



# Diana L. Huerta Muñoz

*Curriculum Vitae*

*"A ship in a harbor is safe; but that is not what ships are built for." J.A. Shedd*

## Contact information

E-mail: [diana.huertamunoz@unibs.it](mailto:diana.huertamunoz@unibs.it)

Web pages: LinkedIn, Researchgate, PISIS

## Current Position

2018–2019 **Postdoctoral researcher**, *Università degli Studi di Brescia*, Brescia, Italy.  
Project: Matheuristics for Vehicle Routing and CVaR Problems

## Education

2014–2018 **PhD. in Statistics and Operations Research**, *Universitat Politècnica de Catalunya*, Barcelona, Spain.

2007–2009 **Master of Science in Systems Engineering**, *Universidad Autónoma de Nuevo León*, San Nicolás de los Garza, Mexico.

2002–2006 **Systems Administration Engineering**, *Universidad Autónoma de Nuevo León*, San Nicolás de los Garza, Mexico.  
Specialization in Computer Networking and Telecommunications

## PhD thesis

Title *The Flexible Periodic Vehicle Routing Problem: Modeling alternatives and solution techniques.*

Supervisors Dr. Elena Fernández and Dr. Claudia Archetti

Description This thesis is focused in a generalization of a Vehicle Routing Problem with periodic demands in which flexible service policies are applied in order to minimize routing costs. New mathematical models and several exact and heuristic algorithms are proposed to obtain better quality solutions efficiently.

## Master's thesis

Title *Diseño de Planes Eficientes para la Segmentación de Clientes con Múltiples Atributos.*

Supervisor Dr. Roger Z. Ríos Mercado

Description This thesis is focused in a customer segmentation problem with multiple attributes of a beverage firm located in Monterrey, Mexico. A combinatorial model and a metaheuristic based on a greedy randomized adaptive search procedure (GRASP) are proposed to solve the problem. The aim is to find the best partition that minimizes the dissimilarity among customer attributes.

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## Vocational experience

- 2010–2014 **Sr Optimization Development Engineer**, PROLEC GE, Apodaca, Mexico.  
Electrical Transformer design optimization by means of the development of optimizing tools based on metaheuristics. Direct chief: Luis E. Mora Forsbach.
- Leading a research project for the Phase-shifting transformers (PST) optimization
  - Analyzing and developing optimization tools for electrical and mechanical designs of transformers
  - Providing technical support to users from Prolec GE Mexico and Prolec–India
  - Collaborating with GE Global Research labs (GRC) to test algorithms
- 2009–2010 **6-month Intern Field Collaborator**, UNIVERSIDAD AUTÓNOMA DE NUEVO LEÓN, San Nicolás de los Garza, Mexico.  
Developing a metaheuristic to solve a customer segmentation problem. Direct chief: Roger Z. Ríos Mercado

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## Awards

- 2017 Grant to attend the ELAVIO 2018, Marbella, Chile - EURO/IFORS.  
2016 Diploma and reward (7th place) - “Coslada Smart Logistics” Competition. Coslada, Spain.  
2016 Mobility Scholarship “UPC-La Caixa” for a research stay at Università di Brescia  
2015-2016 Secretary of Public Education (SEP) - Complementary scholarship for PhD studies  
2015-2018 CONACYT Scholarship - PhD studies.  
2007-2009 CONACYT Scholarship - Master's studies  
2008-2009 CONACYT Scholarship for a research stay at the Universitat Politècnica de València  
2002-2006 UANL Bachelor Scholarship (academic excellence and sport) – Systems Administration

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## Publications

- 2018 **A two-phase solution algorithm for the Flexible Periodic Vehicle Routing Problem.** C. Archetti, E. Fernández, and D. L. Huerta–Muñoz *Computers & Operations Research*. Vol. 99, pp 27-37, 2018.
- 2017 **The Flexible Periodic Vehicle Routing Problem.** C. Archetti, E. Fernández, and D. L. Huerta–Muñoz. *Computers & Operations Research*. Vol. 85, pp 58–70. 2017
- 2017 **An Iterated Greedy Heuristic for a Market Segmentation Problem with Multiple Attributes.** D. L. Huerta Muñoz, Roger Z. Ríos–Mercado, and R. Ruiz. *European Journal of Operational Research*. Vol 85(1), pp 75–87. 2017
- 2009 **A Heuristic Approach to a Market Segmentation Problem with Multiple Attributes.** D. L. Huerta Muñoz, Roger Z. Ríos–Mercado, and R. Ruiz. J. M. Sautto Vallejo, R. Peña Galeana, P. Baldivia Noyola, and N. I. Peña Galeana (editors). *Memories of the TLAIO3*. Paper 073107, pp. 1–6. Acapulco, Mexico.
- 2009 **Diseño de Planes Eficientes para la Segmentación de Clientes con Múltiples Atributos.** D. L. Huerta Muñoz, R. Z. Ríos–Mercado, S. E. Schaeffer, and R. Ruiz. At J. C. Leyva López (editor). *Proceedings of the ELAVIO XIV*. Paper 5–3, pp. 1–5. El Fuerte, Mexico.

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## Presentations

- 2018 **A two-phase algorithm for the Flexible Periodic Vehicle Routing Problem.** D. L. Huerta Muñoz, E. Fernández and C. Archetti. ELAVIO XXII, Marbella, Chile. March 4-9, 2018 (**poster**).
- 2017 **A matheuristic for the Flexible Periodic Vehicle Routing Problem.** D. L. Huerta Muñoz, E. Fernández and C. Archetti. 18th Free Workshop on Metaheuristic for a better World, Rome, Italy. April 3-4, 2017.

- 2015 **Periodic Vehicle Routing Problems: Modeling alternatives and solution techniques.** D. L. Huerta Muñoz, E. Fernández and C. Archetti. Workshop on Combinatorial Optimization, Routing and Location (CORAL 2015), Salamanca, Spain. Sep 30– Oct 2, 2015
- 2015 **Problemas Periódicos de Rutas de Vehículos: Alternativas de modelización y métodos de solución.** D. L. Huerta Muñoz, E. Fernández and C. Archetti, XXXV National Congress of Statistics and Operational Research (SEIO 2015), Pamplona, Spain. May 26-29, 2015
- 2011,2013 **Optimization of Power Transformer Designs** D. L. Huerta Muñoz (Prolec GE), PISIS Seminar, UANL, Mexico.
- 2009 **A heuristic approach to a Market Segmentation Problem with Multiple Attributes.** D. L. Huerta Muñoz, Roger Z. Ríos–Mercado and R. Ruiz. TLAIO3. Acapulco, México.
- 2009 **Diseño de planes eficientes para la segmentación de clientes con múltiples atributos (Efficient plan design for a Multiple Attribute Customer Segmentation Problem).** D. L. Huerta Muñoz, Roger Z. Ríos, S. E. Schaeffer, and R. Ruiz. XIV ELAVIO, El Fuerte, México.
- 2009 **Optimización metaheurística para un caso de segmentación de clientes (Metaheuristics for a Customer Segmentation case).** D. L. Huerta Muñoz, Roger Z. Ríos, S. E. Schaeffer, and R. Ruiz. XIX ONAN, Puebla, México.
- 2008 **Un marco matemático de referencia para la Segmentación de Clientes con Múltiples Atributos (A mathematical framework for a Multiple Attribute Customer Segmentation Problem).** D. L. Huerta Muñoz, Technological Institute of Informatics, Universitat Politècnica de València. Valencia, Spain.
- 2008 **Preprocesamiento de datos para la creación de metaclientes de un caso de estudio de Segmentación de Mercado (Data preparation for meta–client creation: A case study of a Market Segmentation Problem).** D. L. Huerta Muñoz. PISIS Seminar, FIME, UANL.
- 2008 **Modelos de regresión para el proceso de engorda de ganado bovino (Regression models for a cattle fattening process).** D. L. Huerta Muñoz and J. C. Salazar Acosta. I Operations Research Symposium: Industry Case Resolution, PISIS, UANL.

## Other research activities

- 2017/2018 Collaboration as reviewer for the *Annals of Operations Research* journal and the *International Transactions in Operational Research* journal.
- Apr 2017 2-Month Research Stay at Università degli Studi di Brescia. Brescia, Italy.
- Nov 2016 Participation in the “Coslada Smart Logistics” competition. Coslada, Spain.
- Apr 2016 Attendance at the EURO PhD School in Matheuristics. Lorient, France.
- Nov 2015 Attendance at the VI Workshop on Locational Analysis and Related Problems. Bcn, Spain.
- Jun 2015 Attendance at The EURO PhD School on Routing and Logistics. Brescia, Italy.
- Apr 2015 3-Month Research Stay at Università degli Studi di Brescia. Brescia, Italy.
- Jan 2015 Attendance at The Winter School On Network Optimization. Estoril, Portugal.

## Certifications

- 2013 Sr. Development Engineer – Knowledge Dispersion System (KDS) certification by Prolec GE
- 2011 Jr. Development Engineer – Knowledge Dispersion System (KDS) certification by Prolec GE

## Computer skills

- Basic R, Android Studio, OCTAVE.
- Intermediate Arduino/S4A, GUROBI, GAMS, SQL, MATLAB, MINITAB, Java.
- Advanced CPLEX, L<sup>A</sup>T<sub>E</sub>X, UBUNTU-LINUX/Windows, C++/FORTRAN 90, Eclipse/Visual Studio/Netbeans.

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## Languages

Spanish **Native**  
English **Competent user**  
Italian **Intermediate**

*Band 6-6.5 IELTS (2015)*

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## Interests

- Matheuristics/Combinatorial Optimization
- Routing/Clustering
- Smart Cities/Robotics
- Software Development

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## Professional references

- **Prof. Elena Fernández.** Full Professor, Department of Statistics and Operations Research. Universitat Politècnica de Catalunya-BcnTech (UPC) in Barcelona, Spain. **Email:** e.fernandez@upc.edu.
- **Prof. Claudia Archetti.** Associate Professor, Department of Quantitative Methods. Università di Brescia, Brescia, Italy. **Email:** claudia.archetti@unibs.it.
- **Prof. Roger Z. Ríos Mercado.** Full Professor, Graduate Program in Systems Engineering. Universidad Autónoma de Nuevo León, Nuevo León, Mexico. **Email:** roger@yalma.fime.uanl.mx.
- **Prof. Rubén Ruiz García.** Full Professor, Department of Applied Statistics and Operational Research, and Quality. Universitat Politècnica de València, Valencia, Spain. **Email:** rruiz@eio.upv.es.