

Alberto García-García

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Department of Computer Technology (DTIC)
University of Alicante (Spain)

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Interests and Objectives

My main interest is *High Performance Computing*. I am currently active in areas like *Parallel Computing* and *General-Purpose Computation on Graphics Processing Units (GPGPU)*. My motivation lies on applying all that computing knowledge to solve cross-disciplinary problems. In fact, my current projects involve parallel computing and 3D computer vision problems. My other related passions are physics, scientific simulations, 3D computer graphics, robotics and AI.

Being conscious of my limited knowledge in all those fields, I strive for seizing all the opportunities to learn and improve my skills in those fields and also discover current and future challenges to find my true passion and contribute where I can.

Research Experience

2015 (Summer)	PRACE Summer Of High Performance Computing Student Jülich Supercomputing Centre, Forschungszentrum Jülich Worked on parallel computing on GPUs. The goal was to accelerate, using CUDA, certain parts of the Fast Multipole Method (FMM) used to speed up the calculation of long-range forces in the N -body problem. The work was supervised by Ivo Kabadshow and Andreas Beckmann. Jiri Kraus, from NVIDIA, offered valuable support for the development.
2014–2015	Research Internship Department of Computer Technology, University of Alicante Worked on 3D vision algorithms related to object recognition under time constraints using technologies like Kinect 2.0 and CUDA with the Jetson TK1 platform. The research was performed under the direction of José García-Rodríguez and Sergio Orts-Escolano.
2013–2014	Research Internship Department of Computer Technology, University of Alicante Worked on computer vision and computational geometry algorithms. Our efforts were directed towards the development of an accelerated variant of the Iterative Closest Point method. The research was supervised by Higinio Mora-Mora and Jerónimo Mora-Pascual.

Educational Background

2015–2016 (Expected)	Master's Degree in Automation and Robotics University of Alicante Master's Thesis: TBD. Supervisors: José García-Rodríguez.
2011–2015	Bachelor's Degree in Computer Engineering University of Alicante High Academic Performance Group – Average grade : 9.75/10 Bachelor's Thesis (with Honors): "Towards a real-time 3D object recognition pipeline on mobile GPGPU computing platforms using low-cost RGB-D sensors". Supervisors: José García-Rodríguez and Sergio Orts-Escolano
2014	Erasmus Intensive Programme: Big Data The University of Salford

Honors and Awards

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| 2014 | CUDA Programming Contest
Winner of the CUDA Programming Contest organized by the Department of Computer Technology (DTIC) during the IV Workshop of scientific applications and computer vision on graphics processors (JGPU14) for the work entitled " <i>CUDA Implementation of Kohonen maps</i> ". |
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Grants

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| 2014 | Research Collaboration Grant
Research collaboration grant for initiation in research tasks during an eight month stay (November, 2014 – June, 2015) at the Department of Computer Technology at the University of Alicante funded by the <i>Ministerio de Educación, Cultura y Deporte</i> (MECD) from Spain. |
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Research

I am currently an intern at the *Industrial Informatics and Computer Networks (I2RC)* research group which belongs to the *Department of Computer Technology (DTIC)* of the University of Alicante. The research collaboration is being supervised by the professor José García-Rodríguez.

Publications

Journals

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| [j4] | 2015 | Towards a real-time 3D object recognition pipeline on mobile GPGPU computing platforms using low-cost RGB-D sensors. Alberto Garcia-Garcia, Sergio Orts-Escolano, Jose Garcia-Rodriguez, Miguel Cazorla. <i>Journal of Real-Time Image Processing.</i> (<i>Under review</i>). |
| [j3] | 2015 | Computational Analysis of Distance Operators for the Iterative Closest Point Algorithm. Higinio Mora-Mora, Jeronimo Mora-Pascual, Pablo Martinez-Gonzalez, Alberto Garcia-Garcia. <i>Mathematical Problems in Engineering.</i> (<i>Under review</i>). |
| [j2] | 2015 | 3D Model Reconstruction using Neural Gas Accelerated on GPUs. Sergio Orts-Escolano, Jose Garcia-Rodriguez, Jose Antonio Serra-Perez, Antonio Jimeno, Vicente Morell-Gimenez, Miguel Cazorla, Alberto Garcia-Garcia. <i>Applied Soft Computing Journal.</i> doi:10.1016/j.asoc.2015.03.042. JCR IMPACT FACTOR: 2.140 |
| [j1] | 2015 | 3D Surface Reconstruction of noisy Point Clouds using Growing Neural Gas: Object/Scene Reconstruction. Sergio Orts-Escolano, Jose Garcia-Rodriguez, Vicente Morell-Gimenez, Miguel Cazorla, Jose Antonio Serra-Perez, Alberto Garcia-Garcia. <i>Neural Processing Letters.</i> doi:10.1007/s11063-015-9421-x. JCR IMPACT FACTOR: 2.005 |

Conferences

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| [c3] | 2015 | Efficient Matching for the Iterative Closest Point Algorithm by using Low Cost Distance Metrics. Higinio Mora-Mora, Jeronimo Mora-Pascual, Pablo Martinez-Gonzalez, Alberto Garcia-Garcia. <i>International Conference on Applied Mathematics and Computational Methods in Engineering</i> 2015. |
| [c2] | 2015 | Optimized Representation of 3D Sequences using Neural Networks. Sergio Orts-Escolano, Jose Garcia-Rodriguez, Vicente Morell, Miguel Cazorla, Alberto Garcia-Garcia, Sergiu Ovidiu-Oprea. <i>International Work-conference on the Interplay between Natural and Artificial Computation</i> 2015. |
| [c1] | 2014 | Convergence Analysis and Validation of low Cost Distance Metrics for Computational Cost Reduction of the Iterative Closest Point algorithm. Higinio Mora-Mora, Jerónimo Mora-Pascual, Pablo Martínez-González, Alberto García-García. <i>Mathematical Modelling in Engineering & Human Behaviour</i> 2014. |

Projects participation

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| 2014 – Today | SIRMAVED (DPI2013-40534-R)
<i>"Development of a comprehensive robotic system for monitoring and interaction for people with acquired brain damage and dependent people."</i> Spanish National Project. |
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Courses and training

- **Summer course on scientific applications and computer vision on graphics processors**
at the University of Alicante, 2013.
- **Workshop on scientific applications and computer vision on graphics processors**
at the University of Alicante, 2013.
- **Interactive 3D Graphics (Highest Distinction)**
Online at Udacity, 2013.
- **Functional Programming Principles in Scala (Highest Distinction)**
Online at Coursera, 2013

Languages

English	Fluent (B2+)
Spanish	Native

Reference List

- **Ivo Kabadshow**
Forschungszentrum Jülich
Institute for Advanced Simulation
Jülich Supercomputing Centre
Wilhem-Johnen-Strasse
52425 Jülich
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