez; J. Júlvez; J. Merseguer. On the Performance Estimation and Resource Optimisation in Process Petri Nets. *IEEE TRANSACTIONS ON SYSTEMS MAN AND CYBERNETICS: SYSTEMS*. pp. 1385 - 1398. IEEE, 2013.
Type of production: Scientific paper **Format:** Journal
Position of signature: 2
Total no. authors: 3
Impact source: ISI
Impact index in year of publication: 2.18 (2012)
- 18** R. Rodríguez; J. Júlvez; J. Merseguer. Quantification and Compensation of the Impact of Faults in System Throughput. *Proceedings of the Institution of Mechanical Engineers Part O-Journal of Risk and Reliability*. pp. 1 - 16. 2013.
Type of production: Scientific paper **Format:** Journal
Position of signature: 2
Total no. authors: 3
Impact source: ISI
Impact index in year of publication: 0.62
- 19** J. Júlvez; M. Kwiatkowska; G. Normal; D. Parker. Evaluation of sustained stochastic oscillations by means of a system of differential equations. *International Journal of Computers and Applications*. 19 - 2, pp. 101 - 111. 2012.
Type of production: Scientific paper **Format:** Journal



Position of signature: 1

Total no. authors: 4

- 20** J. Júlvez; C. Mahulea; C.R. Vázquez. SimHPN: A MATLAB toolbox for simulation, analysis and design with hybrid Petri nets. *Nonlinear Analysis-Hybrid Systems*. 6 - 2, pp. 806 - 817. 2012.

Type of production: Scientific paper

Format: Journal

Position of signature: 1

Total no. authors: 3

Impact source: ISI

Impact index in year of publication: 1.685

- 21** J. Carmona; J. Júlvez; J. Cortadella; M. Kishinevsky. A scheduling strategy for synchronous elastic designs. *FUNDAMENTA INFORMATICAE*. 108 - 1-2, pp. 1 - 21. 2011.

Type of production: Scientific paper

Format: Journal

Position of signature: 2

Total no. authors: 4

Impact source: ISI

Impact index in year of publication: 0.365

- 22** H. Apaydin-Özkan; J. Júlvez; C. Mahulea; M. Silva. Approaching minimum time control of timed continuous Petri nets. *Nonlinear Analysis-Hybrid Systems*. 5 - 2, pp. 136 - 148. 2011.

Type of production: Scientific paper

Format: Journal

Position of signature: 2

Total no. authors: 5

Impact source: ISI

Impact index in year of publication: 1.685

- 23** M. Silva; J. Júlvez; C. Mahulea; C.R. Vázquez. On Fluidization of Discrete Event Models: Observation and Control of Continuous Petri nets. *DISCRETE EVENT DYNAMIC SYSTEMS-THEORY AND APPLICATIONS*. 21 - 4, pp. 427 - 497. 2011.

Type of production: Scientific paper

Format: Journal

Position of signature: 2

Total no. authors: 4

Impact source: ISI

Impact index in year of publication: 0,872

- 24** J. Júlvez; R. Boel. A Continuous Petri Net Approach for Model Predictive Control of Traffic Systems. *IEEE TRANSACTIONS ON SYSTEMS MAN AND CYBERNETICS PART A-SYSTEMS AND HUMANS*. 40 - 4, pp. 686 - 697. 2010.

Type of production: Scientific paper

Format: Journal

Position of signature: 1

Total no. authors: 2

Impact source: ISI

Impact index in year of publication: 2.123

- 25** J. Júlvez; J. Cortadella; M. Kishinevsky. On the performance evaluation of multi-guarded marked graphs with single-server semantics. *DISCRETE EVENT DYNAMIC SYSTEMS-THEORY AND APPLICATIONS*. 20 - 3, pp. 377 - 407. 2010.

Type of production: Scientific paper

Format: Journal



Position of signature: 1
Total no. authors: 3
Impact source: ISI
Impact index in year of publication: 0,872

- 26** S. Di Cairano; A. Bemporad; J. Júlvez. Event-driven optimization-based control of hybrid systems with integral continuous-time dynamics. AUTOMATICA. 45 - 4, pp. 1243 - 1251. 2009.

Type of production: Scientific paper **Format:** Journal
Position of signature: 3
Total no. authors: 3
Impact source: ISI
Impact index in year of publication: 3.178

- 27** J. Cortadella; M. Kishinevsky; D. Bufistov; J. Carmona; J. Júlvez. Elasticity and Petri nets. Special Issue of Lecture Notes in Computer Science, Transactions on Petri nets and other Models of Concurrency. pp. 221 - 249. 2008. ISBN 978-3-540-89286-1

Type of production: Scientific paper
Position of signature: 5
Total no. authors: 5

- 28** J. Júlvez; E. Jiménez; L. Recalde; M. Silva. On Observability and Design of Observers in Timed Continuous Petri Net Systems. IEEE TRANSACTIONS ON AUTOMATION SCIENCE AND ENGINEERING. 5 - 3, pp. 532 - 537. 2008.

Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Total no. authors: 4
Impact source: ISI
Impact index in year of publication: 1.929

- 29** J. Júlvez; L. Recalde; M. Silva. Deadlock-freeness analysis of continuous mono-T-semiflow Petri nets. IEEE TRANSACTIONS ON AUTOMATIC CONTROL. 51 - 9, pp. 1472 - 1481. 2006.

Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Total no. authors: 3
Impact source: ISI
Impact index in year of publication: 2.772

- 30** A. Bemporad; S. Di Cairano; J. Júlvez. Event-based model predictive control and verification of integral continuous-time hybrid automata. Lecture Notes in Computer Science. 3927, pp. 93 - 107. 2006. ISSN 0302-9743

Type of production: Scientific paper
Position of signature: 3
Total no. authors: 3

- 31** J. Júlvez; L. Recalde; M. Silva. Steady-state performance evaluation of continuous mono-T-semiflow Petri nets. AUTOMATICA. 41, pp. 605 - 616. 2005.

Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Total no. authors: 3
Impact source: ISI



Impact index in year of publication: 1.693

- 32** A. Giua; C. Seatzu; J. Júlvez. Marking Estimation of Petri Nets With Pairs of Nondeterministic Transitions. ASIAN JOURNAL OF CONTROL. 6 - 2, pp. 270 - 280. 2004. ISSN 1561-8625
Type of production: Scientific paper **Format:** Journal
Position of signature: 3
Total no. authors: 3
Impact source: ISI
Impact index in year of publication: 0.466
- 33** J. Júlvez; L. Recalde; M. Silva. On Reachability in Autonomous Continuous Petri Net Systems. Lecture Notes in Computer Science. 2679, pp. 221 - 240. 2003. ISSN 0302-9743
Type of production: Scientific paper
Position of signature: 1
Total no. authors: 3
- 34** J. Júlvez; C. Mahulea; C. R. Vázquez; M. Silva. Continuous Petri nets: Controllability and Control. Control of Discrete-Event Systems. Automata and Petri Net Perspectives. pp. 387 - 406. Springer, 2013. Available on-line at: <<https://doi.org/10.1007/978-1-4471-4276-8>>.
Type of production: Book chapter **Format:** Book
Position of signature: 1 **Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee
Total no. authors: 4
- 35** C. Mahulea; J. Júlvez; C. R. Vázquez; M. Silva. Continuous Petri nets: Observability and Diagnosis. Control of Discrete-Event Systems. Automata and Petri Net Perspectives. pp. 387 - 406. Springer, 2013. Available on-line at: <<https://doi.org/10.1007/978-1-4471-4276-8>>.
Type of production: Book chapter **Format:** Book
Position of signature: 2 **Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee
Total no. authors: 4
- 36** C.R. Vázquez; C. Mahulea; J. Júlvez; M. Silva. Introduction to fluid Petri nets. Control of Discrete-Event Systems. Automata and Petri Net Perspectives. pp. 365 - 386. Springer, 2013. Available on-line at: <<https://doi.org/10.1007/978-1-4471-4276-8>>.
Type of production: Book chapter **Format:** Book
Position of signature: 3 **Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee
Total no. authors: 4

Works submitted to national or international conferences

- 1** **Title of the work:** On the computation of the minimum set of reactions for optimal growth in constraint-based models
Name of the conference: 61st IEEE Conference on Decision and Control (CDC 2022)
Type of event: Conference
Corresponding author: Yes
Date of event: 2022
Type of contribution: Scientific paper
A. Oarga; J. Júlvez.



- 2** **Title of the work:** Extending the Modeling and Analysis Capabilities of Continuous Petri Nets by Flexible Nets
Name of the conference: 60th IEEE Conference on Decision and Control (CDC 2021)
Type of event: Conference
Corresponding author: Yes
Date of event: 2021
Type of contribution: Scientific paper
J. Júlvez; S.G. Oliver.
- 3** **Title of the work:** Growth Dependent Computation of Chokepoints in Metabolic Networks
Name of the conference: 18th International Conference on Computational Methods in Systems Biology (CMSB2020)
Type of event: Conference
Corresponding author: Yes
Date of event: 2020
Type of contribution: Scientific paper
A. Oarga; B. Bannerman; J. Júlvez.
- 4** **Title of the work:** Structural and dynamical analysis of an integrated human/virus metabolic model provides insight to new treatment strategies against Covid-19
Name of the conference: 27th Conference on Intelligent Systems for Molecular Biology (ISMB2020)
Type of event: Conference
Corresponding author: Yes
Date of event: 2020
Type of contribution: Scientific paper
B. Bannerman; J. Júlvez; A. Oarga; T. L. Blundell; P. Moreno; R.A. Floto.
- 5** **Title of the work:** fnyzer: a Python package for the analysis of Flexible Nets
Name of the conference: 18th International Conference on Computational Methods in Systems Biology (CMSB2020)
Type of event: Conference
Corresponding author: Yes
Date of event: 2020
Type of contribution: Scientific paper
J. Júlvez; S.G. Oliver.
- 6** **Title of the work:** A novel modelling framework for the analysis of partially known biological systems
Name of the conference: British Yeast Group (BYG2016)
Type of event: Conference
Corresponding author: Yes
Date of event: 2016
Type of contribution: Scientific paper
J. Júlvez; D. Dikicioglu; S. G. Oliver.
- 7** **Title of the work:** A Petri net model of the protein machinery of the yeast cell factory
Name of the conference: 27th International Conference on Yeast Genetics and Molecular Biology (YEAST 2015)
Type of event: Conference
Corresponding author: Yes
Date of event: 2015



Type of contribution: Scientific paper
J. Júlvez; D. Dikicioglu; S. G. Oliver.

8 Title of the work: MATLAB tools for the analysis of Petri net models

Name of the conference: 19th IEEE International Conference on Emerging Technologies and Factory Automation (2014)

Type of event: Conference

Corresponding author: Yes

Date of event: 2014

Organising entity: IEEE

Type of contribution: Scientific paper

J. Júlvez; M. H. Matcovshi; O. Pastravanu.

9 Title of the work: On the average dynamical behaviour of stochastic population models

Name of the conference: 19th world congress of the International Federation of Automatic Control (IFAC 2014)

Type of event: Conference

Corresponding author: Yes

Date of event: 2014

Organising entity: IFAC

City organizing entity: Cape Town, South African Republic

Type of contribution: Scientific paper

J. Júlvez.

10 Title of the work: The "bound reaching problem" on the fluidization of timed Petri nets

Name of the conference: 12th International Workshop on Discrete Event Systems (WODES 2014)

Type of event: Conference

Corresponding author: Yes

Date of event: 2014

Organising entity: IFAC

Type of contribution: Scientific paper

E. Fraca; J. Júlvez; M. Silva.

11 Title of the work: A simulation approach to detect oscillating behaviour in stochastic population models

Name of the conference: 11th Conference on Computational Methods in Systems Biology

Type of event: Conference

Date of event: 2013

Organising entity: IST Austria

City organizing entity: Viena, Austria

Type of contribution: Scientific paper

J. Júlvez. En: Lecture Notes in Computer Science. 8130, pp. 1 - 3. 09/2013. ISBN 978-3-642-40708-6

12 Title of the work: Control of continuous Petri nets using ON/OFF based method

Name of the conference: 11th International Workshop on Discrete Event Systems (WODES 2012)

Date of event: 2012

Organising entity: IFAC

L. Wang; C. Mahulea; J. Júlvez; M. Silva.

13 Title of the work: Marking homothetic monotonicity and fluidization of untimed Petri nets

Name of the conference: 11th International Workshop on Discrete Event Systems (WODES 2012)

Date of event: 2012



Organising entity: IFAC
E. Fraca; J. Júlvez; M. Silva.

- 14** **Title of the work:** PeabraiN: A PIPE Extension for Performance Estimation and Resource Optimisation
Name of the conference: 12th International Conference on Application of Concurrency to System Design (ACSD2012)
Date of event: 2012
Organising entity: ACSD
R. Rodríguez; J. Júlvez; J. Merseguer.
- 15** **Title of the work:** A systematic approach to evaluate sustained stochastic oscillations
Name of the conference: 3rd International Conference on Bioinformatics and Computational Biology (BICoB 2011)
Date of event: 2011
Organising entity: ISCA
J. Júlvez; M. Kwiatkowska; G. Norman; D. Parker.
- 16** **Title of the work:** Analysis and Simulation of Manufacturing Systems using SimHPN toolbox
Name of the conference: 7th Annual IEEE Conference on Automation Science and Engineering (CASE2011)
Date of event: 2011
Organising entity: IEEE
J. Júlvez; C. Mahulea; C.R. Vázquez.
- 17** **Title of the work:** Decentralized Control of Large Scale Systems Modeled with Continuous Marked Graphs
Name of the conference: 18th world congress of the International Federation of Automatic Control (IFAC2011)
Date of event: 2011
Organising entity: IFAC
L. Wang; C. Mahulea; J. Júlvez; M. Silva.
- 18** **Title of the work:** On State Estimation of Timed Petri Nets
Name of the conference: 18th world congress of the International Federation of Automatic Control (IFAC2011)
Date of event: 2011
Organising entity: IFAC
X. Wang; C. Mahulea; J. Júlvez; M. Silva.
- 19** **Title of the work:** On reachability and deadlock-freeness of Hybrid Adaptive Petri nets
Name of the conference: 18th world congress of the International Federation of Automatic Control (IFAC2011)
Date of event: 2011
Organising entity: IFAC
E. Fraca; J. Júlvez; C. Mahulea; M. Silva.
- 20** **Title of the work:** A Control Method for Timed Distributed Continuous Petri nets
Name of the conference: American Control Conference (ACC 2010)
Date of event: 2010
Organising entity: IFAC
H. Apaydin-Özkan; J. Júlvez; C. Mahulea; M. Silva.



- 21** **Title of the work:** Accurate Performance Estimation for Stochastic Marked Graphs by Bottleneck Regrowing
Name of the conference: 7th European Performance Engineering Workshop (EPEW 2010)
Date of event: 2010
Organising entity: EPEW
R. Rodríguez; J. Júlvez.
- 22** **Title of the work:** An Iterative Control Method for Distributed Continuous Petri nets with Tree Structure
Name of the conference: 49th IEEE Conference on Decision and Control (CDC 2010)
Date of event: 2010
Organising entity: IEEE
H. Apaydin- Özkan; C. Mahulea; J. Júlvez; M. Silva.
- 23** **Title of the work:** Minimum-time Control for Structurally Persistent Continuous Petri Nets
Name of the conference: 49th IEEE Conference on Decision and Control (CDC 2010)
Date of event: 2010
Organising entity: IEEE
L. Wang; C. Mahulea; J. Júlvez; M. Silva.
- 24** **Title of the work:** SimHPN: a MATLAB toolbox for continuous Petri nets
Name of the conference: 10th International Workshop on Discrete Event Systems (WODES 2010)
Date of event: 2010
Organising entity: IFAC
J. Júlvez; C. Mahulea.
- 25** **Title of the work:** An Efficient Heuristics for Minimum Time Control of Continuous Petri nets
Name of the conference: 3rd IFAC Conference on Analysis and Design of Hybrid Systems (ADHS 2009)
Date of event: 2009
Organising entity: IFAC
H. Apaydin-Özkan; J. Júlvez; C. Mahulea; M. Silva.
- 26** **Title of the work:** Basic Qualitative Properties of Petri Nets with Multi-Guarded Transitions
Name of the conference: American Control Conference (ACC 2009)
Date of event: 2009
Organising entity: IFAC
J. Júlvez.
- 27** **Title of the work:** Retiming and recycling for elastic systems with early evaluation
Name of the conference: 46th Design Automation Conference (DAC 2009)
Date of event: 2009
Organising entity: SIGDA
D. Bufistov; J. Cortadella; M. Galceran-Oms; J. Júlvez; M. Kishinevsky.
- 28** **Title of the work:** Scheduling synchronous elastic designs
Name of the conference: Application of Concurrency to System Design 2009 (ACSD 2009)
Date of event: 2009
Organising entity: ACSD
J. Carmona; J. Júlvez; J. Cortadella; M. Kishinevsky.
- 29** **Title of the work:** Performance optimization of elastic systems using buffer resizing and buffer insertion
Name of the conference: International Conference on Computer-Aided Design (ICCAD 2008)
Date of event: 2008



Organising entity: IEEE/ACM
D. Bufistov; J. Júlvez; J. Cortadella.

- 30** **Title of the work:** Polynomial Throughput Bounds for Equal Conflict Petri Nets with Multi-Guarded Transitions
Name of the conference: 5th International Conference on the Quantitative Evaluation of Systems (QEST 2008)
Date of event: 2008
Organising entity: IEEE Computer Society
J. Júlvez.
- 31** **Title of the work:** Performance analysis of concurrent systems with early evaluation
Name of the conference: International Conference on Computer-Aided Design (ICCAD 2006)
Date of event: 2006
Organising entity: IEEE/ACM
J. Júlvez; J. Cortadella; M. Kishinevsky.
- 32** **Title of the work:** Event-Driven Optimal Control of Integral Continuous-Time Hybrid Automata
Name of the conference: 44th IEEE Conference on Decision and Control (2005 Joint CDC-ECC)
Date of event: 2005
Organising entity: IEEE
A. Bemporad; S. D. Cairano; J. Júlvez.
- 33** **Title of the work:** Modelling and controlling traffic behaviour with continuous Petri nets
Name of the conference: 16th triennial world congress of the International Federation of Automatic Control (IFAC2005)
Date of event: 2005
Organising entity: IFAC
J. Júlvez; R. Boel.
- 34** **Title of the work:** On Controllability of Timed Continuous Petri Net Systems: the Join Free Case
Name of the conference: 44th IEEE Conference on Decision and Control (2005 Joint CDC-ECC)
Date of event: 2005
Organising entity: IEEE
E. Jiménez; J. Júlvez; L. Recalde; M. Silva.
- 35** **Title of the work:** Design of Observers for Timed Continuous Petri Net Systems
Name of the conference: IEEE 2004 Int. Conf. on Systems, Man, and Cybernetics (SMC 2004)
Date of event: 2004
Organising entity: IEEE
J. Júlvez; E. Jiménez; L. Recalde; M. Silva.
- 36** **Title of the work:** Event-Driven Optimal Control of Continuous Petri Nets
Name of the conference: 43rd IEEE Conference on Decision and Control (CDC 2004)
Date of event: 2004
Organising entity: IEEE
J. Júlvez; A. Bemporad; L. Recalde; M. Silva.
- 37** **Title of the work:** On Observability in Timed Continuous Petri Net Systems
Name of the conference: First International Conference on the Quantitative Evaluation of Systems (QEST 2004)



Date of event: 2004

Organising entity: IEEE Computer Society

J. Júlvez; E. Jiménez; L. Recalde; M. Silva.

38 Title of the work: Relaxed Continuous Views of Discrete Event Systems: Considerations on Forrester Diagrams and Petri Nets

Name of the conference: IEEE 2004 Int. Conf. on Systems, Man, and Cybernetics (SMC 2004)

Date of event: 2004

Organising entity: IEEE

E. Jiménez; J. Júlvez; L. Recalde; M. Silva.

39 Title of the work: Marking Estimation of Petri Nets based on Partial Observation

Name of the conference: American Control Conference (ACC 2003)

Date of event: 2003

Organising entity: IFAC

A. Giua; J. Júlvez; C. Seatzu.

40 Title of the work: Observers for nondeterministic lambda-free labeled Petri nets

Name of the conference: 9th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA2003)

Date of event: 2003

Organising entity: IEEE

D. Corona; A. Giua; C. Seatzu; J. Júlvez.

41 Title of the work: On deadlock-freeness analysis of autonomous and timed continuous mono-T-semiflow nets

Name of the conference: 41st IEEE Conference on Decision and Control (CDC 2002)

Date of event: 2002

Organising entity: IEEE

J. Júlvez; L. Recalde; M. Silva.

42 Title of the work: Steady State Performance evaluation for some continuous Petri nets

Name of the conference: 15th triennial world congress of the International Federation of Automatic Control (IFAC2002)

Date of event: 2002

Organising entity: IFAC

L. Recalde; J. Júlvez; M. Silva.



R&D management and participation in scientific committees

Scientific, technical and/or assessment committees

- 1** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2022)
Affiliation entity: Formal methods Europe
Start-End date: 2022 - 2022
- 2** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2021)
Affiliation entity: Formal methods Europe
Start-End date: 2021 - 2021
- 3** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2020)
Affiliation entity: Formal methods Europe
Start-End date: 2020 - 2020
- 4** **Committee title:** Co-chair del Track 4: 24th IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 2019 - 2019
- 5** **Committee title:** Comité de programa de: 14th Workshop on Discrete Event Systems
Affiliation entity: IFAC, IEEE
Start-End date: 14/05/2018 - 16/05/2018
- 6** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2018)
Affiliation entity: Formal methods Europe
Start-End date: 2018 - 2018
- 7** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2017)
Affiliation entity: Formal methods Europe
Start-End date: 2017 - 2017
- 8** **Committee title:** Comité de programa de: 21st IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 2016 - 2016
- 9** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2016)
Affiliation entity: Formal methods Europe
Start-End date: 2016 - 2016



- 10** **Committee title:** Comité de programa de: 20th IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 2015 - 2015
- 11** **Committee title:** Comité de programa de: Workshop on Petri nets for Adaptive Discrete-Event Control Systems
Affiliation entity: German Institute for International Educational Research
Start-End date: 2015 - 2015
- 12** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2015)
Affiliation entity: Formal methods Europe
Start-End date: 2015 - 2015
- 13** **Committee title:** Comité de programa de: 19th IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 16/09/2014 - 19/09/2014
- 14** **Committee title:** Comité de programa de: 12th Workshop on Discrete Event Systems
Affiliation entity: IFAC, IEEE
Start-End date: 14/05/2014 - 16/05/2014
- 15** **Committee title:** Comité de programa de: 5th ACM/SPEC International Conference on Performance Engineering
Affiliation entity: ACM
Start-End date: 23/03/2014 - 26/03/2014
- 16** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2014)
Affiliation entity: Formal methods Europe
Start-End date: 2014 - 2014
- 17** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2013)
Affiliation entity: Formal methods Europe
Start-End date: 21/11/2013 - 22/11/2013
- 18** **Committee title:** Comité de programa de: 18th IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 10/09/2013 - 13/09/2013
- 19** **Committee title:** Comité de programa de: 11th Workshop on Discrete Event Systems
Affiliation entity: IFAC, IEEE
Start-End date: 03/10/2012 - 05/10/2012
- 20** **Committee title:** Comité de programa de: 17th IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 17/09/2012 - 21/09/2012



- 21** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2012)
Affiliation entity: Formal methods Europe
Start-End date: 15/09/2012 - 16/09/2012
- 22** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2011)
Affiliation entity: Formal methods Europe
Start-End date: 15/09/2011 - 16/09/2011
- 23** **Committee title:** Comité de programa de: 16th IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 05/09/2011 - 09/09/2011
- 24** **Committee title:** Comité de programa de: 15th IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 13/09/2010 - 16/09/2010
- 25** **Committee title:** Comité de programa de: Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS 2010)
Affiliation entity: Formal methods Europe
Start-End date: 01/07/2010 - 02/07/2010
- 26** **Committee title:** Comité de programa de: 31st International Conference on Application and Theory of Petri Nets and Other Models of Concurrency
Affiliation entity: Springer
Start-End date: 21/06/2010 - 25/06/2010
- 27** **Committee title:** Comité de programa de: 14th IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 22/09/2009 - 26/09/2009
- 28** **Committee title:** Comité de programa de: 3rd IFAC Conference on Analysis and Design of Hybrid Systems
Affiliation entity: IFAC
Start-End date: 16/09/2009 - 19/09/2009
- 29** **Committee title:** Comité de programa de: 30th International Conference on Application and Theory of Petri Nets and Other Models of Concurrency
Affiliation entity: Springer
Start-End date: 22/06/2009 - 26/06/2009
- 30** **Committee title:** Comité de programa de: 13th IEEE International Conference on Emerging Technologies and Factory Automation
Affiliation entity: IEEE
Start-End date: 15/09/2008 - 18/09/2008



Organization of R&D activities

- 1** **Title of the activity:** 18th European Dependable Computing Conference (EDCC 2022)
Type of activity: Local Organization and Financial Chair
Geographical area: Non EU International
Convening entity: IEEE
City convening entity: Zaragoza, Aragon, Spain
Start-End date: 12/09/2022 - 15/09/2022
Duration: 4 days
- 2** **Title of the activity:** 3rd IFAC Conference on Analysis and Design of Hybrid Systems
Type of activity: Miembro del comité organizador
Geographical area: Non EU International
Convening entity: IFAC
City convening entity: Zaragoza, Aragon, Spain
Start date: 16/09/2009
Duration: 3 days
- 3** **Title of the activity:** 3rd IFAC Conference on Analysis and Design of Hybrid Systems
Type of activity: Miembro del comité organizador
Geographical area: Non EU International
Convening entity: IFAC
City convening entity: Zaragoza, Aragon, Spain
Start date: 16/09/2009
Duration: 3 days
- 4** **Title of the activity:** 6th International Workshop on Discrete Event Systems
Type of activity: Miembro del comité organizador
Geographical area: Non EU International
Convening entity: Control Systems Society
City convening entity: Zaragoza, Aragon, Spain
Start date: 02/10/2002
Duration: 3 days
- 5** **Title of the activity:** X Jornadas Nacionales de Concurrencia
Type of activity: Miembro del comité organizador
Geographical area: National
City convening entity: Zaragoza, Aragon, Spain
Start date: 12/06/2002
Duration: 3 days

R&D management

- 1** **Name of the activity:** Control and Automation Systems (Frontiers in Control Engineering)
Type of management: Edición
Performed tasks: Editor Asociado
Entity: Frontiers
Start date: 01/01/2020
Duration: 1 year
- 2** **Name of the activity:** Discrete Dynamics in Nature and Society
Type of management: Edición
Performed tasks: Editor Asociado
Entity: Hindawi
Start date: 01/11/2014
Duration: 2 years



- 3 Name of the activity:** Modelado y Verificación de sistemas de software críticos
Type of management: Management of R&D&I actions and projects
Performed tasks: Investigador principal
Entity: Universidad de Zaragoza **Type of entity:** University
Start date: 01/10/2010 **Duration:** 2 years
- 4 Name of the activity:** Discrete Event Dynamic Systems: Theory and Applications
Type of management: Edición
Performed tasks: Editor Asociado
Entity: Springer **Type of entity:** Business
Start date: 01/01/2010 **Duration:** 11 years

Evaluation and revision of R&D projects and articles

- 1 Name of the activity:** Evaluación
Performed tasks: Evaluador del programe Europa de la Caja de Ahorros de la Inmaculada para estancias de investigación
Entity where activity was carried out: CAJA DE AHORROS DE LA INMACULADA
City of entity: Zaragoza, Aragon, Spain
Start-End date: 01/01/2009 - 31/12/2109
- 2 Name of the activity:** Revisión de artículos
Performed tasks: Revisor de artículos de investigación de las siguientes revistas internacionales: Automatica; IEEE Transactions on Computers; IEEE Systems, Man and Cybernetics, Part A; IEEE Transactions on Automation Science and Engineering; Asian Journal of Control; Revista Iberoamericana de Automática e Inform´atica Industrial; The Computer Journal; Natural Computing; IEEE Transactions on Industrial Informatics; IEEE Transactions on Very Large Scale Integration Systems; Control Engineering Practice; Nonlinear Analysis: Hybrid Systems; Fundamenta Informaticae; World Journal of Modelling and Simulation
Start-End date: 01/01/2003 - 31/12/2011
- 3 Name of the activity:** Revisión de artículos
Performed tasks: Revisor de artículos de investigación de las siguientes conferencias internacionales: International Conference on Application and Theory of Petri Nets; International Workshop on Discrete Event Systems; International Conference on the Quantitative Evaluation of Systems; Hybrid Systems: Computation and Control conference; Conference on Decision and Control; Hybrid Systems: Computation and Control conference; American Control Conference; IFAC World Congress; IEEE International Symposium on Asynchronous Circuits and Systems; European Control Conference; International Conference on Formal Engineering Methods.
Start-End date: 01/08/2002 - 31/12/2011
- 4 Name of the activity:** Miembro del tribunal
Performed tasks: Tesis: Fluidization, Controllability and Control of Timed Continuous Petri nets
Entity where activity was carried out: Universidad de Zaragoza **Type of entity:** University
City of entity: Zaragoza, Spain
Start-End date: 24/06/2011 - 24/06/2011
- 5 Name of the activity:** Miembro del tribunal
Performed tasks: Tesis: Analysis and control of continuous Petri nets
Entity where activity was carried out: Anadolu Univeristy **Type of entity:** University



City of entity: Eskisehir, Turkey

Start-End date: 15/10/2010 - 15/10/2010

Other achievements

Stays in public or private R&D centres

- 1** **Entity:** University of Cambridge
City of entity: Cambridge, East Anglia, United Kingdom
Start-End date: 01/10/2014 - 30/09/2018 **Duration:** 4 years
Goals of the stay: Contracted
Provable tasks: Formalismos de modelado para sistemas biológicos
- 2** **Entity:** University of Cambridge
City of entity: Cambridge, East Anglia, United Kingdom
Start date: 01/08/2013 **Duration:** 21 days
Goals of the stay: Post-doctoral
Provable tasks: Análisis de propiedades dinámicas de sistemas biológicos
- 3** **Entity:** University of Oxford
City of entity: Oxford, Berkshire, Buckinghamshire and Oxfordshire, United Kingdom
Start date: 01/08/2009 **Duration:** 3 months
Goals of the stay: Post-doctoral
Provable tasks: Análisis de propiedades dinámicas de sistemas biológicos
- 4** **Entity:** Università degli Studi di Siena
City of entity: Siena, Toscana, Italy
Start date: 01/05/2005 **Duration:** 3 months
Goals of the stay: Post-doctoral
Provable tasks: Control predictivo de sistemas híbridos
- 5** **Entity:** Universiteit Gent **Type of entity:** University
City of entity: Gante, Belgium
Start date: 01/01/2004 **Duration:** 3 months
Goals of the stay: Doctorate
Provable tasks: Modelado y análisis de sistemas de tráfico
- 6** **Entity:** Università degli Studi di Siena
City of entity: Siena, Toscana, Italy
Start date: 10/10/2003 **Duration:** 2 months - 10 days
Goals of the stay: Doctorate
Provable tasks: Control óptimo de redes de Petri continuas
- 7** **Entity:** Università degli Studi di Cagliari **Type of entity:** University
City of entity: Cagliari, Sardegna, Italy
Start date: 15/04/2002 **Duration:** 3 months
Goals of the stay: Doctorate
Provable tasks: Estimación de marcado en redes de Petri



Obtained grants and scholarships

- 1** **Name of the grant:** Beca del programa Europa de la Caja de Ahorros de la Inmaculada (2009, ref. IT15/09).
Aims: Post-doctoral
Awarding entity: CAJA DE AHORROS DE LA INMACULADA
Conferral date: 01/07/2009 **Duration:** 3 months
- 2** **Name of the grant:** Beca de la red europea de excelencia Hybrid Control: Taming Heterogeneity and Complexity of Networked Embedded Systems (HYCON 2005)"
Aims: Post-doctoral
Awarding entity: Università degli Studi di Siena
Conferral date: 01/05/2005 **Duration:** 3 months
- 3** **Name of the grant:** European Community Marie Curie Fellowship, CTS (HPMT-CT-2001-00278)
Aims: Pre-doctoral
Awarding entity: Unión Europea **Type of entity:** Unión Europea
Conferral date: 01/04/2004 **Duration:** 3 months
- 4** **Name of the grant:** Beca Predoctoral de la Diputación General de Aragón (ref B106/2001)
Aims: Pre-doctoral
Awarding entity: Diputación General de Aragón **Type of entity:** Organismo autonómico
Conferral date: 01/01/2001 **Duration:** 3 years

Prizes, mentions and distinctions

Description: Best paper award por el artículo "Scheduling synchronous elastic designs" en la conferencia ACSD2009
Awarding entity: ACSD **Type of entity:** Comité de programa de la conferencia
City awarding entity: Augsburg, Schwaben, Germany
Conferral date: 01/07/2009

Periods of research activity

- 1** **Nº of recognized periods:** 3
Certifying entity: Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** Pública
City certifying entity: Zaragoza, Aragon, Spain
Date of recognition: 05/06/2013
- 2** **Nº of recognized periods:** 1
Certifying entity: Agencia de Calidad y Prospectiva Universitaria de Aragón (ACPUA) **Type of entity:** Organismo autonómico
City certifying entity: Zaragoza, Aragon, Spain
Date of recognition: 22/04/2010