



RESEARCHING GROUP ON “CIRCUITS AND SYSTEMS FOR INFORMATION PROCESSING” (CASIP TIC-117)

DEPARTMENT OF COMPUTER ARCHITECTURE AND COMPUTER TECHNOLOGY

1. Introduction

The group CASIP is officially recognized as researching group by the Regional Government (Junta de Andalucía) with reference TIC-117, and is one of the groups included in the Researching Thematic Unit on Advanced Computing Architectures and Smart Embedded Systems (ACASES) of the Research Center for Information and Communications Technologies of the University of Granada (CITIC-UGR, <http://citic.ugr.es/>). The group is composed by members of the Department of Computer Architecture and Computer Technology (<http://atc.ugr.es>) teaching subjects related with Computer Technology and Architecture, High Performance Computing, Application Specific Integrated Circuits and Systems, Control Systems, Operating Systems and Programming on the Graduate studies of Computer Engineering, Electronics Engineering, Telecommunications Engineering, Physics and Chemistry, and on the Master of Computer Engineering and Networks.

In the present year (2017), the group CASIP is composed by 44 members (of which 31 are PhD) and collaborators. Among the members, there are 7 full professors and 15 associate professors. Ten members have received the Graduate Extraordinary Prize, and seven have received the Doctorate Extraordinary Prize.

The mission of the group CASIP is to develop high quality researching, developing and innovation activities in areas of Information and Communication Technologies (ICT) for the advancement of scientific and technological knowledge, and to improve the quality of life of the citizens and the competitiveness of companies in our socio-economic environment. The areas of interest of CASIP are the following ones:

- High Performance Architectures and Distributed Systems.
 - Advanced implementation of network interfaces and distributed file systems.
 - High performance computing (HPC) and novel architectures and algorithms in bioengineering, biomedicine and bioinformatics.
 - Application-Specific embedded systems for smart vision sensors, robotics and instrumentation.
 - Safety embedded systems for avionics, automotive or industry.
 - Mobile and Cloud computing infrastructure.
- Neural Engineering.
 - Computational Neuroscience.
 - Brain simulation.
 - Brain Computer Interface (BCI) technologies and applications.
 - Neuromorphic engineering.
- Advanced Monitoring and Control Systems.
 - Embedded systems for control of distributed networks.
 - Online self-organizing adaptive smart embedded controllers.
 - Inference behaviour in sensor networks for monitoring in smart spaces.
 - Control and monitoring of large scientific infrastructures.
 - Remote monitoring and control of environmental parameters for energy efficient buildings and risk prevention.

The target applications of CASIP belong to the following areas:

- e-Health and well-being.
- Computer-aided medical diagnosis.
- Scientific Instrumentation
- e-Monitoring and control
- Smart spaces and ubiquitous systems
- Systems for people with special needs

According to the HORIZON 2020 Framework Programme for Research and Innovation (<http://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020>) of the European Commission and the “Plan Estatal de Investigación Científica y Técnica y de Innovación, 2013-2016” (National Programme for Scientific and Technological Researching and Innovation, 2013-2016) of the Spanish Government, the most relevant Societal Challenges addressed by CASIP are:

- Health and wellbeing
- Smart, green and integrated transport
- Climate action, resource efficiency and raw materials
- Inclusive, innovative and reflective societies
- Secure societies

Moreover, considering the six main activity lines identified in the ICT Leadership in Enabling and Industrial Technologies of the Horizon 2020 Programme (<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/information-and-communication-technologies>):

- a) A new generation of components and systems: Engineering of advanced and smart embedded components and systems;
- b) Next generation computing: Advanced computing systems and technologies;
- c) Future Internet: Infrastructures, technologies and services;
- d) Content technologies and information management: ICT for digital content and creativity;
- e) Advanced interfaces and robots: Robotics and smart spaces;
- f) Micro- and nanoelectronics and photonics: Key enabling technologies related to micro- and nanoelectronics and to photonics.

The activities of group CASIP clearly deal with activities in lines a), b), c) and e).

Papers on the different researching lines of the group have been published in some of the best International Journals of their corresponding areas, as it can be seen from its ISI impact factor. The formative capability of the group is demonstrated by the high number of Doctoral dissertations advised by its members. One of the members of the group (professor Eduardo Ros) has received the Award for Young Researchers of Andalusia in its edition of 2002 and the group CASIP won the University of Granada’s Social Council Award for Knowledge transference (2003 edition).

The main companies that have signed R+D+I contracts with members of the group CASIP are:

- AQUAPLAN
- Atico7,
- Automation Consultants, S.L.,
- BOA COR S.A.,
- CATÓN Sistemas Alternativos
- CIATESA,
- Civista,
- Control in Situ, S.L.,

- Data General,
- EMASAGRA,
- ETC Media, S.L.,
- Fujitsu Spain S.A.,
- HEFAGRA Informática, S.L,
- ICR (Ingeniería y Control Remoto S.A.),
- INFOTEL (Información y Telecomunicaciones S.A.),
- INISEL,
- Intecna Solutions,
- Sadiel,
- SEDIPYME,
- Southern Star,
- Telefónica I+D.
- Telvent Energía y Medio Ambiente, S.A.,
- Telvent Interactiva,
- TQM Asesores
- Viajes Genil, S.A.

Many of those contracts are included in national or regional programmes to promote relationships between public researching organizations and companies (CEDIT, PROFIT, TRACTOR, Technological Corporation of Andalusia, etc.). Moreover, several spin-off companies have been incorporated by members of our group:

- **Ingeniería y Control Remoto (ICR)**
 - Founded by Gonzalo Olivares and Francisco Gómez Mula in 1991.
 - <http://www.icr-sa.com/>
- **Logic Factory**
 - Founded by David Palomar (also promoter and responsible of the Section in Granada of Movired 2000 S.L.)
 - <http://www.logic-factory.com/>
- **Seven Solutions**
 - Incorporated in 2006, and founded by Eduardo Ros, Javier Díaz, Eva M. Ortigosa, Rodrigo Agís, Richard Carrillo and Rafael Rodríguez.
 - <http://www.sevensols.com/>

2. Members

The members of the research group are summarized in the following table. It has been obtained from the SICA (System of Information on Science of Andalusia) database.

Nombre	Titulación	Entidad
ANGUITA LOPEZ, MANCIA	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
BARRANCO EXPÓSITO, FRANCISCO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
BERNIER VILLAMOR, JOSE LUIS	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
CAÑAS VARGAS, ANTONIO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
CARRILLO SANCHEZ, RICHARD R	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
DAMAS HERMOSO, MIGUEL	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
DEL PINO PRIETO, MARIA BEGOÑA	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores

DÍAZ ALONSO, ANTONIO JAVIER	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
DIAZ GARCIA, ANTONIO FRANCISCO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
ESCOBAR PÉREZ, JUAN JOSÉ	Titulado superior	Universidad de Granada. Arquitectura y Tecnología de Computadores
FERNANDEZ BALDOMERO, FRANCISCO JAVIER	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
GARCIA PUNTONET, CARLOS	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
GÓMEZ MULA, FRANCISCO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
GONZÁLEZ PEÑALVER, JESÚS	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
GUILLÉN PERALES, ALBERTO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
GUTIÉRREZ RIVAS, JOSÉ LUIS	Titulado superior	Universidad de Granada. Arquitectura y Tecnología de Computadores
HERNÁNDEZ PALACIOS, RAÚL	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
HERRERA MALDONADO, LUIS JAVIER	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
LUQUE SOLA, NICETO RAFAEL	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
MARTIN SMITH, PEDRO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
MARTÍNEZ CAÑADA, PABLO	Máster	Universidad de Granada. Arquitectura y Tecnología de Computadores
MARTÍNEZ ORTIGOSA, EVA	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
MINGUILLÓN CAMPOS, JESÚS	Titulado superior	Universidad de Granada. Arquitectura y Tecnología de Computadores
MORILLAS GUTIÉRREZ, CHRISTIAN AGUSTÍN	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
OLIVARES RUIZ, GONZALO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
ORTEGA LOPERA, JULIO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
PALOMAR SAEZ, DAVID	Titulado superior	Universidad de Granada. Arquitectura y Tecnología de Computadores
PELAYO VALLE, FRANCISCO JOSE	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
POMARES CINTAS, HÉCTOR	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
PRIETO CAMPOS, BEATRIZ	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
PRIETO ESPINOSA, ALBERTO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
RODRIGUEZ ALVAREZ, MANUEL	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
RODRÍGUEZ QUINTANA, CRISTINA	Máster	Universidad de Granada. E.T.S.I. Informática y de Telecomunicación
ROJAS RUIZ, FERNANDO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
ROJAS RUIZ, IGNACIO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
ROMERO GARCÍA, SAMUEL FRANCISCO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores

ROS VIDAL, EDUARDO	Doctor	Universidad de Granada. Arquitectura y Tecnología de Computadores
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3. Funded projects (competitive programmes):

In 2017, there are 10 active projects funded through competitive programmes (contracts and projects with companies not included). In what follows, the projects funded in competitive programmes in the last six years (from 2012 to 2017) are listed:

European projects:

1. **Title:** HBP: Human Brain Project. Future Neuroscience WP
Reference: FP7 Flagship Project 604102
Responsible researcher: Eduardo Ros Vidal
Funded by: European Union (VII Framework Programme for Research and Innovation). Programme FET. Flagship Project.
Participants: University of Granada (Spain), and 264 researching institutions
Dates: 1-10-2013 to 30-09-2023
Budget: 150.000€
Researchers: 14 in UGR
2. **Title:** Teal-Time ASoC
Reference: PEOF-GA-2012-332081
Responsible researcher: Eduardo Ros Vidal
Funded by: European Union (VII Framework Programme for Research and Innovation). Programme Marie Curie (IOF: International Outgoing Fellowships)
Participants: University of Granada (Spain) and University of Maryland (USA)
Dates: 7-05-2013 to 6-05-2016
Budget: 254.925,90€
Researchers: 3
3. **Title:** ASTERICS: Astronomy ESFRI and Research Infrastructure Cluster
Reference: H2020-INFRADEV-1-2014-1
Responsible researcher: Javier Díaz Alonso
Funded by: European Union, Project ID: 653477
Participants: University of Granada (Spain)
Dates: 1/05/2015 to 30/04/2019
Budget: 191.100€
Researchers: 5
4. **Title:** CEREBSENSING: Cerebellar distributed plasticity towards active sensing and motor control
Reference: H2020 Marie-Sklodowska Curie IF 2014 - 653019
Researchers: Eduardo Ros Vidal, Jesús Garrido Alcázar
Funded by: Unión Europea (UE, H2020 Programa Marco). Programa Marie-Sklodowska Curie 2014
Participants: University of Granada (Spain)
5. **Title:** RECOMP: Reduced Certification Costs for Trusted Multi-core Platforms
Reference: ARTEMIS-100202
Responsible researcher: Díaz Alonso, A. Javier
Funded by: UE; Proyectos ARTEMIS
Date: 01/04/2010 - 31/03/2013
Budget: UGR: 578.550,00 € (16,7 % funded by UE; 33,3% funded by CDTI).
Researchers: 5
6. **Title:** TOMSY: TOpology based Motion SYNthesis for dexterous manipulation.
Reference: FP7-270436
Responsible researcher: Eduardo Ros Vidal

Funded by: European Union (UE, IST, VII Framework Programme)

Date: 01/04/2011 – 31/03/2014

Budget: UGR 434.000 Euros. Total: 3.000.000 Euros

Researchers: 14

7. **Title:** REALNET: Realistic Real-time Networks: computation dynamics in the cerebellum.
Reference: FP7-270434
Responsible researcher: Eduardo Ros Vidal
Funded by: Unión Europea (UE, IST, VII Programa Marco)
Date: 01/02/2011 - 31/01/2014
Budget: UGR 255.070 Euros. Total: 2.387.950 Euros
Researchers: 18
8. **Title:** FASTDEFORM: Real-time understanding of dexterous deformable object manipulation with bio-inspired architectures.
Reference: PIEF-GA-2011-301144.
Responsible researcher: Eduardo Ros Vidal
Funded by: European Union (UE, IST, VII Framework Programme). Marie Curie Programme (IEF: International European Fellowships)
Date: desde 15-07-2012 hasta 14-07-2014
Budget: 168.896,40€
Researchers: 2

National projects:

1. **Title:** CEREBROT: Cerebelo Adaptativo de Integración sensori-motora y su aplicación en Robótica
Reference: TIN2016-81041-R
Responsible researcher: Eduardo Ros Vidal y Mancia Anguita López
Funded by: Ministerio de Economía y Competitividad y Fondos FEDER
Dates: 1/1/2017 - 31/12/2019
Budget: 82.328,40 euros (78.408,00€, 3.920,40€)
Researchers: 8
2. **Title:** Optimización Multi-Objetivo de Altas Prestaciones y Energéticamente Eficiente en Arquitecturas de Computador Heterogéneas. Aplicaciones en Ingeniería Biomédica (ehpMOBE)
Reference: TIN2015-67020-P
Responsible researchers: Julio Ortega Lopera and Jesús González Peñalver
Funded by: Ministerio de Economía y Competitividad and FEDER funds
Dates: 1/1/2016 - 31/12/2018
Budget: 94.864,00 (79.306,30 in 2016; 3.225,38 in 2017; 12.332,32 in 2018)
Researchers: 14
3. **Title:** Participación de la UGR en ANTARES, KM3NET-ARCA/ORCA y PDG
Reference: FPA2015-65150-C3-3- P
Responsible researchers: Sergio Navas Concha / Antonio F. Díaz García
Funded by: Ministerio de Economía y Competitividad
Dates: 1/1/2016 - 31/12/2018
Budget: 55.000,00
4. **Title:** Amiga-6: Gas en el interior y en el entorno de las galaxias. Preparación científica para SKA y contribución al diseño de flujo de datos. Transmisión de Datos y Señales (SaDT).
Reference: AYA2015-65973-C3-2-R
Responsible researcher: Manuel Rodríguez Álvarez.
Funded by: Ministerio de Economía y Competitividad and FEDER-RETOS funds.
Dates: 1/1/2016 - 31/12/2018
Budget: 100.000,00 (82.600,00 in 2016; 3.400,00 in 2017; 14.000,00 in 2018)
Researchers: 6

5. **Title:** Avances en arquitecturas de cómputo para aprendizaje automático utilizando fuentes heterogéneas: aplicaciones en salud y bienestar
Reference: TIN2015-71873-R
Responsible researcher: Luis Javier Herrera Maldonado e Ignacio Rojas Ruiz
Funded by: Ministerio de Economía y Competitividad and FEDER funds
Dates: 1/1/2016 - 31/12/2018
Budget: 97.100 €
Researchers: 13 (7 of UGR)

6. **Title:** Neurociencia Computacional en ciclos cerrados de percepción-acción (NEUROPACK)
Reference: TIN2013-47069-P
Responsible researcher: Eduardo Ros Vidal
Funded by: Ministerio de Economía y Competitividad
Dates: 1/1/2014 - 31/12/2016
Budget: 112.500 Euros

7. **Title:** Participación de la Universidad de Granada en el experimento AUGER y su futura mejora AUGERPRIME
Reference: FPA2015-70420-C2-2-R
Responsible researcher: Antonio Bueno Villar and Alberto Guillén Perales
Funded by: Ministerio de Economía y Competitividad and FEDER- RETOS funds.
Dates: 1/1/2016 - 31/12/2018
Budget: 140.000€
Researchers: 4

8. **Title:** INDOTAC: Mini-UAV para uso táctico y en interiores Indoor and Tactical Purpose (Mini UAV).
Reference: COINCIDENTEDN8644-INDOTAC Programme COINCIDENTE (Cooperación en Investigación Científica y Desarrollo en Tecnologías Estratégicas)
Responsible researcher: Samuel Francisco Romero García
Funded by: Advisor(s) General de Armamento y Material
Dates: 1/10/2015 - 30/09/2017
Budget: 315.114,47 euros (UGR)

9. **Title:** TASA, Técnicas Avanzadas para Sistemas Activos.
Reference: TSI-020100-2010-484.
Responsible researcher: Miguel Damas Hermoso y Héctor Pomares Cintas
Funded by: Ministerio de Industria, Turismo y Comercio. Plan Nacional de Investigación Científica, Desarrollo e Innovación Tecnológica. Acción Estratégica de Telecomunicaciones y Sociedad de la Información. Subprograma Avanza Competitividad I+D+i.
Participants: Universidad de Córdoba and Telvent Energía S.A.
Date: 01/01/2010 - 31/12/2012.
Budget: (UGR) 51046,34 euros.

10. **Title:** Creación de la Red Española de Series Temporales.
Reference: TIN2010-09967-E.
Responsible researcher: Héctor Pomares Cintas.
Funded by: Ministerio de Ciencia e Innovación. Plan Nacional de I+D+i. Subprograma de Acciones Complementarias.
Participants: UGR (coordinator) and 19 Spanish Universities
Dates: 01/01/2012 - 30/12/2012.
Budget: 9000 euros.

11. **Title:** Arquitecturas de computación de propósito específico para percepción visual en tiempo real. Implementación on-chip (ARC-VISION)
Reference: TEC2010-15396
Responsible researcher: Eduardo Ros Vidal

Funded by: CYCIT (Plan Nacional I+Dì)

Date: 1/1/2011 – 31/12/2013

Budget: 113.600,00 € (UGR)

12. **Title:** Desarrollo de sistemas inteligentes avanzados en plataformas de altas prestaciones. Aplicación en problemas bioinformáticos y biomédicos. (DSIPA-BIO)
Reference: SAF2010-20558
Responsible researcher: Rojas Ruiz, Ignacio
Funded by: CICYT Ministerio
Date: 01/01/2010 – 01/01/2013
Budget: 181.500,00 €
13. **Title:** AbFS: Sistema de Almacenamiento Paralelo y Muy Masivo para HPC & Cloud Computing
Reference: IPT-2011:1728-430000
Responsible researcher: Antonio F. Díaz García
Funded by: Ministerio de Ciencia e Innovación.
Date: 1/10/2011 - 31/12/2014
Budget: 628.431 euros (UGR: 174.438 euros)
14. **Title:** UCS: Unified Cluster Storage
Reference: TSI-020100-2011-213
Responsible researcher: Antonio F. Díaz García
Funded by: Ministerio de Industria, Turismo y Comercio. Secretaría de Estado de Telecomunicaciones y para la Sociedad de la Información. Subprogramme AVANZA Competitividad I+D+I.
Date: 1/10/2011 - 31/12/2013
Budget: 403.479 euros total (UGR: 41.300 euros)
15. **Title:** Optimización Multiobjetivo de Altas Prestaciones y Aplicaciones en Neuroingeniería y Técnicas para Rehabilitación
Reference: TIN2012-32039
Responsible researcher: Julio Ortega Lopera
Funded by: Ministerio de Economía y Competitividad
Date: 1/1/2013 - 31/12/2015
Budget: 33.631 (2013); 3.771 (2014); 3.501 (2015)

Regional and local (CEI BIOTIC) projects:

1. **Title:** Plat-EEG: Plataforma de altas prestaciones para la adquisición, extracción y procesamiento inteligente de señales EEG
Reference: TIC-7983
Responsible researcher: Francisco J. Pelayo Valle
Funded by: Junta de Andalucía
Dates: 27/06/2013 - 26/06/2017
Budget: 100.639,38€
2. **Title:** Visión tridimensional para videoanálisis interactivo y realidad aumentada (VITVIR)
Reference: P11-TIC-8120
Responsible researcher: Antonio Javier Díaz Alonso
Funded by: Junta de Andalucía
Dates: 27/06/2013 al 26/06/2016
Budget: 37.881,00€
3. **Title:** UAVs: soluciones técnicas aplicadas al empleo táctico
Reference: PIN 14/2014
Responsible researcher: Samuel F. Romero García and David A. Pelta Mochkovsky
Funded by: Centro Mixto UGR/MADOC – Banco Santander
Dates: 15/11/2014 al 16/5/2016
Budget: 10.000€

Researchers: 16

4. **Title:** Sistemas de cómputo avanzados en aplicaciones del ámbito de biotecnología y bioinformática
Reference: P12-TIC-2082
Responsible researcher: Ignacio Rojas Ruiz
Funded by: Proyectos Motrices y de Innovación- Junta de Andalucía
Dates: 01/01/2013- 31/12/2016
Budget: 212.990€
Researchers: 9
5. **Title:** iShadeGuide: Aplicación inteligente para Odontología Estética Restauradora
Reference: CEI2013-P-19
Responsible researcher: Luis Javier Herrera
Funded by: Convocatoria CEI BIOTIC 2013
Dates: 1/01/2013 al 31/12/2013
Budget: 23.000,00€
6. **Title:** Sistemas deterministas de control e instrumentación basados en White-Rabbit
Reference: CEI2013-P-10
Responsible researcher: Antonio Javier Díaz Alonso
Funded by: Convocatoria CEI BIOTIC 2013
Dates: 1/01/2013 al 31/12/2013
Budget: 24.000,00€
7. **Title:** Procesamiento de Imagen/video en Tiempo Real para Exploración Biomédica Activa (ITREBA)
Reference: TIC-5060
Responsible researcher: Eduardo Ros Vidal
Funded by: Junta de Andalucía
Date: desde: 1/01/2010 – 31/12/2012
Budget: UGR: 185.923,68 €
8. **Title:** Computación de altas prestaciones en bioinformática y biomedicina utilizando sistemas inteligentes
Reference: P09-TIC-175476
Responsible researcher: Rojas Ruiz, Ignacio
Funded by: Proyecto de Investigación de Excelencia de la Junta de Andalucía
Date: 01/01/2010 – 01/01/2013
Budget: 194.360,68 €
9. **Title:** Diseño de sistemas inteligentes para el modelado y predicción de series temporales: aplicación en problemas de demanda energética y consumo de agua.
Reference: P07-TIC-02768.
Responsible researcher: Héctor Pomares Cintas.
Funded by: Consejería de Innovación, Ciencia y Empresa de la Junta de Andalucía. Proyectos de Excelencia.
Dates: 01/02/2008 - 31/01/2012.
Budget: 47500,00 €
10. **Title:** Proyecto de Iniciación a la Investigación e Innovación en Secundaria en Andalucía: PIISA (proyecto individual "Iniciación a la investigación en redes sociales")
Reference: FCT-13-6018
Responsible researcher: Ana Isabel García López
Funded by: Junta de Andalucía, UGR, FECYT and CSIC
Budget: 56900 €
Date: 01/09/2013 - 30/08/2014
Participants: 450 students, 177 researchers, 31 coordinators IES

11. **Title:** Motion-based Vision Systems for UAVs
Reference: PYR-2014-4
Responsible researcher: Francisco Barranco Expósito
Funded by: CEI BioTic GRANADA
Entidades participantes: University of granada, University of Maryland (EEUU)
Date: 01/04/2014 – 31/12/2014
Budget: 3000 €
Número de Researchers: 1

12. **Title:** Programa de Fortalecimiento Grupos de Investigación
Reference: TIC-117
Responsible researcher: Julio Ortega Lopera
Funded by: Junta de Andalucía and FEDER funds
Dates: 1/01/2015 – 30/06/2015
Budget: 25.000,00€

4. Papers in international journals (Q1 and Q2 in JCR impact factor)

The papers published by members of the group, since 2006, in international journals with JCR impact factor, and included in Q1 and Q2 quartiles, are listed below. Among the corresponding 119 papers, 70 papers are Q1 while 49 are Q2. Anyway, the 56 Q1 papers and 26 Q2 papers in the last five years (from 2012 to 2016) demonstrate the relevance of the researching work accomplished by the group.

1. Cámara, M.; Ortega, J.; Toro, F.J.: "A Single Front Genetic Algorithm for Parallel Multi-objective optimization in dynamic environments". *Neurocomputing*, Vol.72, No.16-18, pp.3570-3579. October, 2009. (Q2)
2. Baños, R.; Gil, C.; Reca, J.; Ortega, J.: "A Pareto-based Memetic Algorithm for Optimization of Looped Water Distribution Systems". *GENO: Engineering Optimization*, Vol. 42, No.3, pp.223-240. March, 2010. (Q2)
3. Ortiz, A.; Ortega, J.; Díaz, A.F.; Prieto, A.: "Network Interfaces for Programmable NICs and Multicore Platforms". *Computer Networks*, 54, pp.357-376, 2010. (Q2)
4. Urquiza, J.M.; Rojas, I.; Pomares, H.; Herrera, L.J.; Ortega, J.; Prieto, A.: "Method for prediction of protein-protein interactions in yeast using genomics/proteomics information and feature selection". *Neurocomputing*, 74, pp. 2683-2690. 2011. (Q2)
5. Calvo, J.C.; Ortega, J.; Anguita, M.: PITAGORAS-PSP: Including domain knowledge in a multi-objective approach for protein structure prediction". *Neurocomputing* 74, pp.2675-2682, doi:10.1016/j.neucom.2011.04.003, 2011. (Q2)
6. Díaz, A.F.; Anguita, M.; Camacho, H.E.; Nieto, E.; Ortega, J.: "Two-level Hash/Table approach for metadata management in distributed file systems". *The Journal of Supercomputing*, Vol. 64, 1, pp. 144-155, April 2013 (DOI: 10.1007/s11227-012-0801-y). (Q2)
7. Baños, R.; Ortega, J.; Gil, C.; Fernández, A.; Toro, F. de: "A Simulated Annealing-based parallel multi-objective approach to vehicle routing problems with time Windows". *Expert Systems with Applications*, Vol. 40, Issue 5, Pages 1696-1707, April 2013. (DOI: 10.1016/j.eswa.2012.09.012). (Q1)
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116. K. Pauwels, L. Rubio, E. Ros, Real-time Pose Detection and Tracking of Hundreds of Objects. *IEEE Transactions on Circuits and Systems for Video Technology*. 2015. (Q1)
117. N. R. Luque, J. A. Garrido, F. Naveros, R. R Carrillo, E. D'Angelo, E. Ros, Distributed Cerebellar Motor Learning: A Spike-Timing-Dependent Plasticity Model, *Frontiers in computational neuroscience*, 10:17, 2016. DOI: 10.3389/fncom.2016.00017. (Q1)
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119. F.J. Estévez, P. Glösekötter, J. González: "DARAL: A Dynamic and Adaptive Routing Algorithm for Wireless Sensor Networks". *Sensors*, 2016 (Aceptado para su publicación). (Q1).

5. PhD Dissertations presented (since 2006)

In what follows, the 58 PhD dissertations presented and/or advised by members of the group are listed:

Title: Ontology Engineering and Reasoning to Support Real World Human Behavior Recognition

Author: Claudia Villalonga Palliser

Department: Arquitectura y Tecnología de Computadores (UGR)

Presentation date: 2016-12-16

Advisor(s): Héctor Emilio Pomares Cintas, Oresti Baños Legrán

International mention

Title: Análisis y Optimización de la Interfaz de Comunicación en Sistemas de Ficheros en Red

Author: Raúl Hernández Palacios

Department: Arquitectura y Tecnología de Computadores (UGR)

Presentation date: 2016-07-18

Advisor(s): Antonio Francisco Díaz García, Mancia Anguita López

Title: High-Performance Scientific Computing on FPGA aboard the Solar Orbiter PHI Instrument

Author: Juan Pedro Cobos Carrascosa

Department: Arquitectura y Tecnología de Computadores (UGR), Instituto Andaluz de Astrofísica (CSIC)

Presentation date: 2016-02-05

Advisor(s): Antonio C. López Jiménez and Christian A. Morillas Gutiérrez

Title: Portabilidad de Aplicaciones en Astrofísica a la Infraestructura de Computación Grid
Author: José Ramón Rodón Ortiz
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2016-01-15
Advisor(s): Juan Carlos Suárez Yanes, Julio Ortega Lopera

Title: Sistemas de Detección de Intrusos con Mapas Autoorganizativos Probabilísticos y Optimización Multiobjetivo
Author: Emiro de la Hoz Franco
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2016-02-09
Advisor(s): Andrés Ortiz García, Julio Ortega Lopera

Title: DARP: A new routing algorithm for large communication infrastructures
Author: Francisco José Estévez Ortiz
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2016-06-20
Advisor(s): Jesús González Peñalver, Peter Glösekötter

Title: Mapas Auto-organizativos probabilísticos y análisis en componentes de conexiones para la detección de anomalías en redes de computadores
Author: Eduardo Miguel de la Hoz Correa
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2016-06-23
Advisor(s): Andrés Ortiz García, Julio Ortega Lopera

Title: Implementation of models for image processing applications with real-time constraints
Author: Pablo Guzmán Sánchez
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2015-04-14
Advisor(s): Eduardo Ros Vidal, Antonio Javier Díaz Alonso
International mention

Title: Optimización de modelos hidrodinámicos 3D del transporte y mezcla aplicados al conocimiento y predicción de masas de agua continental
Author: Mario César Acosta Cobos
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2015-05-28
Advisor(s): Francisco José Rueda Valdivia, Mancia Anguita López
International mention

Title: Development of Advanced Computational Systems for Multiple Sequence Alignments by using Heterogeneous Biological Information
Author: Francisco Manuel Ortuño Guzmán
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2014-07-28
Advisor(s): Ignacio Rojas Ruiz
International mention

Title: Sistemas de visión para el seguimiento de poses 3-D de objetos en tiempo real
Author: Leonardo Rubio Navarro
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2014-03-24
Advisor(s): Mancia Anguita López, Antonio Javier Díaz Alonso, Eduardo Ros Vidal
International mention

Title: Robust Expert Systems for more Flexible Real-World Activity Recognition

Author: Oresti Baños Legrán
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2014-04-25
Advisor(s): Miguel Damas Hermoso, Héctor Emilio Pomares Cintas, Ignacio Rojas Ruiz
International mention

Title: Service Oriented Architecture For Adaptive Evolutionary Algorithms: Implementation and Applications

Author: Pablo García Sánchez
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2014-06-16
Advisor(s): Juan Julián Merelo Guervós, Jesús González Peñalver, Alberto Prieto Espinosa
International mention

Title: Esquemas de control robótico bio-inspirados utilizando estructuras neuronales biológicamente plausibles

Author: Niceto Rafael Luque Sola
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2013-05-16
Advisor(s): Eduardo Ros Vidal, Richard R. Carrillo Sánchez
International mention

Title: Estado emocional y funcionalidad visual de personas con Retinosis Pigmentaria. Repercusión en el entorno familiar

Author: Helena Chacón López
Department: Psicología Evolutiva y de la Educación (UGR),
Presentation date: 2013-05-27
Advisor(s): M^a Dolores López Justicia, Francisco J. Pelayo Valle

Title: Modelos de visión para tareas de videovigilancia en sistemas empotrados

Author: Enrique Jaime Fernández Sánchez
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2013-06-28
Advisor(s): Eduardo Ros Vidal, Antonio Javier Díaz Alonso
International mention

Title: Applying Real-Time Calculus and HDL Simulation for Network Interfaces Evaluation.

Author: Godofredo Ramón Garay Álvarez
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2012-06-01
Advisor(s): Julio Ortega Lopera, Antonio Francisco Díaz García, Luis Corrales Barrios

Title: Estudio estadístico de algoritmos de control inteligente en tiempo real. Aplicación en una plataforma hardware de control de temperatura.

Author: Rafik Lasri
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2012-05-04
Advisor(s): Ignacio Rojas Ruiz, Héctor Emilio Pomares Cintas, Olga Valenzuela Cansinos

Title: Análisis Estadístico de distintas técnicas de Inteligencia Artificial en detección de intrusos.

Author: Hind Tribak
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2012-02-06
Advisor(s): Ignacio Rojas Ruiz, Héctor Emilio Pomares Cintas, Olga Valenzuela Cansinos

Title: Incremento de la localidad de datos en sistemas de ficheros

Author: Hugo Eduardo Camacho Cruz
Department: Arquitectura y Tecnología de Computadores (UGR),

Presentation date: 2012-07-18
Advisor(s): Mancia Anguita López, Antonio Francisco Díaz García

Title: Bio-inspired motor learning models for robot control.
Author: Silvia Tolu
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2012-03-20
Advisor(s): Eduardo Ros Vidal, Jo-anne Ting , Antonio Cañas Vargas
European mention

Title: New Methodologies for the Design of Evolving Fuzzy Systems for Online Intelligent Control
Author: Ana Belén Cara Carmona
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2012-03-27
Advisor(s): Ignacio Rojas Ruiz, Héctor Emilio Pomares Cintas, Miguel Damas Hermoso
European mention

Title: Specific-purpose processing architectures for dynamic artificial vision systems
Author: Francisco Barranco Expósito
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2012-10-09
Advisor(s): Eduardo Ros Vidal, Antonio Javier Díaz Alonso, María Begoña del Pino Prieto
International mention

Title: Sistema para Separación de Señales en Tiempo Real basado en DSP
Author: Juan Carlos Moreno Comba
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2012-10-26
Advisor(s): Carlos García Puntonet, Antonio Francisco Díaz García

Title: Arquitectura eficiente de condensación de información visual dirigida por procesos atencionales
Author: María Sara Granados Cabeza
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2012-12-11
Advisor(s): Antonio Javier Díaz Alonso, María Sonia Mota Fernández, Alberto Prieto Espinosa
International mention

Title: Simulation of biological neuronal structures. Design and functional study of the cerebellum
Author: Jesus Alberto Garrido Alcázar
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2011-11-17
Advisor(s): Eduardo Ros Vidal, Richard R. Carrillo Sánchez

Title: Intelligent systems for function approximation and the integration of heterogeneous biological data
Author: Javier Pérez Florido
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2011-10-10
Advisor(s): Ignacio Rojas Ruiz, Héctor Emilio Pomares Cintas
European mention

Title: Fusion and Regularisation of Image Information in Variational Correspondence Methods
Author: Jarno Ralli
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2011-12-19
Advisor(s): Eduardo Ros Vidal, Antonio Javier Díaz Alonso
European mention

Title: Nuevos métodos de predicción de Interacción de Proteína-Proteína utilizando Sistemas Inteligentes en Bases de Datos de Proteómica
Author: José Miguel Urquiza Ortiz
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2011-10-14
Advisor(s): Ignacio Rojas Ruiz, Héctor Emilio Pomares Cintas, Luis Javier Herrera Maldonado
European mention

Title: Extracción Eficiente de la Estructura de Escenas Naturales
Author: José Manuel Palomares Muñoz
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2011-02-25
Advisor(s): Jesús González Peñalver, Eduardo Ros Vidal

Title: Modelos Avanzados de Inteligencia Computacional para Aproximación Funcional y Predicción de Series Temporales en Arquitecturas Paralelas
Author: Ginés Rubio Flores
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2010-07-05
Advisor(s): Héctor Emilio Pomares Cintas, Ignacio Rojas Ruiz, Alberto Guillén Perales

Title: Análisis en Componentes de Imágenes Funcionales para la Ayuda al Diagnóstico de la Enfermedad del Alzheimer
Author: Ignacio Álvarez Illán
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2010-07-10
Advisor(s): Juan Manuel Górriz Sáez, Javier Ramírez Pérez de Inestrosa, Carlos García Puntonet

Title: Pyramidal Architecture For Stereo Vision and Motion Estimation In Real-Time Fpga-Based devices
Author: Matteo Tomasi
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2010-06-15
Advisor(s): Eduardo Ros Vidal, Antonio Javier Díaz Alonso

Title: Procesamiento de Registros Oculares Sacádicos en Pacientes de Ataxia Sca2. Aplicación del Análisis de Componentes Independientes
Author: Rodolfo Valentín García Bermúdez
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2010-12-16
Advisor(s): Fernando José Rojas Ruiz, Jesús González Peñalver, Luis Velázquez Pérez

Title: Improving Communications By Using Network Processors
Author: Pablo Guillermo Cascón Katchadourian
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2010-02-17
Advisor(s): Julio Ortega Lopera, Antonio F Díaz
European mention

Title: Arquitectura Basada en Tecnología Fpga para la Estimación y Análisis de Información de Flujo Óptico en Tiempo Real
Author: Mauricio de Jesús Vanegas Hernández
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2010-07-19
Advisor(s): Eduardo Ros Vidal, Antonio Javier Díaz Alonso

Title: Optimización multiobjetivo dinámica y procesamiento paralelo
Author: Mario Cámara Sola
Department: Arquitectura y Tecnología de Computadores (UGR),

Presentation date: 2010-06-22
Advisor(s): Julio Ortega Lopera, Francisco Jesús del Toro Negro
European mention

Title: Simulación Eficiente de Estructuras Neuronales Basadas en el Sistema Nervioso
Author: Richard R. Carrillo Sánchez
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2009-07-20
Advisor(s): Eduardo Ros Vidal, Eva Martínez Ortigosa, Francisco José Pelayo Valle
European mention

Title: Interfaz Bci de altas Prestaciones Basada en la Detección y Procesamiento de la Actividad Cerebral
Author: Miguel Ángel López Gordo
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2009-03-26
Advisor(s): Alberto Prieto Espinosa, Francisco José Pelayo Valle

Title: Alternativas de Externalización para la Interfaz de Red. Análisis y Optimización Mediante Simulación de Sistema Completo. (Doctorado con Mención Europea)
Author: Andrés Ortiz García
Department: Arquitectura y Tecnología de Computadores (UGR), Universidad de Málaga
Presentation date: 2008-11-11
Advisor(s): Julio Ortega Lopera, Alberto Prieto Espinosa
European mention

Title: Aproximación Funcional Mediante Redes de Funciones de Base Radial, Una alternativa para la Predicción en el Proceso de Reducción de Mineral de la Tecnología Caron de Producción de Níquel
Author: Francisco Fernández Periche
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2008-01-25
Advisor(s): Julio Ortega Lopera, Ignacio Rojas Ruiz

Title: Estudio Comparativo de la Técnica de Análisis de Componentes Independientes (ICA) Aplicado al Procesamiento Digital de Imágenes Con Ruido.
Author: Salua Esther Nassabay Pardo
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2007-03-02
Advisor(s): Carlos García Puntonet, Rubén Martín Clemente

Title: Diseño de Sistemas Inteligentes en Plataformas de Cómputo Paralelas
Author: Alberto Guillén Perales
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2007-07-05
Advisor(s): Ignacio Rojas Ruiz, Jesús González Peñalver, Héctor Emilio Pomares Cintas

Title: Sistemas Inteligentes Adaptativos para Aproximación y Predicción Utilizando Arquitecturas Avanzadas
Author: Luis Javier Herrera Maldonado
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2007-07-06
Advisor(s): Ignacio Rojas Ruiz, Héctor Emilio Pomares Cintas

Title: Arquitecturas para el Procesamiento de Sistemas Neuronales para el Control de Robots Bioinspirados
Author: Rodrigo C. Agís Melero
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2007-10-08
Advisor(s): Eduardo Ros Vidal, Francisco José Pelayo Valle, Eva Martínez Ortigosa

Title: Circuitos Bio-Inspirados para la Evaluación de Movimiento en Tiempo Real y Sus Aplicaciones
Author: María Sonia Mota Fernández
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2007-03-09
Advisor(s): Eduardo Ros Vidal, Francisco José Pelayo Valle

Title: Implementación en Hardware Reconfigurable de un Modelo de Flujo Óptico Robusto
Author: Guillermo Botella Juan
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2007-07-13
Advisor(s): Eduardo Ros Vidal, Manuel Rodríguez Álvarez, Antonio García Ríos

Title: Desarrollo y Evaluación de Ayudas Optoelectrónicas para Pacientes de Baja Visión
Author: María Dolores Peláez Coca
Department: Arquitectura y Tecnología de Computadores (UGR), Universidad de Murcia
Presentation date: 2007-07-16
Advisor(s): Fernando Vargas Martín, Eduardo Ros Vidal

Title: Development Of a High Accuracy Analogue-To-Digital Converter System: Application In Data Logging Units For Formula-1 Vehicles
Author: Carlos Castro Serrato
Department: Arquitectura y Tecnología de Computadores, e Infineon Technologies Ag, Munich
Presentation date: 2006-05-02
Advisor(s): Ignacio Rojas Ruiz, Pedro Ángel Castillo Valdivieso, Alberto Prieto Espinosa

Title: Automatic Generation Of Bioinspired Vision Systems Using Reconfigurable Hardware
Author: Antonio Martínez Álvarez
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2006-05-03
Advisor(s): Francisco José Pelayo Valle, Leonardo Reyneri

Title: Hardware/Software Environment For Visual Prosthetics Research
Author: Samuel Francisco Romero García
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2006-11-03
Advisor(s): Francisco José Pelayo Valle, Eduardo Fernández Jover

Title: Study and Characterization With Scanning Probe Methods Of Employable Nano-Materials In New Architectures For Molecular Memories
Author: Manuela Alba Bueno
Department: Arquitectura y Tecnología de Computadores, e Infineon Technologies Ag, Munich
Presentation date: 2006-05-05
Advisor(s): Karl Goser , Ignacio Rojas Ruiz, Alberto Prieto Espinosa

Title: Desarrollo de Sistemas Inteligentes para Clasificación y Diagnóstico de Problemas en Medicina
Author: Suhail Odeh
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2006-07-07
Advisor(s): Eduardo Ros Vidal, Ignacio Rojas Ruiz

Title: Nuevos Avances en detección de Actividad de Voz Mediante Estadísticos de Alto Orden y Estrategias de Optimización
Author: Juan Manuel Górriz Sáez
Department: Arquitectura y Tecnología de Computadores (UGR), Teoría de la Señal, Telemática y Comunicaciones (UGR),
Presentation date: 2006-07-13
Advisor(s): Carlos García Puntonet, Javier Ramírez Pérez de Inestrosa

Title: ICA Incompleto paralelo: Una Nueva Herramienta para el Análisis de Datos Fmri
Author: Ingo Rudolf Keck
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2006-07-13
Advisor(s): Carlos García Puntonet

Title: Aplicación de la Factorización Matricial al Análisis de Datos Experimentales Con Microarrays
Author: Kurt Stadlthanner
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2006-07-14
Advisor(s): Carlos García Puntonet

Title: Sistema de Visión Bio-Inspirado Multi-Modal. Arquitectura de Procesamiento de Movimiento y Visión Estéreo de altas Prestaciones.
Author: Antonio Javier Díaz Alonso
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2006-07-21
Advisor(s): Eduardo Ros Vidal, Alberto Prieto Espinosa

Title: Modelos y Herramientas para Sistemas de Rehabilitación Visual
Author: Christian Agustín Morillas Gutiérrez
Department: Arquitectura y Tecnología de Computadores (UGR),
Presentation date: 2006-09-28
Advisor(s): Francisco José Pelayo Valle, Alberto Prieto Espinosa

6. Patents and contracts:

The list of patents obtained by members of the group are provided in the link:
<http://atc.ugr.es/pages/idi/patentes>

In the link <http://atc.ugr.es/pages/idi/casip> it can be found more information related with the group CASIP