

# ANTONIO L BAJUELOS DOMINGUEZ, PH.D.

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## CURRICULUM VITAE

### SUMMARY

Expertise in the conception and teaching of courses in Computer Science and Mathematics.

18+ years expertise in the supervision of research and academic projects related to some real-world problems: wireless networks, quality coverage problems, proximity and facility location problems, etc.

Major adviser of two PhD in Mathematics and ten MS graduates in Mathematics (Major in Computer Science), supervisor of 3 post-docs projects.

### EDUCATION

- [Joint Institute for Nuclear Research](#), Dubna, Russia, [Laboratory of Computer Techniques and Automation](#), Ph.D., Applied Math, Specialization in Computer Science,
- St. Petersburg State University, St. Petersburg, Russia, [Faculty of Mathematics and Mechanics](#), M.S, Mathematics, with Special Mention and Honours, Specialization in Operations Research
- St. Petersburg State University, St. Petersburg, Russia, [Faculty of Mathematics and Mechanics](#), B.S., Mathematics, with Special Mention and Honours (4.85/5.0)

### PROFESSIONAL EXPERIENCE

**INSTRUCTOR/LECTURER**, Aug/2015 – Present

*Florida International University, School of Computing and Information Sciences, Miami, FL*

- Teaching on Computer Science:

**Data Structures** (Spring 2018, Fall 2017, Summer 2017, Spring 2017, Fall 2016, Spring 2016 and Fall 2015),

<https://sites.google.com/site/cop3530fall2017/home>

**Discrete Structures** (Spring 2018, Fall 2017, Summer 2017, Spring 2017,),

<https://sites.google.com/site/cot3100fall2017/home>

**Computer Programming II** (Fall 2016, Spring 2016 and Fall 2015),

<https://sites.google.com/site/cop3337spring2016/home>

**Logic in Computer Science** (Spring 2018, Fall 2017, Summer 2017, Spring 2017, Fall 2016, Spring 2016)

<https://sites.google.com/site/cot3541fall2017/home>

**VISITING INSTRUCTOR/LECTURES**, Jan/2015 – Jul/2015

*Florida International University, School of Computing and Information Sciences, Miami, FL*

- Teaching on Computer Science:

**Data Structures** (Spring 2015 and Summer 2015),

**Algorithm Techniques** (Spring 2015 and Summer 2015),

<https://sites.google.com/site/cop4534summer2015/>

**Logic in Computer Science** (Spring 2015 and Summer 2015)

**LECTURER (ADJUNCT)**, Aug/2014 – Dec/2014

*Florida International University, School of Computing and Information Sciences, Miami, FL*

- Teaching on Computer Science:

**Data Structures** (Fall 2014)

**LECTURER (ADJUNCT)**, Aug/2014 – Dec/2014

*Miami Dade College, Department of Mathematics, Miami, FL*

- Teaching on Math

**Intermediate Algebra**, College Algebra and Trigonometry

**ASSISTANT PROFESSOR** (with tenure since Oct/2006), Feb/1997 – Mar/2013,

*University of Aveiro, [Department of Mathematics](#), Aveiro, Portugal,*

- Teaching and Research on Math & Computer Sciences:
  - Undergraduate Courses: Algorithms and Data Structures, Database Systems, Programming Languages, Algorithms for Computer Graphics, Logic Programming, and Discrete Mathematics.
  - Postgraduate Courses: Computational Geometry, Algorithmic Engineer, Data Mining and Machine Learning.
- Coordination of postgraduate M.S. course in Modelling and Graphical Visualization.
- Supervision of 7 (seven) Post-Graduate training projects in software development and modelling systems for industry.
- Software team leader of the project *Ecotoons* (adaptive math educational computer game).
- Principal Investigator and coordinator of two Luso-Spanish research projects: “Illumination and Visibility Problems” and “Approximate Resolution of Geometric Optimization Problems”.
- Supervision of 10 (ten) M.S. thesis, 2 (two) Ph.D. dissertations and 3 (three) Post-Doc projects mainly related to the field of Computer Algorithms and Optimization Coverage Problems on Wireless Sensor Networks applied to real-life problems.
- Senior Researcher of the Research Unit: **Centre of Research and Development in Mathematics and Applications** (CIDMA), University of Aveiro, Portugal.
- Member of the Research project “Algorithm Engineering Group”, sited at the Technical University of Madrid, Spain.

**SENIOR COMPUTER ANALYST**, Jan/1995 – Feb/1997,

[Contact S.A.](#), Dubna, Russia,

- Design and implementation of software for diverse Decision Support Systems.
- Design, training and implementation of the office automation projects.

**SENIOR RESEARCHER**, Jun/1994 – Feb/1997,

[Joint Institute for Nuclear Research](#), [Laboratory of Information Technologies](#),

Dubna, Russia

- Processing of remote databases. Analysis of systems for the migration of Main-Frame technology to Client/Server technology.
- Design and implementation of application software for diverse Decision Support Systems: Stock market and Database Marketing.
- Design and implementation of software for Decision Support Systems for the Network Department.
- Design and implementation of personal computer software to processing graphical information related to circuit board layout.
- Research in: Methodology, Protocols and Utility's Library for File-Transfer Environments and E-Mail's Service for Local Area Network (material of the PhD dissertation).

#### **AREAS OF INTEREST**

(BUT ARE NOT LIMETED TO)

- Algorithms for Combinatorial and Computational Geometry Problems.
- Approximations Algorithms, Heuristics and Metaheuristics.
- Software Development and Modelling Systems.
- Database Systems and Information Technologies.
- Adaptive Learning Systems and User Interfaces.

#### **AWARDS**

- Awards of Exceptional Work and distinguished labour, Joint Institute for Nuclear Research, Dubna, Russia, years: 1988, 1989 and 1990.
- Awards of Exceptional Work and distinguished labour, Central Bank of Cuba, Havana, Cuba, 1992.
- Award for Junior Scientist – Joint Institute for Nuclear Research, Dubna, Russia, 1988.

#### **CURRENT RESEARCH PROJECTS**

- Supervising of the project **“Geometric Optimization on Visibility Problems”**, (post-doctoral fellows, since 2011, supported by the Foundation of sciences and Technologies of Portugal and in collaboration with researchers of the Technical University of Madrid, Spain). The aim is the design and implementation of metaheuristics, and possible hybridizations, to solve visibility and coverage problems in real life applications. One of the difficulties of the work already undertaken is the identification of real physical elements with the theoretical

concepts used. In particular, the Minimum Vertex Set  $k$ -transmitter problem is defined as a wireless device that transmits a signal along the  $k$  walls.

### Other Projects

- Principal Investigator of the Luso-Spanish research project “Approximate Resolution of Geometric Optimization Problems”, Advice of the Portuguese Universities, 2009 - 2010.
- Principal Investigator of the Luso-Spanish research project “Problems of Illumination and Visibility in Computational Geometry”, Advice of the Portuguese Universities, 2006 - 2007.
- General Software Coordinator - *Geometrix* – Tool to Help the Learning Process in Geometry, University of Aveiro, Portugal, 2001 - 2005.

### PATENTS/COPYRIGHTED SOFTWARE

- Software coordinator of the math-game “[Ecotoons](#)” (commercial product). University of Aveiro, December 2003. Number - 202506/03, ISBN: 972-712-317-1

### SELECTED PUBLICATIONS (ONLY PEER REVIEWED PUBLICATIONS)

I have published over thirty research papers in peer reviewed journals, conference proceedings and books chapters on networking, educational computer games, geometric optimization, approximation algorithms and heuristics, networking, coverage and visibility problems relates to wireless sensor networks. For a full list of my papers and Google citations please visit:

<http://scholar.google.pt/citations?hl=en&user=Ygb3GqcAAAAJ>

- A. L. Bajuelos, S. Canales, G. Hernández-Peñalver, A. M. Martins, I. Matos: “Some Results on Open Edge and Open Mobile Guarding of Polygons and Triangulations”, *The Computer Journal*, Vol 58 No. 1 (2015), pp. 160-171. doi: 10.1093/comjnl/bxt151
- A. L. Bajuelos, S. Bereg, A. M. Martins: “Guarding Orthogonal Galleries with Rectangular Rooms”, *The Computer Journal*, Vol. 57 No. 11, (2014), pp 1668-1673 doi:10.1093/comjnl/bxt089.
- M. Abellanas, A. L. Bajuelos, S. Canales, M. Claverol, Gregorio Hernández, I. Matos: “Connecting Red Cells in a Bicolour Voronoi Diagram”, *Lecture Notes in Computer Science*, Volume 7579, pp 210-219 (2012).
- Bajuelos A, L., Canales S., Hernández G., Martins A. M.: “A Hybrid Metaheuristic Strategy for Covering with Wireless Devices”. *Journal of Universal Computer Science*, Vol. 18, Issue 14, pp. 1906-1932 (2012).
- M. Abellanas, A. L. Bajuelos, S. Canales, M. Claverol, G. Hernández and I. Matos: “Connecting Red Cells in a Bicolour Voronoi Diagram”. A. Márquez et al. (Eds.): *EGC 2011 (Hurtado Festschrift)*, LNCS 7579, pp. 210–219, (2012).
- M. Abellanas, A.L. Bajuelos and I. Matos: “Minimizing the Range for  $k$ -Covered Paths on Sensor Networks”. *The Computer Journal*, Volume 55, Issue 1, pp: 69-81 (2012).
- M. Abellanas, A.L. Bajuelos, F. Hurtado and I. Matos: “Coverage restricted to an angle”. *Operations Research Letters*, Volume 39, Issue 4, pp 241-245 (2011).

- M. Abellanas, A.L. Bajuelos I. Matos, "Optimal 2-Coverage of a Polygonal Region in a Sensor Network". *Algorithms*, Vol. 2, Issue 3, pp. 1137-1154 (2009).
- M. Abellanas, A.L. Bajuelos, G. Hernández, I. Matos and B. Palop, "Embracing Voronoi Diagram and Closest Embracing Number". *Journal of Mathematical Sciences*, Vol. 161, No. 6, pp. 909-918 (2009).
- Abellanas M., Bajuelos A.L., Matos I.: "2-Covered Paths by a Set of Antennas with Minimum Power Transmission Range", in *Information Processing Letters (IPL) Journal*, Vol. 109, Issue 4, pp. 768-773, ISSN: 0020-0190 (2009).
- Bajuelos A.L., Martins A.M., Canales S., Hernández G.: "Metaheuristic Approaches for the Minimum Vertex Guard Problem", IEEE Computer Society, in *The Third IEEE International Conference on Advanced Engineering Computing and Applications in Sciences (ADVCOMP 2009)*, DOI 10.1109/ADVCOMP.2009.19, (2009), p. 77-82.
- Bajuelos A. L., Canales S., Hernández G., Martins A. M., "Estimating the Maximum Hidden Vertex Set in Polygons" *International Conference on Computational Sciences and Its Applications (ICCSA 2008)*, pp. 421-432, IEEE-CS Press, Perugia, Italy, (2008).
- Bajuelos A.L., Canales S., Hernández G., Martins A.M.: "Solving some Combinatorial Problems in grid  $n$ -ogons", *International Journal of Mathematics and Computers in Simulation, NAUN*, Vol.1, Issue 2, (2007), pp 177-183.
- Abellanas M., Bajuelos A., Matos I.: "Some Problems Related to Good Illumination", *ICCSA 2007, Lecture Notes in Computer Science (LNCS) 4705*, Springer Verlag, (2007), Chapter: pp 1 - 14.
- Abellanas M., Bajuelos A., Matos I.: "Good theta-illumination of Points", in *Proc. of 23rd European Workshop on Computational Geometry*, Graz, Austria, (2007). pp. 61-64.
- Martins A. M., Bajuelos A, L.: "Vertex Guards in a Subclass of Orthogonal Polygons", *International Journal of Computer Science & Network Security (IJCSNS)*, Vol. 6, No. 9, September, (2006), pp 102-108.
- Martins A. M., Bajuelos A, L.: "Guarding two Subclasses of Orthogonal Polygons", *Recent Progress in Computational Sciences and Engineering, Lecture Series on Computer and Computational Sciences (LSCCS), Volume 7*, VSP/Brill, (2006), Chapter: pp 372-375.
- Mafalda A. M., Bajuelos A. L.: "Characterizing and Covering Some Subclasses of Orthogonal Polygons", *Computational Science – ICCS 2006: 6th International Conference, Lecture Notes in Computer Science (LNCS) 3992*, Springer Verlag, (2006), Chapter: pp 255-262.
- Tomás A. P., Bajuelos A. L., Marques F.: "On Visibility Problems in the Plane – Solving Minimum Vertex Guard Problems by Successive Approximations", in *on-line Proceedings of Artificial Intelligence and Mathematics*, Florida, USA, <http://anytime.cs.umass.edu/aimath06/>, (2006).
- Abellanas M. Bajuelos A.L., Hernández G., Matos I.: "Good Illumination with Limited Visibility", in *International Conference on Numerical Analysis and Applied Mathematics 2005. Official conference of the European Society of Computational Methods in Sciences and Engineering (ESCMSE)*, Rhodes, Greek, September 16-20, (2005). Weinheim: Wiley-VCH. pp. 35-38.
- Abellanas M., Bajuelos A., Hernandez G., Matos I. and Belen Palop: "Minimum Illumination Range Voronoi Diagrams", in *Proc. of 2nd International Symposium*

on Voronoi Diagrams in Science and Engineering (VD2005), Seoul, Korea, (2005). pp. 317-324.

- Martins A. M., Bajuelos A.: "Some properties of FAT and THIN grid n-ogons", in International Conference on Numerical Analysis and Applied Mathematics 2005. Official conference of the European Society of Computational Methods in Sciences and Engineering (ESCMSE), Rhodes, Greek, September 16-20, (2005). Weinheim: Wiley-VCH. pp. 361-365.
- Tomás A. P., Bajuelos A. L.: "Generating Random Orthogonal Polygons", Current Topics in Artificial Intelligence: 10th Conf. of the Spanish Association for Artificial Intelligence, CAEPIA 2003, and 5th Conference on Technology Transfer, TTIA 2003. Revised Selected Papers, Lecture Notes in Computer Science (LNCS) 3040, Springer Verlag, (2004), Chapter: pp 364-373.
- Tomás A. P., Bajuelos A. L.: "Quadratic-Time Linear-Space Algorithms for Generation Orthogonal Polygons with a Given Number of Vertices", Proceedings of ICCSA 2004, Lecture Notes in Computer Science (LNCS) 3045, Springer-Verlag, (2004), Chapter: pp 117-126.
- Bajuelos A. L., Tomás, A. P., Marques F.: "Partitioning Orthogonal Polygons by Extension of All Edges Incident to Reflex Vertices: lower and upper bounds on the number of pieces", Proceedings of ICCSA 2004, Lecture Notes in Computer Science (LNCS) 3045, Springer Verlag, (2004), Chapter: pp 127-136.
- Tomás A. P., Bajuelos A. L., Marques F.: "Approximation Algorithms to Minimum Vertex Cover Problems on Polygons and Terrains", P.M.A Sloot et al. (Eds): ICCS 2003, LNCS 2657, Springer Verlag Berlin Heidelberg, (2003), pp 869-878.
- Carro R. M., Breda A.M., Castillo G., Bajuelos A. L.: "A Methodology for Developing Adaptive Educational-Game Environments", Proceedings of AH2002, Lecture Notes in Computer Science, Vol.2347, Springer-Verlag, (2002) pp. 90-99.
- Breda A. M., Bajuelos A. L., Madeira J., Azevedo J., Menezes R., Silva E., "Geometrix - Tool to help the Learning Process in Geometry", Proceedings of the IASTED, International Conference: Computer and advance Technology in Education (CATE 2000), May 24-27, (2000), Cancun, Mexico, pp. 54-58.

#### OTHER SKILLS

- Excellent organization skills, leadership and team management.
- Language proficiency:
  - Native: Spanish
  - Fluent: Russian, Portuguese and English

*Antonio Leslie Bajuelos Domínguez*

Last Modified: March 2018