

Curriculum Vitae

Personal Information

- **Name:** Ricardo Javier Barrientos Rojel
- **Currently:**
 - Assistant Professor at DCI Department, [Catholic University of Maule](#), Chile.
 - Researcher at [LITRP Laboratory](#), Catholic University of Maule, Chile.
 - Director, [Master in Computer Science](#), Catholic University of Maule, Chile.
- **Personal website:** <http://www.ribarrie.cl>
- **e-mail:** ricardo.j.barrientos@gmail.com
- **Year of birth:** 1982
- **Nationality:** Chilean
- **Areas of interest:** High Performance Computing, Information Retrieval, Biometrics.

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](#).

Others

- **2018:** Diploma in University Teaching, Catholic University of Maule, Chile.

Research Projects

- **2018-2019:** Responsible Investigator in the FONDEF IDeA Project ID17i10254 "Massive Identification of People using the Fingerprint". This project was ranked 6th among 429 applications. Funding Entity: Conicyt, Chilean Government. Amount awarded: \$335,000 USD.
- **2018:** Academic Advisor of the Project FONDEF VIU VIU18P0142 "Mobile Biometric Assistance Control". Funding Entity: Conicyt, Chilean Government.

- **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.

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), 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](#)).

Administration

- **2017 - today:** Program Director, Computer Engineering, Catholic University of Maule, Chile.
- **2017 - today:** Member of the Faculty Council, Faculty of Engineering Sciences, Catholic University of Maule, Chile.

Teaching

Postgraduate

Created Courses

- **2016 - 2018:** *Parallel Computing*, Master in Computer Science. Catholic University of Maule, Talca, Chile.

Regular Courses

- **2016 - 2018:** *Seminar I y Advanced Databases*, Master in Computer Science. Catholic University of Maule, Talca, Chile.
- **2015:** *Systems Modeling*. Master in Informatic. Universidad de La Frontera, Temuco, Chile.

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

Undergraduate

Created Courses

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

Regular Courses

- **2016 - 2018:** *Analysis of Algorithms, Distributed Systems, Competitive Programming, Object Oriented Programming, Programming Languages, Introduction to Engineering*. Catholic University of Maule, Talca, Chile.
- **2014 - 2015:** *Computer Laboratory*. Universidad de La Frontera, Temuco, Chile.
- **2006:** *Computer Programming*. Universidad de Magallanes, Punta Arenas, Chile.

Other activities

- **2016 - 2019:** Coach of the teams of the Catholic University of Maule for the ACM-ICPC Programming Contest.

Theses advisor

Postgraduate Students:

- **Name:** Cristofher Rojas
Thesis: "Individuals Identification using Finger Veins and Palm Veins".
Program: Master in Computer Science, Catholic University of Maule, Chile.
- **Name:** Roberto Ahumada
Thesis: "Bioinformatic Pipeline for the Analysis of Immunoglobulin Repertoires Sequenced by Nanopore".
Program: Master in Computer Science, Catholic University of Maule, Chile.
- **Name:** Felipe Tirado
Thesis: "Accelerating Ant Colony Optimization using a Xeon Phi coprocessor".
Program: Master in Computer Science, Catholic University of Maule, Chile.

Undergraduate Students:

- **Nombre:** Paulina Quezada
Tesis: "Information Retrieval on a Web Search Engine".
Program: Computer Science Engineering, Catholic University of Maule, Chile.
- **Nombre:** Agustin Bustos
Tesis: "Cola de Prioridad Concurrente sobre un sistema multi-nucleo de memoria compartida".
Program: Computer Science Engineering, Catholic University of Maule, Chile.
- **Nombre:** Miguel Ortega
Tesis: "Sorting Algorithms using an Intel Xeon Phi coprocessor".
Program: Computer Science Engineering, Catholic University of Maule, Chile.
- **Nombre:** Ramiro Urbina
Tesis: "Retrieving the Chilean Web".
Program: Computer Science Engineering, Catholic University of Maule, Chile.

- **Nombre:** Chien-Hao Chen
Tesis: "Creation of an Inverted Index using Concurrent Data Structures (Linked List and Map)".
Program: Computer Science Engineering, Catholic University of Maule, Chile.
- **Nombre:** Cristofher Rojas
Tesis: "kNN Solutions over Different Parallel Platforms".
Program: Computer Science Engineering, Catholic University of Maule, Chile.
- **Nombre:** Jenniffer Gonzlez
Tesis: "Mobile application for Attendance Control".
Program: Computer Science Engineering, Catholic University of Maule, Chile.
- **Nombre:** Pablo Cceres
Tesis: "Web Application to create Generic Forms and Scalable Reports".
Program: Computer Science Engineering, Catholic University of 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.

Distinctions and Scholarships

- **2012:** Second prize in the XX Contest of Latin American Computer Science MSc. Theses, given by the Latin American Center of CS Studies (CLEI).
- **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-Chair of the 38-th International Conference of the Chilean Computer Science Society (SCCC), Concepcin, Chile, 2019.
- Co-organizer of the workshop "Bioinformatics Workshop", Talca, Chile, September 2016.
- 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.

Referee Work

In Journals and Conferences:

- Canadian Journal of Electrical and Computer Engineering.
- 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), *International Conference of the Chilean Computer Science Society* (SCCC).

In Projects:

- 2018: Reviewer of CONICYT Projects, Chilean Government.

Invited Talks and Tutorials

- Tutorial "GPU Programming". In 10th International Conference on Pattern Recognition Systems (ICPRS 2018), Valparaíso, Chile.
- 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.
- "Coproductors (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>.

2019:

- Roberto Ahumada-García, Jorge González-Puelma, Diego Iváñez-Saravia, Ricardo J. Barrientos, Roberto Uribe-Paredes, Xaviera A. López-Corts, Marcelo A. Navarrete, "Identification of Immunoglobulin Gene Usage in Immune Repertoires Sequenced by Nanopore Technology", In 7th International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO 2019), Springer, LNCS volume 11465, LNBI volume 11465. Granada, Spain, 2019.

2018:

- Cristófer Rojas, Rubén Hernández-García, Ricardo J. Barrientos, "Individuals Identification Using Finger Veins under a Multi-core Platform", In 37th International Conference of the Chilean Computer Science Society (SCCC 2018), Noviembre 2018.

- P. Gonzalez, F. Vasquez, B. Alcaino, R.J. Barrientos, M. Mora, F. Tirado, "Heuristic Parametrization of Anisotropic Diffusion Filtering", In 37th International Conference of the Chilean Computer Science Society (SCCC 2018), Noviembre 2018.
- P. Gonzalez, B. Alcaino, R.J. Barrientos, M. Mora, F. Tirado, C. Tauber, "Dynamic PET Image Denoising", In 9th International Conference on Pattern Recognition Systems (ICPRS 2018), IET Digital Library, Mayo 2018.

2017:

- Felipe Tirado, Ricardo J. Barrientos, Paulo Gonzalez, 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. Snchez, 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, Andrs 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 Algoritmo 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. Marco Mora, Head of the LITRP Lab, Catholic University of Maule, Talca, Chile, marcomoracofre@gmail.com
- 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
May 2019.