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
- **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)"
  Advisors: Mauricio Marin.
- **2006:** Computer Engineer, University of Magallanes, Punta Arenas, Chile.
  Thesis: "Parallel strategies of *egnat* index using a cluster of computers"
  Advisors: Roberto Uribe, Mauricio Marin.

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.
- **March - May, 2012:** Research stay at DISA Laboratory, Masaryk University, Brno, Czech Republic. Host professor: Pavel Zezula.

Administration

- **2017 at present:** Head of the career Computer Engineering, Catholic University of Maule, Chile.
- **2017 at present:** Member of the Faculty Council, Engineering Faculty, Catholic University of Maule, Chile.

Teaching

Postgraduate

Created Courses

- **2016-2017:**
  - Creation, with Felipe Tirado, of the course *Parallel Computing*, Master in Computer Science, Catholic University of Maule, Talca, Chile.

Regular Courses

- **2016-2017:**
  - Professor of a module in the course *Advanced Databases*, Master in Computer Science, Catholic University of Maule, Talca, Chile.
- **2015:**
  - Professor of a module in the course *System Modeling*, Master in Computer Science, Universidad de La Frontera, Temuco, Chile.

Undergraduate

Created or Reformulated Courses

- **2015:**
  - Creation, with Patricio Galeas, of the course *Information Retrieval*, Universidad de La Frontera, Temuco, Chile.
- **2014-2015:**
  - Redesign of the course *Parallel Computing*, Universidad de La Frontera, Temuco, Chile.

Regular Courses

- **2017:**
  - Professor of the course *Introduction to Engineering*, Computer Science Department, Catholic University of Maule, Talca, Chile.
- **2016-2017:**
  - Professor of the course *Distributed Systems*, Computer Science Department, Catholic University of Maule, Talca, Chile.
- **2016-2017:**
  - Professor of the course *Competitive Programming*, Computer Science Department, Catholic University of Maule, Talca, Chile.
- **2016:**
  - Professor of the course *Object Oriented Programming*, Computer Science Department, Catholic University of Maule, Talca, Chile.
- **2016:**

- Professor of the course *Programming Languages*, Computer Science Department, Catholic University of Maule, Talca, Chile.

- **2014 - 2015:**
  - Professor of the course *Computer Laboratory*, Mathematical Engineering Department, Universidad de La Frontera, Temuco, Chile.

- **2009:**
  - Assistant professor of the course *Object Oriented Programming*, University of Chile, Santiago, Chile.

- **2006:**
  - Professor of the course *Computer Programming*, University of Magallanes.

- **2003 - 2005:**
  - Assistant professor of the course *Computer Programming*, University of Magallanes.

Theses advisor

Postgraduate Students:

- **Name:** Felipe Tirado
  Thesis: "Accelerating Ant Colony Optimization using a Xeon Phi coprocessor".
  Status: Finished (Oct. 2015).
  Program: MSc in Computer Science.
  University: Catholic University of Maule, Talca, Chile.

Undergraduate Students:

- **Name:** Paulina Quezada
  Thesis: "Information Retrieval on a Web Search Engine using multi-core shared-memory Systems".
  Status: In progress.
  Program: Computer Sciences Engineering.
  University: Catholic University of Maule, Talca, Chile.

- **Name:** Agustín Bustos
  Thesis: "Concurrent Priority Queue on multi-core shared-memory systems".
  Status: In progress.
  Program: Computer Sciences Engineering.
  University: Catholic University of Maule, Talca, Chile.

- **Name:** Miguel Ortega
  Thesis: "Sorting Algorithms on a Xeon Phi coprocessor".
  Status: In progress.
  Program: Computer Sciences Engineering.
  University: Catholic University of Maule, Talca, Chile.

- **Name:** Ramiro Urbina
  Thesis: "Crawling the Chilean Web".
  Status: In progress.
  Program: Computer Sciences Engineering.
  University: Catholic University of Maule, Talca, Chile.

- **Name:** Chien-Hao Chen
  Thesis: "Concurrent Data Structures applied on a Web Search Engine".
  Status: In progress.
  Program: Computer Sciences Engineering.
  University: Catholic University of Maule, Talca, Chile.

- **Name:** Cristofher Rojas
  Thesis: "Software to solve kNN Queries on Different Parallel Platforms".
  Status: In progress.
  Program: Computer Sciences Engineering.
  University: Catholic University of Maule, Talca, Chile.

- **Name:** Jenniffer González
  Thesis: "Mobile Software for Assistance Control".
  Status: In progress.
  Program: Computer Sciences Engineering.
  University: Catholic University of Maule, Talca, Chile.

- **Name:** Pablo Cáceres
  Thesis: "Web Application to create Generic Forms and Scalable Reports".
  Status: Completed (Jul. 2015).
  Program: Computer Sciences Engineering.
  University: Catholic University of Maule, Talca, Chile.

- **Name:** Carlos Toledo
  Thesis: "Exhaustive and indexed search to solve range queries using a Xeon Phi coprocessor".
  Status: Completed (Jan. 2015).
  Program: Computer Sciences Engineering.
  University: Universidad de La Frontera, Temuco, Chile.

- **Name:** Fabricio Millaguir
  Thesis: "kNN queries processing using exhaustive algorithms on GPU".
  Status: Completed (Jan. 2015).
  Program: Computer Sciences Engineering.
  University: Universidad de La Frontera, Temuco, Chile.

Languages

English: Fluent.
Spanish: Native.

Scholarships

- **2012:** Scholarship to do a research stay as part of a sub-program of the FPI doctoral scholarship, Spain.

- **Sept./2009 - Sept./2013:** FPI doctoral scholarship, given by the Ministry of Science and Innovation of Spain.

Conferences Organization

- Co-organizer of the workshop "HPC-UCM Workshop", 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 and main researcher of the DIUFRO Project DI15-0031 (Universidad de la Frontera (UFRO), Chile), "Parallel Computing for Information Retrieval".
- **2012-2015:** Researcher in the MEC CICYT[1] Project TIN 2012/32180, "Arquitecturas y tecnologías emergentes. Eficiencia energética mediante heterogeneidad". Head: Manuel Prieto Matías.
- **2009-2013:** PhD student in the MEC CICYT[1] Project TIN 2008/00508, "Arquitecturas HW/SW para sistemas de alto rendimiento II". Head: Francisco Tirado Fernández.

Creation of Research (or Teaching) Centers

- **2016-2017:** Creation of the NVIDIA *GPU Education Center*, Catholic University of Maule, Talca, Chile.

Invited Talks and Tutorials

- 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.

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

Publications

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

2016:

- Carlos M. Toledo, Ricardo J. Barrientos, Andrés I. vila,
  "Similarity (range and kNN) queries processing on an Intel Xeon Phi coprocessor", Cluster Computing, pp.1-15, DOI 10.1007/s10586-015-0515-z. ISI Journal.

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,
  "Solución del Algortimo ACO (Ant Colony Optimization) mediante un coprocesador Intel Xeon Phi" (Poster),
  In XI Workshop of Copec-UC Foundation, November 2015.

- Sergio Hernández, Jorge Contreras, Luis Farias, R.J. Barrientos,
  "Aceleración del Algoritmo K-Means para Reconocimiento Automático de Rostros Usando 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 Computación (ECC 2014), Jornadas Chilenas de Computación (JCC 2014). Talca, Chile, November 2014.

- C. Toledo, R.J. Barrientos,
  "Búsqueda exhaustiva utilizando el coprocesador Intel Xeon Phi",
  In XXVI Encuentro Chileno de Computación (ECC 2014), Jornadas Chilenas de Computación (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 Computación (ECC 2013), Jornadas Chilenas de Computación. 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

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

Ricardo J. Barrientos
July 2016.