



CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date

30/08/2023

First and Family name	Ricardo Carmona Galán		
ID number	28906573N	Age	53
Researcher IDs	WOS ID	A-8924-2012	
	Orcid code	0000-0002-4230-3988	

A.1. Current position

University/Institution	Consejo Superior de Investigaciones Científicas		
Department	Instituto de Microelectrónica de Sevilla		
Address and Country	C/ Américo Vespucio 28, PCT La Cartuja, 41092 Sevilla (Spain)		
Phone numbers	+34954466666	E-mail	ricardo.carmona@csic.es
	+34654326149	Web	www.imse-cnm.csic.es/~rcarmona
Current position	Científico Titular (Tenured Scientist)	From	15/06/2005
Espec. code UNESCO	2203 and 3307		
Keywords	Analog and mixed-signal microelectronics, CMOS image sensors, smart imagers and vision chips		

A.2. Education

Degree	University	Year
Licenciado (BSc) in Electronic Physics	Universidad de Sevilla	1993
PhD in Microelectronics	Universidad de Sevilla	2002

A.3. JCR articles, h Index, thesis supervised...

- 4 Periodical 6-year certifications of Research Excellence (Sexenios CNEAI): 1994-1999 (07/06/2006), 2000-2005 (07/06/2006), 2006-2011 (06/06/2012), 2012-2017 (06/06/2018)
- 5 Periodical 5-year certifications of Research Excellence (Quinquenios CSIC): 1995-1999 (07/06/2006), 2000-2004 (07/06/2006), 2005-2009 (21/10/2010), 2010-2014 (20/08/2015), 2015-2019 (20/10/2020)
- 9 PhD Thesis supervised in the last 12 years (6 defended and 3 in progress): Dr. Jorge Fernández-Berni, Universidad de Sevilla (20/06/2011); Dr. Manuel Suárez Cambre, Universidad de Santiago de Compostela (22/04/2015) (co-dirigida); Dr. Franco Bandi (29/05/2020), Universidad de Sevilla ; Dr. Marco Trevisi (23/07/2021), Univ. Sevilla; Dr. Juan Manuel López (18/01/2023), Univ. Sevilla; Dr. Mojtaba Parsakordasiabi (16/03/2023) Univ. Sevilla, Mr. Hossein Khosravi (to be defended in 2024) Univ. Sevilla, Mr. Amir Khan (to be defended in 2024) Univ. Sevilla, Mr. Yassine Lamouaraa (to be defended in 2025) Univ. Sevilla,
- Total JCR papers: 56 Q1:28 Q2:18 Q3:6 Q4:4
- Total cites 2018-2023: 797 (Google Scholar), 503 (Scopus)
- Average 2018-2023: 133 (Google Scholar), 84 (Scopus)
- H-index: 24 ([Google Scholar](#)), 19 ([Scopus](#)), 15 ([WOS](#))

Part B. CV SUMMARY (max. 3500 characters, including spaces)

Ricardo Carmona Galán received the degrees of *Licenciado* (B. Sc.) and *Doctor* (Ph. D.) in Electronic Physics from the University of Seville, Spain, in 1993 and 2002, respectively. He designed his first chip, a smart CMOS image sensor delivering the Radon Transform of an input image binarized with an automatic threshold, as his graduation project. From 1994 to 1996 he was a graduate student at the [Institute of Microelectronics of Seville](#). Later, from July



1996 to June 1998, he worked as a Research Assistant at Prof. Chua's laboratory at the EECS Department of the [University of California, Berkeley](#). From 1999 to 2005 he was an Assistant Professor at the Dept. of Electronics and Electromagnetism at the School of Engineering of the University of Seville. He taught "Circuit Analysis and Synthesis" and "Circuit Synthesis Laboratory" and "Smart Sensory Processing Microsystems" He was awarded with a Certificate of Teaching Excellence by the University of Seville.

Since 2005 he is a Tenured Scientist of [CSIC](#) at the Institute of Microelectronics of Seville. His main research area is smart CMOS imagers for low-power vision applications like robotics, vehicle navigation and vision-enabled wireless sensor networks. He is also interested in CMOS-compatible sensing structures for LWIR and MWIR imaging, single-photon detection, and detectors for X-ray and high energy physics. He has designed several vision chips, some implementing bio-inspired nonlinear dynamics emulating the behaviour of the retina. He also held a PostDoc at the [University of Notre Dame](#), Indiana (2006-07), at Prof. Porod's laboratory, where he studied the interfaces for CMOS-compatible nanostructures for multi-spectral light sensing. He currently teaches "Interface Circuits for Integrated Sensors" at [MSc](#) and [PhD Programs](#) at the University of Seville.

Ricardo Carmona has authored more than 160 papers in refereed journals and conferences and several book chapters and has received best paper awards from the Int. J. of Circuit Theory and Applications, the IS&T/SPIE Electronic Imaging Conference on Image Sensors and the IEEE ISCAS Technical Committee on Sensory Systems. He was co-recipient of an award of the [ACET](#) in 2002. He holds several patents and has collaborated with start-up companies in Seville ([AnaFocus](#)) and Berkeley ([Eutecus](#)). He is co-founder of [Photonvis SL](#), a start-up dedicated to vision and imaging systems based in single-photon detection, established in July 2019. This was recognized by HIPEAC, in its [2020 Tech Transfer Awards](#), and by FGCSIC in its [COMTE-EBT](#) initiative to promote the creation of technology-based start-ups.

He has been the Secretary of the Association of the Research and Teaching Staff of the University of Seville ([ADIUS](#)). He was member of the University Senate and the University Council. He is currently the Secretary of the Scientific Staff Assembly of IMSE. He is a Senior Member of the IEEE, and belongs to the Circuits and Systems, Solid-State Circuits Societies. He is also Member of the ACM, HIPEAC and the IEEE-CASS Technical Committees on Cellular Nanoscale Networks and Array Computing and on Sensory Systems, of which he is Secretary-Elect. He belongs also to the IEEE Sensors Council. He has served as Associate Editor for the [IEEE Transactions on Circuits and Systems-I](#) for the period 2012-13. He is currently Associate Editor of the Springer's [Journal of Real-Time Image Processing](#). He is member of the steering committee of the Workshop on Architecture of Smart Cameras. He has been the General Chair of [ICDSC 2015](#) in cooperation with ACM SIGBED.

He has been the coordinator of [ACHIEVE-ITN](#), an Innovative Training Network (H2020 Marie Skłodowska-Curie Action) dedicated to research on Advanced Hardware/Software Components for Integrated/Embedded Vision Systems.

Part C. RELEVANT MERITS

C.1. Publications (including books)

- [1] M. Parsakordasiabi, I. Vornicu, Á. Rodríguez-Vázquez, and **R. Carmona-Galán**, "An Efficient TDC Using a Dual-Mode Resource-Saving Method Evaluated in a 28-nm FPGA". IEEE Transactions on Instrumentation and Measurement, Vol. 71, pp: 1-13, Art. No. 2000413. Dec. 2021. ([DOI: 10.1109/TIM.2021.3136267](#)) Print ISSN: 0018-9456, Online ISSN: 1557-9662. IF 5.332 Q1: 10/64 Category: Instruments and Instrumentation
- [2] I. Vornicu, J. M. López-Martínez, F. Bandi, **R. Carmona-Galán** and Á. Rodríguez-Vázquez, "Design of High-Efficiency SPADs for LiDAR Applications in 110nm CIS Technology". IEEE Sensors Journal, Vol. 21, No. 4, pp: 4776-4785, Feb. 2021. ([DOI: 10.1109/JSEN.2020.3032106](#)) Print ISSN: 1530-437X, Online ISSN: 1558-2205. Data from JCR 2020: IF 3.301; Q2: 96/273; Category: EE Engineering.
- [3] M. Parsakordasiabi, I. Vornicu, Á. Rodríguez-Vázquez and **R. Carmona-Galán**, " A Low-Resources TDC for Multi-Channel Direct ToF Readout Based on a 28-nm FPGA". Sensors, Vol. 21, No. 1: 308, Jan. 2021. ([DOI: 10.3390/s21010308](#)) ISSN 1424-8220. Data from JCR 2020: IF 3.576; Q1: 14/64; Category: Instruments & Instrumentation.
- [4] I. Vornicu, F. Bandi, **R. Carmona-Galán** and Á. Rodríguez-Vázquez, "Compact Macro-Cell With OR Pulse Combining for Low Power Digital-SiPM". IEEE Sensors Journal, Vol. 20, No. 21, pp: 12817-12826, Nov. 2020. ([DOI: 10.1109/JSEN.2018.2885960](#)) Print ISSN:



- 1530-437X, Online ISSN: 1558-2205. Data from JCR 2020: IF 3.301; Q2: 96/273; Category: EE Engineering.
- [5] G.M.S. Nunes, F.D.V.R. Oliveira, M.C.Q. Farias, J.G.R.C. Gomes, A. Petraglia, J. Fernández-Berni, **R. Carmona-Galán**, Á. Rodríguez-Vázquez, "Comparison between Digital Tone-Mapping Operators and a Focal-Plane Pixel-Parallel Circuit". *Signal Processing: Image Communication*, Vol. 88, p.115937, 2020. ([DOI: 10.1016/j.image.2020.115937](https://doi.org/10.1016/j.image.2020.115937)) ISSN 0923-5965. Data from JCR 2020: IF 3.256; Q1: 100/273; Category: EE Engineering.
- [6] D.Velasco-Montero, J. Fernández-Berni, **R. Carmona-Galán** and Á. Rodríguez-Vázquez, "PreVlous: A Methodology for Prediction of Visual Inference Performance on IoT Devices". *IEEE Internet of Things Journal*, Vol. 7, No. 10, pp: 9227-9240, Oct. 2020. ([DOI: 10.1109/JIOT.2020.2981684](https://doi.org/10.1109/JIOT.2020.2981684)) Electronic ISSN: 2327-4662. Data from JCR 2020: IF 9.471; Q1: 15/273; Category: Elec. and Electronic Engineering.
- [7] M. Trevisi, A. Akbari, M. Trocan, Á. Rodríguez-Vázquez and **R. Carmona-Galán**, "Compressive Imaging using RIP-compliant CMOS Imager Architecture and Landweber Reconstruction". *IEEE Transactions on Circuits and Systems for Video Technology*, Vol. 30, No. 2, pp: 387-399, Feb. 2020. ([DOI: 10.1109/TCSVT.2019.2892178](https://doi.org/10.1109/TCSVT.2019.2892178)) Print ISSN: 1051-8215, Online ISSN: 1558-1748. Data from JCR 2020: IF 4.685; Q1: 43/273; Category: Elec. and Electronic Engineering.
- [8] I. Vornicu, A. Darie, **R. Carmona-Galán** and Á. Rodríguez-Vázquez, "Compact Real-Time Inter-Frame Histogram Builder for 15-Bits High-Speed ToF-Imagers based on Single-Photon Detection". *IEEE Sensors Journal*, Vol. 19, No. 6, pp: 2181-2190, Mar. 2019. ([DOI: 10.1109/JSEN.2018.2885960](https://doi.org/10.1109/JSEN.2018.2885960)) ISSN: 1530-437X. Data from JCR 2019: Impact factor 3.073; Quartile Q2: 18/64; Category: Instruments & Instrumentation.
- [9] D.Velasco-Montero, J. Fernández-Berni, **R. Carmona-Galán** and Á. Rodríguez-Vázquez, "Optimum Selection of DNN Model and Framework for Edge Inference". *IEEE Access*, Vol. 6, pp: 51680-51692, Sep. 2018. ([DOI: 10.1109/ACCESS.2018.2869929](https://doi.org/10.1109/ACCESS.2018.2869929)) Electronic ISSN: 2169-3536. Data from JCR 2018: IF 4.098; Q1: 52/266; Category: EEEng.
- [10] Á. Rodríguez-Vázquez, J. Fernández-Berni, J. A. Leñero-Bardallo, I. Vornicu and **R. Carmona-Galán**, "CMOS Vision Sensors: Embedding Computer Vision at Imaging Front-Ends". *IEEE Circuits and Systems Magazine*, Vol. 18, No. 2, pp: 90-107, Second quarter 2018. ([DOI: 10.1109/MCAS.2018.2821772](https://doi.org/10.1109/MCAS.2018.2821772)) Print ISSN: 1531-636X, Online ISSN: 1558-0830. Data from JCR 2018: IF 4.481; Q1: 42/266; Category: EEEng.

C.2. Research projects and grants

- (1) SEMIoTICs: Advanced SEnsing Modalities for intelligent IoT Components and Systems, **R. Carmona-Galán** and J. Fernández-Berni, PID2021-128009OB-C31, MICINN, Spain, 01/2022-12/2024. Participation: PI/Coordinator. Total budget: 534,820€
- (2) [Envisage: Enabling Vision Technologies for Integrated Intelligent Transportation](#), **R. Carmona-Galán** and J. Fernández-Berni, RTI2018-097088-B-C31, MICINN, Spain, 01/2019-12/2021. Participation: PI/Coordinator. Total budget: 305.283€
- (3) ["ACHIEVE: AdvanCed Hardware/Software Components for Integrated/ Embedded Vision SystEms"](#), IP: **Ricardo Carmona Galán**, H2020 MSCA-ITN 2017, Research Executive Agency, European Commission, 10/2017-09/2021. Participation: PI/Coordinator. Total budget: 2.266.907,76 €
- (4) ["iCaveats: Integración de Componentes y Arquitecturas para la Visión Embebida en Aplicaciones de Transporte y Seguridad"](#), IP: **Ricardo Carmona Galán**, Plan Nacional de I+D+i (Proyecto coordinado). MINECO, Ref. TEC2015-66878-C3-1-R, 01/2016-12/2018. Participation: PI/Coordinator. Total budget: 499.125,00€
- (5) ["MONDEGO: Monitorización y vigilancia basada en dispositivos integrados de visión con bajo consumo de potencia"](#). PI: **Ricardo Carmona Galán**, Plan Nacional de I+D+i (Proyecto coordinado). MINECO (cofinanciado por FEDER). Ref. TEC2012-38921-C02-01, 01/01/2013-31/12/2015. Participation: PI/Coordinator. Total budget: 308,412.00€

C.3. Contracts

- (1) Contrato de colaboración Photonvis SL- CSIC, **R. Carmona-Galán** (PI) , 11/2019-12/2020.
- (2) "PLATINO: Investigación y desarrollo de tecnología para convoyes no tripulados con aplicación a misiones logísticas militares y de seguridad". IP: Ángel Rodríguez Vázquez.



Subcontrato. Programa FEDER-Interconecta. CDTI. Ref. ITC-20111009. 01/012012-31/12/2014. Participation: Researcher. Budget: 305,000.00€

- (3) "FLEX-CMOS: Diseño microelectrónico de un sensor CMOS de área flexible y adaptativo para uso industrial" IP: Ángel Rodríguez Vázquez. Subcontrato Innov. Microelec. S. L. Ref. 010204080002. 01/12/2010-31/12/2011. Participation: Researcher. Budget: 90,000.00€
- (4) "ADAPTA: Tecnología de funciones de protección lateral, inteligentes y adaptativas". IP: José Luis Huertas Díaz. Subcontrato CENIT-Innovaciones Microelectrónicas S. L. Ref. 010204100001. 19/02/2008-31/12/2011. Participation: Researcher.
- (5) "Diseño microelectrónico de sistemas autónomos programables para visión artificial". IP: José Luis Huertas Díaz. Subcontrato Innov. Microelectrónicas S. L. Ref. 010204110001. 01/08/2008-31/12/2010. Participation: Researcher. Budget: 324,449.68€

C.4. Patents

- (1) I. Vornicu, **R. Carmona Galán**, Á. Rodríguez Vázquez, "Fotomultiplicador digital de combinación OR de pulsos". CSIC-Universidad de Sevilla. Núm. P202030127, 14-FEB-2020. OEPM (España).
- (2) I. Vornicu, **R. Carmona Galán**, Á. Rodríguez Vázquez, "Método y dispositivo de detección de pico del histograma comprimido de los valores de píxel en sensores de tiempo de vuelo de alta resolución". CSIC-Universidad de Sevilla. Núm. P201830870, 05-SEP-2018. OEPM (España). Licenciada a PhotonvisSL en Nov. 2019.
- (3) M. Trevisi, **R. Carmona Galán**, Á. Rodríguez Vázquez, "Sensor de imágenes con muestreo compresivo on-chip". CSIC-Universidad de Sevilla. Núm. P201730285, 02-MAR-2017. OEPM (España).
- (4) J. Fernández Berni, **R. Carmona Galán**, Á. Rodríguez Vázquez, M. Niemier, X. S. Hu, "Pixel having a reset device with asymmetric conduction". University of Notre Dame-Universidad de Sevilla-CSIC. No. 15220473, 27-JUL-2016. USPTO (USA).
- (5) L. Cervera Gontard, **R. Carmona Galán**, "Sensor de electrones para microscopía electrónica". CSIC. Núm. P201630925, 07-JUL-2016. OEPM (España).

C.5 Scientific societies, technical and programme committees

- (1) Member of IEEE (Senior Member), ACM, IEEE Circuit and Systems Society, IEEE Solid-State Circuits Society (since 1998), IEEE Computer Society (2010-2012) and HIPEAC.
- (2) Member of the Association of the Research and Teaching Staff of the University of Seville (ADIUS) (from 2002, Secretary from 2002 to 2004)
- (3) Member of the Technical Committees of IEEE-CASS on Cellular Nanoscale Networks and Array Computing (from 2004) and Sensory Systems (from 2012, Secretary 2019).
- (4) Chairman of the 9th International Conference on Distributed Smart Cameras, Seville (Spain), September, 8-11, 2015, in-cooperation with ACM SIGBED
- (5) Technical Programme Chair of IEEE ISCAS 2020. Member of the organizing committees of: CNNA 2014, WASC 2013, CNNA 2012, IEEE-ICECS 2012, SPIE's Microtechnologies 2011, ESSCIR/ESSDERC 2010.

C.6 Editorial duties, review committees and project and thesis evaluation

- (1) Guest Editor Special Issues IJCTA 2017-18, JRTIP 2013-14 y JSA 2012-13.
- (2) Associate Editor IEEE TCAS-I 2012-13.
- (3) Review Committee Member ISCAS 2010-11-12
- (4) Reviewer and panellist of Plan Nacional de I+D+i, Área TIC, MICINN, 2010.
- (5) Reviewer of ANEP 2011-2012, 2015, 2017, 2018
- (6) Thesis tribunals at CEA-LETI (2019, 2021), EPFL (2018, 2020), Univ. Sevilla (2012, 2014, 2017), Helsinki (2007), Turku (2013, 2014), Granada (2010), Barcelona (2014 y 2020) Santiago de Compostela (2012), Ramón-Llull (2012) Toulouse (2012), Manchester (2014)