

Curriculum Vitae

Personal Information

- **Name:** Ricardo Javier Barrientos Rojel
- **Position:** Professor at Catholic University of Maule, Chile.
- **Personal website:** <http://www.ribarrie.cl>
- **e-mail:** ricardo.j.barrientos@gmail.com
- **Year of birth:** 1982
- **Nationality:** Chilean
- **Civil status:** Single (without children)
- **Areas of interest:** High Performance Computing, Information Retrieval.

Studies

- **2013:** PhD in Computer Science, Complutense University of Madrid, Madrid, Spain.
Graduated with *European Mention*.
Thesis: "Similarity search in metric spaces on parallel multi-core and multi-GPU platforms"
Advisors: [José I. Gómez](#), [Manuel Prieto](#).
- **2011:** MSc in Computer Science, Complutense University of Madrid, Madrid, Spain.
Thesis: "kNN query processing in metric spaces using GPUs"
Advisors: [José I. Gómez](#), [Christian Tenllado](#).
- **2011:** MSc in Computer Science, University of Chile, Santiago, Chile.
Graduated with honors.
Thesis: "Similarity search in metric spaces on multi-core platforms (CPU and GPU)"
Advisor: [Mauricio Marin](#).
- **2006:** Computer Engineer, University of Magallanes, Punta Arenas, Chile.
Thesis: "Parallel strategies of *egnat* index using a cluster of computers"
Advisor: [Roberto Uribe-Paredes](#).

Postdoctoral and Research Stays

- **April, 2017:** Research stay at [VIB](#) Center, Ghent University, Ghent, Belgium. Host professor: Daniel Peralta.
- **2014-2015:** Postdoctoral stay at Universidad de La Frontera (UFRO), Temuco, Chile.
- **April - June, 2012:** Research stay at Masaryk University, Brno, Czech Republic. Host professor: [Pavel Zezula](#).

Memberships

- Member of the Chilean Computer Science Society ([SCCC](#)).
- Member of the Chilean Association of Pattern Recognition ([ACHIRP](#)).
- Researcher in the Laboratory of Technology Research on Pattern Recognition ([LITRP](#)).

Teaching

Postgraduate

Created Courses

- **2016 - 2017:** *Parallel Computing*, Master in Computer Science. Universidad Catlica del Maule, Talca, Chile.

Regular Courses

- **2016 - 2017:** *Seminar I y Advanced Databases*, Master in Computer Science. Universidad Catlica del Maule, Talca, Chile.
- **2015:** *Systems Modeling*. Master in Informatic. Universidad de La Frontera, Temuco, Chile.

Undergraduate

Created Courses

- **2014 - 2015:** *Information Retrieval, Parallel Computing*. Universidad de La Frontera, Temuco, Chile.

Regular Courses

- **2016 - 2017:** *Analysis of Algorithms, Distributed Systems, Competitive Programming, Object Oriented Programming, Programming Languages, Introduction to Engineering*. Universidad Catlica del Maule, Talca, Chile.
- **2014 - 2015:** *Computer Laboratory*. Universidad de La Frontera, Temuco, Chile.
- **2006:** *Computer Programming*. Universidad de Magallanes, Punta Arenas, Chile.

Theses advisor

Postgraduate Students:

- **Name:** Felipe Tirado
Thesis: "Accelerating Ant Colony Optimization using a Xeon Phi coprocessor".
Program: Master in Computer Science, Universidad Catlica del Maule, Chile.

Undergraduate Students:

- **Nombre:** Paulina Quezada
Tesis: "Information Retrieval on a Web Search Engine".
Program: Computer Science Engineering, Universidad Catlica del Maule, Chile.
- **Nombre:** Agustin Bustos
Tesis: "Cola de Prioridad Concurrente sobre un sistema multi-ncleo de memoria compartida".
Program: Computer Science Engineering, Universidad Catlica del Maule, Chile.
- **Nombre:** Miguel Ortega
Tesis: "Sorting Algorithms using an Intel Xeon Phi coprocessor".
Program: Computer Science Engineering, Universidad Catlica del Maule, Chile.
- **Nombre:** Ramiro Urbina
Tesis: "Retrieving the Chilean Web".
Program: Computer Science Engineering, Universidad Catlica del Maule, Chile.
- **Nombre:** Chien-Hao Chen
Tesis: "Creation of an Inverted Index using Concurrent Data Structures (Linked List and Map)".
Program: Computer Science Engineering, Universidad Catlica del Maule, Chile.
- **Nombre:** Cristofher Rojas
Tesis: "kNN Solutions over Different Parallel Platforms".
Program: Computer Science Engineering, Universidad Catlica del Maule, Chile.
- **Nombre:** Jenniffer Gonzalez
Tesis: "Mobile application for Attendance Control".
Program: Computer Science Engineering, Universidad Catlica del Maule, Chile.
- **Nombre:** Pablo Cceres
Tesis: "Web Application to create Generic Forms and Scalable Reports".
Program: Computer Science Engineering, Universidad Catlica del Maule, Chile.
- **Name:** Carlos Toledo
Thesis: "Exhaustive and indexed search to solve range queries using a Xeon Phi coprocessor".
Program: Computer Science Engineering, Universidad de La Frontera (UFRO), Chile.
- **Name:** Fabricio Millaguir
Thesis: "kNN queries processing using exhaustive algorithms on GPU".
Program: Computer Science Engineering, Universidad de La Frontera (UFRO), Chile.

Languages

English: Fluent.
Spanish: Native.

Scholarships

- **May-July, 2012:** Scholarship to do a research stay as part of a sub-program of the FPI doctoral scholarship, Spain.
- **October/2009 - October/2013:** FPI doctoral scholarship, given by the Ministry of Science and Innovation of Spain.

Scientific Events Organization

- Co-organizer of the workshop “HPC-UCM”, Talca, Chile, September 2016.
- Co-organizer of the workshop “Escuela HPC”, Temuco, Chile, January 2016.
- Co-organizer of the workshop “Escuela HPC”, Temuco, Chile, October 2014.

Distinctions

- **2012:** Second prize in the XX Contest of Latin American Computer Science MSc. Theses, given by the Latin American Center of CS Studies (CLEI).

Referee Work

- Scalable Computing: Practice and Experience.
- Journal of Software Engineering for Robotics (JOSER).
- Program Committee member of *Workshop on Complex Problems over High Performance Computing Architectures* (CPHPCA 2015).

Research Projects

- **2015-2016:** Responsible Investigator in the DIUFRO Project DI15-0031 (Universidad de la Frontera (UFRO), Chile), “Parallel Computing for Information Retrieval”.
- **2012-2015:** Researcher in the MEC CICYT¹ Project TIN 2012/32180, “Arquitecturas y tecnologas emergentes. Eficiencia energtica mediante heterogeneidad”. Head: Manuel Prieto Matías.
- **2009-2013:** PhD student in the MEC CICYT¹ Project TIN 2008/00508, “Arquitecturas HW/SW para sistemas de alto rendimiento II”. Head: Francisco Tirado Fernández.

¹CICYT: Interministerial Commission on Science and Technology. Public agency of the Spanish Government.

Creation of Research/Teaching Centers

- **2016-2017:** Creation of the “GPU Education Center” at Universidad Católica del Maule, Talca, Chile, supported by NVIDIA.

Invited Talks and Tutorials

- Talk and Tutorial of “GPU Programming”. Universidad Andrés Bello, Chile, August 2017.
- Keynote talk at “Encuentro Regional de Software Libre UCM 2015”, Talca, Chile, October 2015.
- “Coprocessors (GPU & Xeon Phi)”. Universidad Católica del Maule, Chile, October 2015.
- Tutorial “GPU Programming”. Jornadas Chilena de Computación (JCC 2014). Talca, Chile, November 2014.
- “Using Coprocessors (GPU & Xeon Phi) for Similarity Search”. Universidad Católica del Maule, Chile, August 2014.
- “Searching in Metric Spaces using GPUs”. Universidad de Magallanes, Chile, June 2011.

Publications

They are available on <http://www.ribarrie.cl/Publications.html>.

2017:

- Felipe Tirado, Ricardo J. Barrientos, Paulo González, Marco Mora, “Efficient exploitation of the Xeon Phi architecture for the Ant Colony Optimization (ACO) metaheuristic”, Journal of Supercomputing, Springer DOI 10.1007/s11227-017-2124-5.
- Ricardo J. Barrientos, Fabricio Millaguir, Jos L. Sánchez, Enrique Arias, “GPU-based exhaustive algorithms processing kNN queries”, Journal of Supercomputing, Springer 73(10):4611-4634, DOI 10.1007/s11227-017-2110-y.

2016:

- Carlos M. Toledo, Ricardo J. Barrientos, Andrés I. Vila, “Similarity (range and kNN) queries processing on an Intel Xeon Phi coprocessor”, Cluster Computing, Springer 19(1):57-71, DOI 10.1007/s10586-015-0515-z.

2015:

- F. Tirado, R. Barrientos, A. Ávila, “Solution for ACO using an Intel Xeon Phi coprocessor”, In 2nd Conference on Business Analytics in Finance and Industry (BAFI 2015). Santiago, Chile, December 2015.

- F. Tirado, R. Barrientos, A. Urrutia,
“Using a coprocessor to solve the Ant Colony Optimization algorithm”,
In XXXIV International Conference of the Chilean Computer Science Society (SCCC 2015). IEEE
CPS. November, 2015.
- F. Tirado, R.J. Barrientos, A. Urrutia, A. vila,
“Solucin del Algortimo ACO (Ant Colony Optimization) mediante un coprocesador Intel Xeon
Phi” (Poster),
In XI Workshop of Copec-UC Foundation, November 2015.

2014:

- F. Millaguir, R.J. Barrientos, A. Ávila, J.I. Gómez,
“Resolviendo consultas kNN mediante algoritmos exhaustivos en GPU”,
In XXVI Encuentro Chileno de Computacin (ECC 2014), Jornadas Chilenas de Computacin (JCC
2014). Talca, Chile, November 2014.
- C. Toledo, R.J. Barrientos,
“Búsqueda exhaustiva utilizando el coprocesador Intel Xeon Phi”,
In XXVI Encuentro Chileno de Computacin (ECC 2014), Jornadas Chilenas de Computacin (JCC
2014). Talca, Chile, November 2014.

2013:

- R.J. Barrientos, J.I. Gómez, C. Tenllado, M. Prieto, M. Marin,
“Range query processing on single and multi GPU environments”,
Computers and Electrical Engineering, 39(8):2656-2668. ISI JCR Q3.
- R.J. Barrientos, J.I. Gómez, C. Tenllado, M. Prieto, P. Zezula,
“Multi-level clustering on metric spaces using a multi-GPU platform”,
In 19th International European Conference on Parallel and Distributed Computing (Euro-Par 2013).
Springer, LNCS. Aachen, Germany, August 2013.
- R.J. Barrientos,
“Pipeline strategies to accelerate range query processing on a multi-GPU environment”,
In XXV Encuentro Chileno de Computacin (ECC 2013), Jornadas Chilenas de Computacin.
Temuco, Chile, November 2013.
- Ricardo J. Barrientos,
“Similarity search in metric spaces on parallel multi-core and multi-GPU platforms”,
PhD Thesis, Complutense University of Madrid, Madrid, Spain, 2013.
Advisors: José I. Gómez, Manuel Prieto.

2012:

- R.J. Barrientos, J.I. Gómez, C. Tenllado, M. Prieto, M. Marin,
“Range query processing in a multi-GPU environment”,
In 10th IEEE International Symposium on Parallel and Distributed Processing with Applications
(ISPA 2012). IEEE. Madrid, Spain, July 2012.

- Ricardo J. Barrientos,
"Similarity search in metric spaces on multi-core platforms (CPU and GPU)",
XXXVIII Latin American Conference on Informatics (CLEI 2012), Medellín, Colombia, Oct. 2012.
Second prize at XX CLEI Contest of Latin American Computer Science MSc. Theses.

2011:

- R.J. Barrientos, J.I. Gómez, C. Tenllado, M. Prieto, M. Marin,
"kNN Query Processing in Metric Spaces using GPUs",
In 17th International European Conference on Parallel and Distributed Computing (Euro-Par 2011).
Springer, LNCS. Bordeaux, France, Sept. 2011.
- R.J. Barrientos, J.I. Gómez, C. Tenllado, M. Prieto,
"Query Processing in Metric Spaces using GPUs",
XII Jornadas de Paralelismo, Tenerife, Spain, Sept. 2011.
- Ricardo J. Barrientos,
"kNN query processing in metric spaces using GPUs",
Thesis of MSc in Computer Science, Complutense University of Madrid, Madrid, Spain, 2011.
Advisors: José I. Gómez, Christian Tenllado.
- Ricardo J. Barrientos,
"Similarity search in metric spaces on multi-core platforms (CPU and GPU)",
Thesis of MSc in Computer Science, University of Chile, Santiago, Chile, 2011.
Advisors: Mauricio Marin.

2010:

- G.V. Costa, R. Barrientos, M. Marin and C. Bonacic,
"Scheduling Metric-Space Queries Processing on Multi-Core Processors",
In 18th Euromicro International Conference on Parallel, Distributed and Network-Based Computing
(PDP 2010). IEEE CS. Pisa, Italy, Feb. 2010.
- R.J. Barrientos, J.I. Gómez, C. Tenllado, M. Prieto,
"Heap-Based k-Nearest Neighbor Search on GPUs",
XXI Jornadas de Paralelismo, Valencia, Spain, Sept. 2010.

2009:

- G.V. Costa, M. Marin, R. Barrientos and C. Bonacic,
"Estructuras Métricas Paralelas en la Recuperación de Imágenes en la Web".
XIII Workshop de Sistemas Distribuidos y Paralelismo (WSDP), Jornadas Chilenas de
Computación, Santiago, Chile, Nov. 2009.

2007:

- M. Marin, R. Uribe, and R. Barrientos,
"Searching and Updating Metric Space Databases using the Parallel EGNAT",

In 7th International Conference on Computational Science (ICCS 2007), Springer, LNCS. Beijing, China, May 2007.

2006:

- Roberto Uribe, Gonzalo Navarro, Ricardo J. Barrientos, M. Marin, "An index data structure for searching in metric space databases", In 6th International Conference on Computational Science (ICCS 2006). Springer, LNCS. Reading, UK, May 2006.
- Ricardo Barrientos R., Roberto Uribe Paredes, "Estrategias de paralelización para el *egnat*", XXXII Conferencia Latinoamericana de la Informática (CLEI 2006), Santiago, Chile, Agosto 2006.
- Ricardo J. Barrientos, "Parallel strategies of *egnat* index using a cluster of PCs", Thesis of Computer Engineering, University of Magallanes, Punta Arenas, Chile, 2006. Advisors: Roberto Uribe, Mauricio Marin.

References

- Dr. Manuel Prieto, Vice-Dean of the Faculty of Computer Sciences, Complutense University of Madrid, Spain, mpmatias@ucm.es
- Dr. Mauricio Marin, Professor at University of Santiago, Santiago, Chile, mauricio.marin@usach.cl
- Dr. Roberto Uribe, Professor at University of Magallanes, Punta Arenas, Chile, roberto.uribe@umag.cl
- Dr. Verónica Gil-Costa, Professor at University of San Luis, San Luis, Argentina, gvcosta@unsl.edu.ar
- Dr. Pavel Zezula, Professor at Masaryk University, Brno, Czech Republic, zezula@fi.muni.cz

Ricardo J. Barrientos
August 2017.