

Ricardo Carmona-Galán

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Research interests

- Low power vision chips based on bioinspired massively parallel processing.
- Vision-enabled wireless sensor networks and distributed smart cameras.
- Vertical integration of sensor arrays, multispectral vision and silicon detectors for high-energy physics.
- CMOS-compatible 3D imaging, 2D-3D information interaction on-chip.

Education

Ph. D. Microelectronics, University of Seville, 2002
Dissertation: Analysis and Design of CNN-based VLSI Hardware for Real-Time Image Processing.
Advisor: Ángel Rodríguez-Vázquez

Licenciatura (5-year degree) in Electronic Physics, University of Seville, 1993

Academic positions

Tenured Scientist (Associate Professor) at the National Council of Research (CSIC), Institute of Microelectronics of Seville (IMSE-CNM), Spain, 2005-present

Visiting Scholar at the Center for Nanoscience and Technology, Department of Electrical Engineering, University of Notre Dame (Indiana, USA), 2006-2007

Assistant Professor at the Department of Electronics and Electromagnetism, School of Engineering, University of Seville, Spain, 1999-2005.

Assistant Researcher at the Institute of Microelectronics of Seville (IMSE-CNM), National Council of Research (CSIC), Spain, 1998-1999.

Assistant Researcher at the Electronics Research Laboratory, Department of electrical Engineering and Computer Science, University of California, Berkeley (USA), 1996-1998.

Graduate student at the Institute of Microelectronics of Seville (IMSE-CNM), National Council of Research (CSIC), funded by Iberdrola S. A., Spain, 1994-1996.

Awards

1999 *Best Paper Award* of the *International Journal of Circuit Theory and Applications* for paper: "SIRENA: A CAD Environment for Behavioral Modeling and Simulation of VLSI Cellular Neural Network Chips", Vol. 27, No. 1, pp. 43-76.

2002 *Premio Salvà i Campillo* to the most original Project (co-recipient), *Asociació Catalana d'Enginyers de Telecomunicació*. 7^a Nit de les Telecomunicacions, 7th Edition of the "Salvà i Campillo" Prizes Barcelona, Spain.

2001-2002 Certificate for Teaching Excellence, Vice-Chancellery of Quality and Information Technology, University of Seville.

Research grants and contracts

"Design of high-performance heterogeneous, ultra high speed cellular sensor-processors for multispectral light sensing" A. Rodríguez-Vázquez (PI), Office of Naval Research, USA, 01/2011-12/2013.

"Wireless and smart vision sensors for networked surveillance and monitoring", R. Carmona-Galán (PI), TEC2009-11812, Ministry of Science and Innovation, Spain, 01/2010-12/2012.

"V-mote: Bioinspired VLSI implementation of concurrent image sensing/processing at the nodes of a wireless sensor network", R. Carmona-Galán (PI), 2006-TIC-2352, Junta de Andalucía, 04/2007-12/2010.

"Microelectronic design of autonomous programmable systems for artificial vision", J. L. Huertas (PI), Innovaciones Microelectrónicas, 01/2008-12/2010

"Vision systems on-a-chip for driving safety in CMOS technology", G. Liñán-Cembrano (PI), Ministry of Education and Science, Spain, 10/2006-03/2010.

"Advanced technologies for fabrication equipment", G. Liñán-Cembrano (PI), FAGOR, 01/2006-12/2009.

"Study and design of interfaces for CMOS-compatible sensing nanostructures for the integration of nanoelectronic systems", R. Carmona-Galán (PI), Ministry of Education and Science, 10/2006-09/2007.

"Modeling of light-effects on humans of a flash-bang", R. Carmona-Galán (PI), Ministry of Defense, Spain, 12/2006-12/2007.

"Design of a vision system on-a-chip using concurrent sensing and processing", R. Carmona-Galán (PI), CSIC, 07/2006-12/2007.

"Microelectronic design of a programmable artificial vision system", E. Roca (PI), Ministry of Industry, Spain, 01/2006-12/2006

"Design of sensing-processing-actuation systems on-a-chip: 4th generation vision systems" A. Rodríguez-Vázquez (PI), Ministry of Science and Technology, Spain, 12/2003-11/2006.

"Focal-plane adaptive sensor-supercomputer technologies with retina-like multichannel visual processing", A. Rodríguez-Vázquez (PI), N000140210884, Office of Naval Research, USA, 07/2002-07/2005.

"Dynamic image computing using tera-speed analog visual microprocessors", A. Rodríguez-Vázquez (PI), IST-1999-19007, European Commission, 01/2000-06/2003.

“Implementation of programmable opto-electronic analogic CNN computer embedding CNN universal chips and polymer optical memories”, A. Rodríguez-Vázquez (PI), N000140210884, Office of Naval Research, USA, 11/2000-11/2003.

“Design of high density and neuromorphic CNN universal chips and image processors”, A. Rodríguez-Vázquez (PI), Office of Naval Research, USA, 02/1998-02/2001.

Graduate and postgraduate research advisees

Thesis advising

Jorge Fernández-Berni, Ph. D. Degree at the University of Seville, 06/2011

Thesis: Power-efficient VLSI implementation of vision hardware on wireless sensor network nodes.

Currently at: University of Seville

Carlos M. Domínguez-Mata, DEA (Certificate of Advanced Studies) Univ. of Seville, 06/2004

Master project: CMOS integrated circuits for vision systems on a chip with adaptive sensing and bioinspired processing.

Currently at: Anafocus, Seville, Spain

Francisco Sánchez-Fernández, DEA (Certificate of Advanced Studies) Univ. of Seville, 06/2005

Master project: A microcontroller unit based on SIMPLEZ for embedded control of a vision SoC

Currently at: Telefónica I+D, Spain

Martin Bölter, Practicum for an Engineering Degree at TU Dresden, 02/2009

Graduation project: Design of low noise amplifier structures exploiting carbon nanotube field effect transistor models.

Currently at: X-FAB, Erfurt, Germany

Gábor Csordás, Practicum for and Engineering Degree at PPKU, Budapest, 08/2008

Graduation project: An eye-tracking algorithm on an embedded system developed in NIOS and Matlab environment.

Manuel Hernández-Méndez, Engineering Degree at the University of Seville, 06/2008

Graduation project: Implementation of a model of the visual stimuli capture and non-desired effects on the retina on SW and HW platforms.

Currently at: MDU, Militärtechnologie, Dienst und Überwachung, S.A. Seville, Spain

Raúl González-Marcelo, Engineering Degree at the University of Seville, 07/2006

Graduation project: Motion detection and tracking on a commercial image processing platform: performance evaluation.

José Fernández-Pérez, Engineering Degree at the University of Seville, 05/2006

Graduation project: Implementation of a vision system on a single reconfigurable chip: evaluation and performance.

Currently at: Anafocus, Seville, Spain

Martin Claus, Practicum for an Engineering Degree at TU Dresden, 07/2004

Graduation project: Sample and Hold Switched Capacitor Circuits for the Storage of Multiple Samples.

Currently at: Technical University Dresden, Germany

Rocío Maldonado-López, Engineering Degree at the University of Seville, 03/2004

Graduation project: Test and application development platform based on FPGAs for massively parallel mixed-signal processors .

Thesis juries and committees

External reviewer of Mika Laiho's thesis, Ph. D. Degree, Helsinki University of Technology, Finland, 2003.

Opponent of Asko Kananen's thesis, Ph. D. Degree, Helsinki University of Technology, Finland, 2007.

Member of the jury, Jesús Vanegas-Fernández, Ph. D. Degree, Universidad de Granada, Spain, 2010.

Teaching

"Integrated Sensor Technologies", Master in Microelectronics, University of Seville, 2009-present.

"Interface Circuits for Signal Conditioning and Data Conversion", Doctorate program in Microelectronics, University of Seville, 2003-2004.

"Microelectronic systems, sensors and intelligent processing", Electronics Engineering, University of Seville, 2004-2005.

"Circuit Analysis and Synthesis", Telecommunication Engineering, University of Seville, 1999-2005.

"Laboratory of Circuit Synthesis", Telecommunication Engineering, University of Seville, 1999-2005.

"EE129: Cellular Neural Networks", Laboratory practices of Prof. Chua's course. University of California, Berkeley, 1996-1998.

Invited talks

"Design of Analog Integrated Circuits for Image Processing", IEEE-CAS Tour 2, Universidade Federal de Santa Catarina, Florianópolis, SC, Brazil, 1999.

"CMOS Mixed-Signal Blocks for a Focal-Plane Programmable Array Processor". Colloquia Series, Institute of Neuroinformatics, ETH Zürich, 2004.

Professional activities service and honors

Society memberships

Institute of Electrical and Electronic Engineers (IEEE, Member), 1998-present.

IEEE Circuit and Systems Society (IEEE-CASS), 1998-present.

IEEE Solid-State Circuits Society (IEEE-SSCS), 1998-present.

IEEE Computer Society, 2010-present.

Researchers and Scholars University Association, University of Seville, (ADIUS), 2002-present (Secretary 2002-2004).

Technical committees

IEEE-CASS Cellular Nanoscale Networks and Array Computing Technical Committee, 2004-present.

Conference program and organizing committees

Co-chair of 2011 SPIE's Conference on Microtechnologies: Bioelectronics, Biomedical, and Bio-inspired Systems. Prague, Czech Republic, May 2011.

Local arrangements co-chair of the 36th European Solid-State Circuits Conference (ESSCIR/ESSDERC), Seville, Spain, September 2010.

Co-chair of 2009 SPIE's Conference on Microtechnologies: Bioengineered and Bioinspired Systems. Dresden, Germany, May 2009.

Tutorials co-chair of 2007 18th European Conference on Circuit Theory and Design (ECCTD). Seville, Spain, August 2007.

Co-chair of 2005 SPIE's Conference on Microtechnologies: Bioengineered and Bioinspired Systems. Seville, Spain, May 2005.

Co-chair of 2003 SPIE's Conference on Microtechnologies: Bioengineered and Bioinspired Systems. Mas Palomas, Gran Canaria, Spain, May 2003.

Session chair at IEEE International Symposium of Circuits and Systems (ISCAS), IEEE International Workshop on Cellular Neural Networks and their Applications (CNNA), European Conference on Circuit Theory and Design (ECCTD), etc.

Review service

Reviewer for IEEE Transactions on Circuits and Systems I and II, International Journal of Circuit Theory and Applications, International Journal on Bifurcation and Chaos, International Journal on Electronics, Sensors, Journal on Circuits, Systems and Computers, IEE Electronics Letters, Integration: the VLSI Journal, Journal of Universal Computer Science.

Review Committee member of the IEEE International Symposium on Circuits and Systems.

Reviewer of the IEEE International Symposium on Circuits and Systems (ISCAS), IEEE Int. Workshop on Cellular Neural Networks and their Applications (CNNA), European Conference on Circuit Theory and Design (ECCTD), Design of Integrated Circuits and Systems (DCIS), IEEE Latin-American Circuits and Systems Conference (LASCAS), IEEE Biomedical Circuits and Systems Conference (BioCAS) .

Reviewer and panelist of the 2010 Call of the National Plan for Research, Area of Information Technology and Communications, Ministry of Science and Innovation, Spain.

University service

Member of the University Senate, University of Seville, 2002-2004.

Co-chair of the University Senate, University of Seville, 2002.

Member of the Norms and Regulations Commission of the University Senate, University of Seville, 2002-2004.

Member of the University Council, 2002-2004.

Secretary of the Scientific Staff Meeting, Institute of Microelectronics of Seville, 2009-present.

Publications

Book chapters

1. Á. Zarándy, Cs. Rekeczky, P. Földesy, R. Carmona-Galán, G. Liñán-Cembrano, G. Sós, Á. Rodríguez-Vázquez, T. Roska, "VISCUBE: a multi-layer vision chip", in Á. Zarandy (Editor): *Focal-Plane Sensor-Processor Chips*, pp. 181-208. Springer, New York, 2011. ISBN 978-1-4419-6474-8.
2. J. Fernández-Berni and R. Carmona-Galán, "Focal-plane dynamic texture segmentation by programmable binning and scale extraction", in Á. Zarandy (Editor): *Focal-Plane Sensor-Processor Chips*, pp. 105-124. Springer, 2011. ISBN 978-1-4419-6474-8.
3. Á. Zarandy, P. Foldesy, R. Carmona, Cs. Rekeczky, J. Bean, W. Porod, "Cellular Multi-core Processor Carrier Chip for Nanoantenna Integration and Experiments", in Ch. Baatar, W. Porod and T. Roska (Editors): *Cellular Nanoscale Sensory Wave Computing*, pp-147-168. Springer, New York, 2010. ISBN 978-1-4419-1010-3.
4. R. Carmona, A. Rodríguez-Vázquez, R. Domínguez-Castro and S. Espejo, "Vertebrate Retina Emulation using Multi-Layer Array-Processor Mixed-Signal Chips", in Maurizio Valle (Editor): *Smart Adaptive Systems on Silicon*, pp. 85-101. Springer, 2004.
5. R. Carmona, R. Domínguez-Castro, S. Espejo and A. Rodríguez-Vázquez, "Chapter 2, Part C- Behavioural Modelling and Simulation of CNN Chips", in T. Roska and A. Rodríguez-Vázquez (Editors): *Towards the Visual Microprocessor: VLSI Design and the Use of Cellular Neural Network Universal Machine Computers*, pp. 56-86. John Wiley & Sons, Chichester, 2001. ISBN 0-471-95606-6.
6. A. Rodríguez-Vázquez, M. Delgado-Restituto, E. Roca, G. Liñán, R. Carmona, S. Espejo and R. Domínguez-Castro, "Chapter 3- CMOS Analog Design Primitives", in T. Roska and A. Rodríguez-Vázquez (Editors): *Towards the Visual Microprocessor: VLSI Design and the Use of Cellular Neural Network Universal Machine Computers*, pp. 87-132. John Wiley & Sons, Chichester, 2001. ISBN 0-471-95606-6.
7. A. Rodríguez-Vázquez, M. Delgado-Restituto, E. Roca, R. Carmona, G. Liñán, S. Espejo and R. Domínguez-Castro, "Chapter 4- On the Implementation of Linear and Nonlinear Interaction Operators for CNNs", in T. Roska and A. Rodríguez-Vázquez (Editors): *Towards the Visual Microprocessor: VLSI Design and the Use of Cellular Neural Network Universal Machine Computers*, pp. 133-182. John Wiley & Sons, Chichester, 2001. ISBN 0-471-95606-6.
8. R. Domínguez-Castro, S. Espejo, A. Rodríguez-Vázquez and R. Carmona, "Chapter 6, Part A- A 20x22 CNN-UM Chip with On-Chip Optical Sensors", in T. Roska and A. Rodríguez-Vázquez (Editors): *Towards the Visual Microprocessor: VLSI Design and the Use of Cellular Neural Network Universal Machine Computers*, pp. 213-237. John Wiley & Sons, Chichester, 2001. ISBN 0-471-95606-6.
9. R. Carmona, A. Rodríguez-Vázquez, S. Espejo, R. Domínguez-Castro and M. Delgado-Restituto, "Chapter 7- Short-Term Storage of Analogue Signals for CNNUM-Based Image Processing", in T. Roska and A. Rodríguez-Vázquez (Editors): *Towards the Visual Microprocessor: VLSI Design and the Use of Cellular Neural Network Universal Machine Computers*, pp. 281-318. John Wiley & Sons, Chichester, 2001. ISBN 0-471-95606-6.
10. R. Carmona, A. Rodríguez-Vázquez, R. Domínguez-Castro, S. Espejo and T. Roska, "Chapter 15- Learning with CNN Universal Machine Chips" in G. Cauwenberghs (Editor): *Learning on Silicon*, pp. 369-396. Kluwer Academic Publishers, Norwell, 1999. ISBN 0-7923-8555-1

Journal papers (indexed)

1. J. Fernández-Berni, R. Carmona-Galán and L. Carranza González, "FLIP-Q: A QCIF Resolution Focal-Plane Array for Low-Power Image Processing". *IEEE Journal of Solid-State Circuits* , Vol. 46, No. 3, pp. 669-680, March 2011. ISSN: 0018-9200.
2. J. Fernández-Berni and R. Carmona-Galán, "All-MOS Implementation of RC Networks for Time-Controlled Gaussian Spatial Filtering". *International Journal of Circuit Theory and Applications* (in press, to appear in 2011, published on-line on Feb. 23, 2011. DOI: 10.1002/cta.759). ISSN: 1097-007X.
3. J. Fernández-Berni and R. Carmona-Galán, "On the Implementation of Linear Diffusion in Transconductance-Based Cellular Nonlinear Networks". *International Journal of Circuit Theory and Applications*, Vol. 37, No. 4, pp. 543-567, May 2009. ISSN: 1097-007X.
4. J. Fernández-Pérez, F. J. Sánchez-Fernández, R. Carmona-Galán, "Performance Evaluations and Limitations of a Vision System on a Reconfigurable/Programmable Chip". *Journal of Universal Computer Science*, Vol. 13, No. 3, pp. 440-453, March 2007. ISSN: 0948-6968.
5. G. Liñán, A. Rodríguez-Vázquez, R. Carmona, F. Jiménez, S. Espejo and R. Domínguez-Castro, "A 1000FPS@128x128 Vision Processor with 8-bit Digitized I/O". *IEEE Journal of Solid-State Circuits* , Vol. 39, No. 7, pp. 1044-1055, July 2004. ISSN: 0018-9200.
6. A. Adamatzky, P. Arena, A. Basile, R. Carmona, B. De Lacy Costello, L. Fortuna, M. Frasca and A. Rodríguez-Vázquez, "Reaction-Diffusion Navigation Robot Control: From Chemical to VLSI Analogic Processors". *IEEE Transactions on Circuit and Systems—I: Fundamental Theory and Applications*, Vol. 51, No. 5, pp. 926-938, May 2004. ISSN 1057-7122.
7. R. Carmona, F. Jiménez-Garrido, C. M. Domínguez-Mata, R. Domínguez-Castro, S. Espejo, I. Petrás and A. Rodríguez-Vázquez, "2nd-Order Neural Core for Bioinspired Focal-Plane Dynamic Image Processing in CMOS". *IEEE Transactions on Circuit and Systems—I: Fundamental Theory and Applications*, Vol. 51, No. 5, pp. 915-925, May 2004. ISSN 1057-7122.
8. A. Rodríguez-Vázquez, G. Liñán, L. Carranza, E. Roca, R. Carmona, F. Jiménez-Garrido, and R. Domínguez-Castro, "ACE16k: the Third Generation of Mixed-Signal SIMD-CNN ACE Chips towards VSoCs". *IEEE Transactions on Circuit and Systems—I: Fundamental Theory and Applications* , Vol. 51, No. 5, pp. 851-863, May 2004. ISSN 1057-7122
9. D. Bálya, I. Petrás, T. Roska, R. Carmona and A. Rodríguez-Vázquez, "Implementing the Multilayer Retinal Model on the Complex-Cell CNN-UM Chip Prototype". *International Journal of Bifurcations and Chaos*, Vol. 14, No. 2, pp. 427-452, World Scientific Pub. February 2004. ISSN: 0218-1274.
10. R. Carmona, F. Jiménez-Garrido, R. Domínguez-Castro, S. Espejo, T. Roska, Cs. Rekeczky and A. Rodríguez-Vázquez, "A Bio-Inspired 2-Layer Mixed-Signal Flexible Programmable Chip for Early Vision". *IEEE Transactions on Neural Networks*, Vol. 14, No. 5, pp. 1313-1336. ISSN 1045-9227.
11. I. Petrás, Cs. Rekeczky, T. Roska, R. Carmona, F. Jiménez-Garrido, A. Rodríguez-Vázquez, "Exploration of Spatial-Temporal Dynamic Phenomena in a 32x32-Cells Stored Program 2-Layer CNN Universal Machine Chip Prototype", *Journal of Circuits, Systems and Computers*, Vol. 12, No. 6, pp. 691-710, World Scientific Pub. December 2003. ISSN 0218-1266.

12. R. Carmona, F. Jiménez-Garrido, R. Domínguez-Castro, S. Espejo and A. Rodríguez-Vázquez, "CMOS Realization of a 2-Layer CNN Universal Machine Chip". *International Journal on Neural Systems*, Vol. 13, No. 6, pp. 435-442, World Scientific Pub. December 2003. ISSN: 0129-0657.
13. R. Carmona, A. Rodríguez-Vázquez, S. Espejo, R. Domínguez-Castro, T. Roska, T. Kozek and L. O. Chua, "A 0.5um CMOS Analog Random Access Memory Chip for TeraOPS Speed Multimedia Video Processing". *IEEE Transactions on Multimedia*, Vol. 1, No. 2, pp. 121-135. June 1999. ISSN 1520-9210.
14. R. Carmona, I. García-Vargas, G. Liñán, R. Domínguez-Castro, S. Espejo and A. Rodríguez-Vázquez, "SIRENA: A CAD Environment for Behavioral Modeling and Simulation of VLSI CNNs". *International Journal of Circuit Theory and Applications*, Vol. 27, No. 1, pp. 43-76. January-February 1999. ISSN: 0098-9886.
15. R. Domínguez-Castro, S. Espejo, A. Rodríguez-Vázquez, R. A. Carmona, P. Földesy, A. Zarándy, P. Szolgay, T. Szirányi and T. Roska, "A 0.8-um CMOS Two-Dimensional Programmable Mixed-Signal Focal-Plane Array Processor with On-Chip Binary Imaging and Instruction Storage", *IEEE Journal of Solid-State Circuits*, Vol. 32, No. 7, pp. 1013-1025, July 1997. ISSN 0018-9200.
16. S. Espejo, R. Carmona, R. Domínguez-Castro and A. Rodríguez-Vázquez, "A VLSI Oriented Continuous-Time CNN Model". *International Journal of Circuit Theory and Applications*, Vol. 24, No. 3, pp. 341-356, May-June 1996. ISSN: 0098-9886.
17. S. Espejo, R. Carmona, R. Domínguez-Castro and A. Rodríguez-Vázquez, "A CNN Universal Chip in CMOS Technology". *International Journal of Circuit Theory and Applications*, Vol. 24, No. 1, pp. 93-109, January-February 1996. ISSN: 0098-9886.
18. S. Espejo, R. Domínguez-Castro, R. Carmona and A. Rodríguez-Vázquez, "CMOS Optical Sensor Array with High Output Current Levels and Automatic Signal-Range Centering". *IEEE Electronics Letters*, Vol. 30, No. 22, pp. 1847-1849, October 1994. ISSN 0013-5194.

Edited Books

1. Á. Rodríguez-Vázquez, R. Adelung, R. Carmona-Galán, G. Liñán-Cembrano, C. Ronning (Editors), *Bioelectronics, Biomedical, and Bioinspired Systems V and Nanotechnology V, Proc. of SPIE*, Vol. 8068, May 2011. ISBN: 978-0-8194-8657-8.
2. Á. Rodríguez-Vázquez, R. Carmona-Galán, G. Liñán-Cembrano (Editors), *Bioengineered and Bioinspired Systems IV, Proc. of SPIE*, Vol. 7365, May 2009. ISBN: 978-0-8194-7639-5.
3. R. Carmona, G. Liñán (Editors), *Bioengineered and Bioinspired Systems II, Proc. of SPIE*, Vol. 5839, June 2005. ISBN: 978-0-8194-5834-6.
4. Á. Rodríguez-Vázquez, D. Abbott, R. Carmona (Editors), *Bioengineered and Bioinspired Systems, Proc. of SPIE*, Vol. 5119, April 2003. ISBN: 978-0-8194-4979-5.

Conference papers

1. J. Fernández-Berni, R. Carmona-Galán, Á. Rodríguez-Vázquez, "Image Filtering by Reduced Kernels Exploiting Kernel Structure and Focal-Plane Averaging", 20th European Conference on Circuit Theory and Design, pp. 229-232, Linköping, Sweden, August 29-31, 2011. ISBN: 978-1-4577-0616-5.
2. M. Suárez, V. M. Brea, D. Cabello, F. Pozas-Flores, R. Carmona-Galán, Á. Rodríguez-Vázquez, "Switched-Capacitor Networks for Scale-Space Generation", 20th European

- Conference on Circuit Theory and Design, pp. 189-192, Linköping, Sweden, August 29-31, 2011. ISBN: 978-1-4577-0616-5.
3. J. Fernández-Berni, R. Carmona-Galán, G. Liñán-Cembrano, A. Zarándy, Á. Rodríguez-Vázquez, "Wi-FLIP: A Wireless Smart Camera Based on a Focal-plane Low-power Image Processor", *Fifth ACM/IEEE International Conference on Distributed Smart Cameras*, pp. xxx-xxx, Ghent, Belgium, August 22-25, 2011. ISBN: xxxxxxxxxxxx.
 4. J. Fernández-Berni, R. Carmona-Galán, G. Liñán-Cembrano, A. Zarándy, Á. Rodríguez-Vázquez, "Demo: Real-time Remote Reporting of Active Regions with Wi-FLIP", *Fifth ACM/IEEE International Conference on Distributed Smart Cameras*, pp. xxx-xxx, Ghent, Belgium, August 22-25, 2011. ISBN: xxxxxxxxxxxx.
 5. J. Fernández-Berni, R. Carmona-Galán, L. Carranza-González, A. Zarándy, Á. Rodríguez-Vázquez, "Focal plane generation of multi-resolution and multi-scale image representation for low-power vision applications", in B. F. Andresen, G. F. Fulop, P. R. Norton (Eds.): *Infrared Technology and Applications XXXVI, Proceedings of SPIE*, Vol. 8012, pp. 8012-14, Orlando, FL (USA), April 25-29, 2011. ISBN: 9780819485861.
 6. J. Fernández-Berni, R. Carmona-Galán, F. Pozas-Flores, Á. Rodríguez-Vázquez, "Multi-resolution low-power Gaussian filtering by reconfigurable focal-plane binning", in Á. Rodríguez-Vázquez, R. Adelung, C. Ronning (Eds.): *Bioelectronics, Biomedical, and Bio-inspired Systems V; and Nanotechnology V, Proceedings of SPIE*, Vol. 8068, pp. 8068-06, Prague, Czech Republic, April 18-20, 2011. ISBN: 9780819486578.
 7. F. Pozas-Flores, R. Carmona-Galán, J. Fernández-Berni, Á. Rodríguez-Vázquez, "Design of a smart SiPM based on focal-plane processing elements for improved spatial resolution in PET", in Á. Rodríguez-Vázquez, R. Adelung, C. Ronning (Eds.): *Bioelectronics, Biomedical, and Bio-inspired Systems V; and Nanotechnology V, Proceedings of SPIE*, Vol. 8068, pp. 8068-08, Prague, Czech Republic, April 18-20, 2011. ISBN: 9780819486578.
 8. M. Suárez, V. M. Brea, C. Domínguez-Matas, R. Carmona, G. Liñán, A. Rodríguez-Vázquez, "In-Pixel ADC for a Vision Architecture on CMOS-3D Technology". *IEEE 3D System Integration Conference (3DIC'10)*, pp. 23(1-4), Munich, Germany, November 18-16, 2010.
 9. J. Fernández-Berni, R. Carmona-Galán, L. Carranza-González, A. Cano-Rojas, J. F. Martínez-Carmona, Á. Rodríguez-Vázquez, S. Morillas-Castillo, "On-site forest fire smoke detection by low-power autonomous vision sensor". *VI International Conference on Forest Fire Research*, p. 94, Coimbra, Portugal, November 15-18, 2010. ISBN: 978-989-20-2157-7.
 10. M. Bakkali, R. Carmona-Galán and A. Rodríguez-Vázquez, "A Prototype Node for Wireless Vision Sensor Network Applications Development". *5th International Symposium on I/V Communications and Mobile Networks (ISIVC'10)*, pp. 1-4, Rabat, Morocco, September 30-October 2, 2010. ISBN: 978-1-4244-5996-4.
 11. A. Rodríguez-Vázquez, R. Carmona-Galán, G. Liñán, R. del Río, B. Pérez-Verdú, "Circuitual and Architectural Challenges for the Design of PET Medical Imaging Systems using CMOS". *International Workshop on Biomedical Applications of MicroPET*, pp. 34-35, Seville, Spain, September 20-21, 2010.
 12. A. Rodríguez-Vázquez, R. Carmona, C. Domínguez-Matas, M. Suárez-Cambre, V. Brea, F. Pozas, G. Liñán, P. Földesy, A. Zarándy, C. Rekeczky, "A 3D Chip Architecture for Optical Sensing and Concurrent Processing", in F. Berghmans, A. G. Mignani, C. A. van

- Hoof (Eds.): *Optical Sensing and Detection, Proceedings of SPIE*, Vol. 7726, pp. 772613-1-772613-12, Brussels, Belgium, April 12-15, 2010. ISBN: 9780819481993.
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