

# Ruber Hernández García, PhD, Curriculum Vitae

Academic Researcher

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## Personal Information

- Gender: Male
- Date of birth: January 12, 1983
- Nationality: Cuban Citizen
- ORCID: 0000-0002-9311-1193
- Languages: Fluent in English (reading, spoken and written); Native in Spanish.

## Education

- **2014:** PhD. in Technical Sciences (Computer Sciences). University of Informatics Sciences, Cuba.  
**Thesis:** "Representation model of visual n-grams for human actions classification in videos".  
**Advisors:** PhD. Edel García-Reyes; PhD. Julián Ramos-Cózar; PhD. Nicolás Guil.
- **2011:** MSc. in Applied Informatics. University of Informatics Sciences, Cuba.  
**Thesis:** "Advertisements detection in television broadcasting based on audio signal representation".  
**Advisor:** PhD. Julián Ramos-Cózar.
- **2010:** MSc. in Audiovisual Information Systems. University of Malaga, Spain.  
**Thesis:** "Advertisements detection in television broadcasts using audio signal features".  
**Advisor:** PhD. Julián Ramos-Cózar.
- **2007:** Information Sciences Engineer. University of Informatics Sciences, Cuba.  
**Thesis:** "Automated Teletext System for the Cuban Satellite Television Platform".  
**Advisors:** Eng. Serguey González García; M.Cs. Tamara Roselló Reina.

## Research Experience

### *Research areas*

- Video and image automatic processing.
- Pattern Recognition in image and video.
- Human actions recognition in videos.
- Biometric systems under parallel platforms.

### *Research positions*

- **Academic Researcher:** Center of Advanced Research of Maule, Catholic University of Maule, Chile, Ago/2019–Present.
- **Postdoc researcher:** Laboratory of Technology Research on Pattern Recognition, Catholic University of Maule, Chile, Aug/2018–Jul/2019.
- **Postdoc researcher:** IRIS Group, Dept. of Electronics and Informatics, Vrije Universiteit Brussel, Belgium, Sept/2015–Nov/2015.
- **Research collaborator:** Dept. of Pattern Recognition, Advanced Technologies Application Center, Cuba, 2014–2015.
- **Research collaborator:** VIP Research Group, Dept. Computer Architecture, University of Malaga, Spain, 2010–Present.
- **Research collaborator:** Geoinformatics and Signal Processing Development Center, University of Informatics Sciences, Cuba, 2010–2017.
- **Project leader:** Geoinformatics and Signal Processing Development Center, University of Informatics Sciences, Cuba, 2007–2010.

### *Research fellowships*

- **2015:** VLIR-CUBA Network Research fellowship in Audio-Visual Signal Processing Research Group, Dept. Electronics and Informatics (ETRO), Vrije Universiteit Brussel (VUB), Belgium. Two months. Host Professor: Hichem Sahli.
- **2012:** AUIP Research fellowship at University of Malaga, Spain. Six months. Host Professors: Nicolás Guil Mata and Julián Ramos Cózar.
- **2010:** AUIP Master fellowship in Audiovisual Information Systems Master Program, University of Malaga, Spain. Six months. Host Professor: Nicolás Guil Mata.

### *Memberships*

- Member, Cuban Association of Pattern Recognition.
- Member, Mathematics and Computer Cuban Society.
- Member, International Association of Pattern Recognition.

### *Referee of journals and conference*

- Executive Editor and Referee, Revista Cubana de Ciencias Informáticas.
- Referee, IEEE Transactions Latinoamerica.
- Referee, Multimedia Systems and Applications.
- Invited Referee, Journal of Intelligent of Data Analysis (Special Number).
- Referee, International Conference UCIENCIA 2014, 2016.
- Invited Referee, Computer Analysis of Image Patterns 2015.

- Referee, 46th Annual Conference of the Southern African Computer Lecturers' Association (SACLA2017).
- Referee, 47th Annual Conference of the Southern African Computer Lecturers' Association (SACLA2018).
- Referee, Simposio Argentino de Educación en Informática (SAEI), in 48th Jornadas Argentinas de Informática (JAIIO) 2019.
- Referee, Simposio Argentino de Imágenes y Visión (SAIV), in 48th Jornadas Argentinas de Informática (JAIIO) 2019.

### *Scientific events organization*

- Technological management supervisor, Feria y Convención Internacional Informática 2013, La Habana, Cuba.
- Head organizer, ACM-ICPC Namibian Final 2016, 2017, Namibia.
- Executive secretary, UCIENCIA 2016, La Habana, Cuba.
- Member of Organizing Committee, Winter and Summer Schools, University of Informatics Sciences, La Habana, Cuba.
- Technological management supervisor, ACM-ICPC Caribbean Final 2013, La Habana, Cuba.

## Academic Experience

- **2020–Present:** Collaborator Professor. PhD in Applied Mathematical Modelling. Catholic University of Maule, Chile.
- **2019–Present:** Collaborator Professor. Master in Computer Sciences. Catholic University of Maule, Chile.
- **2016–2017:** Full Professor. University of Namibia, Namibia.
- **2015–2017:** Auxiliar Professor. University of Informatics Sciences, Cuba.
- **2011–2014:** Assistant Professor. University of Informatics Sciences, Cuba.
- **2008–2010:** Instructor Professor. University of Informatics Sciences, Cuba.

### *Teaching activities and courses*

- **Undergraduate courses:** Introduction to Programming; Programming 1; Data Structure; Web Programming; Computer Graphics; Computer Vision; Digital Images Processing; Research Methodology; *at University of Informatics Sciences*. Object Oriented Programming; Web Design and Programming; Computer Networks; Internet Technologies and Application; *at University of Namibia*.
- **Postgraduate courses:** Audiovisual Storage Systems; Digital Images Processing; Gesture-Based Computing (Master in Advanced Informatics); Computer Network Architecture (Master in Applied Informatics); *at University of Informatics Sciences*. Computer Graphics (Master in Computer Science); *at University of Namibia*. Pattern Recognition and Neural Networks (Master in Computer Sciences, PhD in Applied Mathematical Modelling); *at Catholic University of Maule, Chile*.
- **Trainings:** ICPC Coach, *at University of Namibia, Namibia, 2016–2017* and *Catholic University of Maule, Chile, 2018–2019*.

### *Administrative positions*

- **Director of Research**, University of Informatics Sciences. 2015–2016.
- **Director of Technological Management**, University of Informatics Sciences. 2012–2013.
- **Director of Academic Affairs**, Geoinformatics and Signal Processing Development Center, University of Informatics Sciences. 2010–2012.

### *Academic lectures*

- “*Reconocimiento de acciones humanas en videos usando n-gramas visuales*”. Catholic University of Maule, Chile, 2018.
- “*Visual Information Representation for Human Actions Classification in Videos*”. University of Informatics Sciences, Cuba, 2014.
- “*Human Action Recognition in Videos: current status and challenges*”. Dept. Computer Architecture, University of Malaga, Spain, 2012.
- “*La Arquitectura de Computadoras en la Universidad de Ciencias Informáticas*”. Dept. Computer Architecture, University of Malaga, Spain, 2010.

## Thesis advisor

### *Postgraduate students*

- Francisco Philip Vázquez Iglesias. “Development of iris recognition method based on displacement patterns”. Master in Computer Sciences. Catholic University of Maule, Chile, 2020.
- Hernán Alberto Campos Rivero. “Development of a biometric iris recognition system based on texture descriptors on a parallel platform”. Master in Computer Sciences. Catholic University of Maule, Chile, 2019.
- Reinier Pupo Ruiz. “Algorithm for detecting blurring in video-surveillance cameras”. Master in Applied Informatics. University of Informatics Sciences, Cuba.

### *Undergraduate students*

- Fernando Quesada Peña. “Computer system for the management of technological availability indicators”. Informatics Sciences Engineering. University of Informatics Sciences, Cuba.
- José Antonio Ávila Prieto. “Development of the additional information component on PRIMICIA v2.0”. Informatics Sciences Engineering. University of Informatics Sciences, Cuba.
- Janet Cristina Labrada Paneque. “Component for digital audio processing in Audiovisual Information Systems”. Informatics Sciences Engineering. University of Informatics Sciences, Cuba.
- Ariadna Miranda Cruz. “Digital audio processing on the Information Television Platform PRIMICIA”. Informatics Sciences Engineering. University of Informatics Sciences, Cuba.
- Carlos de Jesús Andrés González. “Design of the Configuration Subsystem on the Information Television Platform PRIMICIA”. Informatics Sciences Engineering. University of Informatics Sciences, Cuba.

- Rafael Lorente Miranda. "Improvement proposal for the news writing process of the Information Television Platform PRIMICIA". Informatics Sciences Engineering. University of Informatics Sciences, Cuba.
- Douglas Páez Castillo. "Development of the system architecture of the Information Television Platform PRIMICIA". Informatics Sciences Engineering. University of Informatics Sciences, Cuba.
- Jorge Daniel Olivares Tamayo and Bernardo Rey Almaguer. "Development of the corporate television channel of the Ministry of Energy and Petroleum of Venezuela: Management Subsystem". Informatics Sciences Engineering. University of Informatics Sciences, Cuba.
- José Andrés Hernández Bustio. "Development of the corporate television channel of the Ministry of Energy and Petroleum of Venezuela: Broadcasting Subsystem". Informatics Sciences Engineering. University of Informatics Sciences, Cuba.

## Research Projects

- **2018–2019:** Postdoc researcher, FONDEF IDeA Project ID17i10254 "Massive Identification of People using the Fingerprint". Funding Entity: Conicyt, Chilean Government. Head: Ricardo J. Barrientos.
- **2012–2014:** PhD researcher, Efficient techniques for video analysis on advanced computer architectures (Po7-TIC-02800). Funding Entity: Junta of Andalucia. Head: Nicolás Guil Mata.
- **2012–2017:** Associate researcher, Platform of Intelligent Video-surveillance. Funding Entity: University of Informatics Sciences. Head: Yanio Hernandez Heredia.
- **2012–2017:** Associate researcher, Automated Teletext Platform. Funding Entity: University of Informatics Sciences. Head: Abel Díaz Berenguer.
- **2007–2012:** Head researcher, Automated Teletext Platform. Funding Entity: University of Informatics Sciences.

## Publications

2019

- **Hernández-García, R.;** Barrientos, R. J.; Rojas, C.; Soto-Silva, W. E. ; Mora, M.; Gonzalez, P.; Frati, E. F. (2019): "Fast Finger Vein Recognition Based on Sparse Matching Algorithm under a Multicore Platform for Real-Time Individuals Identification". *Symmetry*, 11(9), 1167, DOI: [10.3390/sym11091167](https://doi.org/10.3390/sym11091167). Indexación: WoS - Q2.
- **Hernández-García, R.;** Barrientos, R. J.; Rojas, C.; Mora, M. (2019): "Individuals Identification Based on Palm Vein Matching under a Parallel Environment". *Applied Sciences*, 9(14), 2805, DOI: [10.3390/app9142805](https://doi.org/10.3390/app9142805). Indexación: WoS - Q2.
- Barrientos, R. J.; **Hernández-García, R.;** Ortega, K.; Luque, E.; Peralta, D. (2019): "Heap-based Algorithms to Accelerate Fingerprint Matching on Parallel Platforms". In *7th International Conference on Cloud Computing & Big Data (JCC&BD 2019)*, Springer, La Plata, Argentina. DOI: [10.1007/978-3-030-27713-0\\_6](https://doi.org/10.1007/978-3-030-27713-0_6). Indexación: SCOPUS.
- **Hernández-García, R.;** Guidet, S.; Barrientos, R. J.; Frati, F. E. (2019): "Massive Finger-vein Identification based on Local Line Binary Pattern under Parallel and Distributed Systems". In *2019 38th International Conference of the Chilean Computer Science Society (SCCC)*, IEEE, Concepción, Chile. DOI: [10.1109/SCCC49216.2019.8966400](https://doi.org/10.1109/SCCC49216.2019.8966400). Indexación: SCOPUS.

- Campos, H.; **Hernández-García, R.**; Barrientos, R. J. (2019): "Evaluation of LBP-based descriptors for Iris Recognition based on Learning Vector Quantization Classifier under a Multi-core Platform". In *2019 38th International Conference of the Chilean Computer Science Society (SCCC)*, IEEE, Concepción, Chile. DOI: [10.1109/SCCC49216.2019.8966407](https://doi.org/10.1109/SCCC49216.2019.8966407). Indexación: SCOPUS.
- Iglesias, P.; **Hernández-García, R.**; Barrientos, R. J.; Goncalves, E.; Mora, M. (2019): "Iris Recognition based on Displacement Information using a Sparse Matching Technique". In *2019 38th International Conference of the Chilean Computer Science Society (SCCC)*, IEEE, Concepción, Chile. DOI: [10.1109/SCCC49216.2019.8966438](https://doi.org/10.1109/SCCC49216.2019.8966438). Indexación: SCOPUS.

2018

- Rojas, C.; **Hernández-García, R.**; Barrientos, R.J. (2018): "Individuals identification using finger veins under a multi-core platform". In *2018 37th International Conference of the Chilean Computer Science Society (SCCC)*, IEEE, Santiago, Chile. DOI: [10.1109/SCCC.2018.8705155](https://doi.org/10.1109/SCCC.2018.8705155). Indexación: SCOPUS.

2017

- **Hernández-García, R.**; Ramos-Cózar, J.; Guil, N.; García-Reyes, E.; Sahli, H. (2017): "Improving Bag-of-Visual-Words model using visual n-grams for human action classification". *Expert Systems with Applications*, 92, pp. 182-191, DOI: [10.1016/j.eswa.2017.09.016](https://doi.org/10.1016/j.eswa.2017.09.016). Indexación: WoS - Q1.
- **Hernández-García, R.**; Zulueta-Veliz, Y.; Mufeti, T.K. (2017): "Contributing to the Teaching-Learning Process through the use of Competitive Programming. Experience of School of Computing at University of Namibia". In *2017 46th Annual Conference of the Southern African Computer Lecturers' Association (SACLA)*, pp. 150-157, Magaliesburg, South Africa. Online: <https://cs.up.ac.za/cs/vpieterse/pub/2017PieterseEtSACLA.pdf>.

2016

- **Hernández-García, R.** (2016): "Applying visual n-grams for human action classification". In *4th Annual Science Research Conference of University of Namibia*, pp 81-82, Windhoek, Namibia. Online: [http://unam.edu.na/sites/default/files/fos\\_book\\_of\\_abstracts\\_2016.pdf](http://unam.edu.na/sites/default/files/fos_book_of_abstracts_2016.pdf).

2014

- **Hernández-García, R.**; García-Reyes, E.; Ramos-Cózar, J.; Guil, N. (2014): "Modelos de representación de características para la clasificación de acciones humanas en video: estado del arte". Cuba: *Revista Cubana de Ciencias Informáticas (RCCI)*, 8 (4). Indexación: SciELO.
- **Hernández-García, R.**; García-Reyes, E.; Ramos-Cózar, J.; Guil, N. (2014): "Human Action Classification using N-grams Visual Vocabulary". In: Bayro-Corrochano E., Hancock E. (eds) *Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications. CIARP 2014. Lecture Notes in Computer Science*, 8827, pp. 319-326, Springer, Cham. DOI: [10.1007/978-3-319-12568-8\\_39](https://doi.org/10.1007/978-3-319-12568-8_39). Indexación: SCOPUS - Q2.

2013

- Hernandez, Y.; Montes de Oca, D.; **Hernández, R.** (2013): "Framework para la Clasificación de Acciones Humanas en Videos". In *Memorias de la II Conferencia Internacional de Ciencias Computacionales e Informáticas, Informática 2013*, La Habana, Cuba.

- **Hernández García, R.**; Ramos Cózar, J.; Hernandez Heredia, Y.; González-Linares, J.M; Guil Mata, N. (2013): "Selecting Descriptive Visual Words in Human Action Classification". In *Memorias de la II Conferencia Internacional de Ciencias Computacionales e Informáticas, Informática 2013*, La Habana, Cuba.

## 2012

- Cózar, J.R.; **Hernández, R.**; Heredia, Y.; González-Linares, J.M.; Guil, N. (2012): "Reducing Vocabulary Size in Human Action Classification". In *2012 16th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems (KES), Advances in Knowledge-Based and Intelligent Information and Engineering Systems, Frontiers in Artificial Intelligence and Applications (FAIA) series*, 243, pp. 1712-1719, IOSPress, San Sebastian, Spain. DOI: [10.3233/978-1-61499-105-2-1712](https://doi.org/10.3233/978-1-61499-105-2-1712). Indexación: SCOPUS - Q4.
- Cózar, J.R.; **Hernández, R.**; Heredia, Y.; González-Linares, J.M.; Guil, N. (2012): "Visual Words Selection for Human Action Classification". In *2012 International Workshop on Machine Learning, Pattern Recognition & Applications (MLPRA2012), as part of International Conference on High Performance Computing & Simulation (HPCS)*, pp. 188-194, IEEE, Madrid, Spain. DOI: [10.1109/HPCSim.2012.6266910](https://doi.org/10.1109/HPCSim.2012.6266910). Indexación: SCOPUS.
- Hernandez Y.; Ortiz, J.; **Hernández, R.**; González, J.M. (2012): "Descriptores temporales-espaciales en la detección automática de información audiovisual". *Ciencias de la Información, Instituto de Información Científica y Tecnológica (IDICT)*, 43 (2), pp. 21-27. Indexación: SCOPUS - Q3.
- Hernandez-Heredia, Y.; González-Linares, J.M; Guil, N.; Ortiz, J.; **Hernández, R.**; Cózar, J. (2012): "Object detection with vocabularies of space-time descriptors". *Journal of Applied Research and Technology*, 10 (6), pp. 950-956. ISSN 1665-6423. Indexación: SCOPUS - Q2.

## 2011

- Hernandez, Y.; **Hernández, R.** (2011): "Detección de objetos en secuencias de video con una técnica basada en la transformada de Hough". In *Memorias del V Congreso Internacional de Tecnologías, Contenidos Multimedia y Realidad Virtual, Informática 2011*, La Habana, Cuba.
- **Hernández, R.**; Hernandez, Y.; Hernández, J.A. (2011): "Detección de anuncios en emisiones de televisión basada en la caracterización del audio". *Memorias del V Congreso Internacional de Tecnologías, Contenidos Multimedia y Realidad Virtual, Informática 2011*, La Habana, Cuba.
- Hernandez, Y.; Estrada, A.; **Hernández, R.** (2011): "Detección de objetos con vocabularios de descriptores temporales-espaciales". In *Memorias del XII Congreso de Matemática y Computación, COMPUMAT 2011*, Santa Clara, Cuba.
- **Hernández, R.**; Hernández, J.A.; Hernandez, Y. (2011): "Detección de archivos de audio duplicados en plataformas de transmisión de radio y televisión". In *Memorias del XII Congreso de Matemática y Computación, COMPUMAT 2011*, Santa Clara, Cuba.

## 2010

- Hernandez, Y.; **Hernández, R.**; Estrada, A. (2010): "Detección de objetos en sistemas de catalogación utilizando bosques binarios de Hough". In *Memorias del VIII Congreso Nacional de Reconocimiento de Patronos, RECPAT 2010*, La Habana, Cuba.
- Hernández Bustio, J. A; Bermudez Valdes, G.; Herrera González, A.; **Hernández García, R.** (2010). "Personalización de Nova GNU/Linux para la Plataforma de Televisión Informativa, Primicia". In *Taller La innovación en el desarrollo de la industria cubana del sector de la informática, as part of Memorias de la Décima Semana Tecnológica de FORDES*, La Habana, Cuba. ISBN: 978-959-2076-9792.

2009

- **Hernández, R.;** Montaner, Y.; Hernández, J. A.; Olivares, J. D. (2009) "Primicia, Plataforma de Televisión Informativa". In *Informática 2009*, La Habana, Cuba. ISBN: 978-959-286-010-0.

## References

- Dr.Marco Mora Cofré, Académico, Universidad Católica del Maule, Talca, Chile. ☎ (56) 9 6206 7684  
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- PhD. José Ortiz Rojas, Director of Academic Affairs, University of Informatics Sciences, La Habana, Cuba. ☎ (53) 5415 2926 ✉ [jortiz@uci.cu](mailto:jortiz@uci.cu)
- PhD. Nicolás Guil Mata, Dept. Computer Architecture, University of Malaga, Malaga, Spain.  
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- PhD. Hichem Sahli, Department of Electronic and Informatics, Vrije Universiteit Brussel, Brussels, Belgium. ☎ (32) (0)2 629 2916 ✉ [hsahli@etrovub.be](mailto:hsahli@etrovub.be)
- PhD. Kauna Mufeti, Associate Dean, School of Computing, University of Namibia, Windhoek, Namibia. ☎ (264) 81 283 4479 ✉ [tndakunda@unam.na](mailto:tndakunda@unam.na)

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