RODRIGO A. DE LA FUENTE

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RESUME SUMMARY

My research interests are simulation modeling and analysis of complex systems with emphasis in output evaluation using modern *machine learning* algorithms. **Methodology:** Systems Dynamics, Discrete Event Simulation, Machine Learning, Geographic Information Systems, Evolutionary Algorithms. **Applications:** Service and production systems, analysis of complex healthcare environments, simulation output metamodeling.

EDUCATION

PhD in Industrial Engineering *July 2016*
North Carolina State University, USA
Dissertation: *Simulation Metamodeling with Gaussian Processes: A Numerical Study*
GPA: 3.89/4.0

Master of Industrial Engineering *May 2013*
North Carolina State University, USA
Minor in Production Systems
GPA: 4.0/4.0

Industrial Engineer and Bachelor of Science in Engineering *May 2009*
Universidad del Bío-Bío, Chile
First Class honors (Industrial Engineer)
GPA: 94/100
Maximum Honor (Bachelor of Science in Engineering)

Bachelor of Business *December 2004*
Universidad del Bío-Bío, Chile
First Class honors (Accounting Concentration)
GPA: 84/100

WORK EXPERIENCE

University of Concepcion, Chile, *Assistant Professor,* *August 2016 - Present*

. *Graduate Level Teaching (Master of Industrial Engineering)*

- Simulation,Logistic Engineering, Operations Management, Stochastic Models, Machine Learning

. Undergraduate Teaching Level (Industrial Engineering)

- Simulation Modeling, Machine Learning for Business Intelligence, Stochastic Models

North Carolina State University, USA, *Research Assistant,* *August 2015 - August 2016*

University of the Bío-Bío, Chile, *Undergraduate Instructor,* *January 2005 - November 2010*

. Undergraduate Teaching Level (Accounting)

- Management Control Systems, Value-Based Management, Forecasting and Decision Tools for Managers.

LANGUAGES SKILLS

English (Full professional proficiency) ESL course, *UW-Madison* and Spanish (Native).

CURRENT RESEARCH PROJECTS

Simulation

1) Assessing the impact of different warehouse configurations in storing and dispatching times (Coca-Cola, Concepción, Chile), 2) Exploring the affect that delayed paperwork has on service completion times and billing (Finning Caterpillar, Concepción, Chile)

Logistic

1) Design of bicycle-sharing systems for the city of Concepción using GIS and mathematical programming, 2) Location of new fire stations in the city of Concepción, and assessing their performance through hypercube queuing models and discrete event simulation

Machine Learning

1) Comparison of machine learning methods for dry biomass estimation based on green logging residues chips, 2) Spatio-temporal modeling of the S-s inventory system, 3) Fine tuning the operational budget of a medium-size harvesting company through efficient forecasting of the harvested volume of timber

PUBLICATIONS

Jorge Jimenez, Cristian Rivas, Rodrigo De la Fuente (2017+)

. *Technical and economic viability of agricultural residue-based power generation in southern Chile through discrete location models*

(Under Review)

Rodrigo De la Fuente and Raymond Smith III (2017)

. *Metamodeling a System Dynamics Model: A Contemporary Comparison of Methods*

Winter Simulation Conference (WSC), Dec 2017, p. 1926-1937

CONFERENCE AND SEMINAR PRESENTATIONS

Winter Simulation Conference, USA, *Las Vegas, NV* *December 2017*

. *Metamodeling a System Dynamics Model: A Contemporary Comparison of Methods*

East Carolina University, USA, *Greenville, NC* *November 2017*

. *Exploring Machine Learning Techniques to Improve the Forecast of Dry Biomass Yields*

University of Concepción, Chile, *Concepción* *March 2017*

. *A Gentle Introduction to Python Programming for Engineers*

INFORMS Annual Conference, USA, *Phoenix, AZ* *October 2012*

. *Modeling Combat Air Support Using Simulation: An Object Oriented Approach*

MENTORING (CURRENT IN BOLD)

. **Carolina Pacheco**, Universidad de Concepción, (UG Research)
. **Juan Gatíca**, Universidad de Concepción, (UG - MIE Research)
. **Ciro Campos**, Universidad de Concepción, (UG Research)
. **Sebastián Rodríguez**, Universidad de Concepción, (UG - MIE Research)
. Cristian Rivas, Universidad de Concepción, (MIE Thesis Committee Member)
. Mirko Lipski, Universidad de Concepción, (MIE Thesis Committee Member)
. Carlos Villagrán, Universidad de Concepción, (MIE Thesis Committee Member)
. Camila Flores, Universidad de Concepción, (MIE Thesis Committee Member)

SERVICE

. Master of Industrial Engineering Admission Committee, UdeC
. Winter Simulation Conference, Analysis Methodology Track Referee

GRADUATE COURSEWORK

Computer Methods
Computer Methods for Civil Engineers I (Analysis of Algorithms), Computer Methods for Civil Engineers II (Object Oriented Programming).

Statistics and Simulation
Experimental Statistics for Engineers, Design of Experiments, Applied Spatial Statistics, Applied Times Series Analysis, Simulation Modeling, Computer Simulation, Simulation Analysis, Business Dynamics (MBA UNC).

Production Systems
Healthcare Systems Performance Improvements, Production Planning Scheduling and Inventory, Logistic Engineering, Linear Programming, Introduction to Production and Service Systems, Stochastic Models.

Breath Requirements
Manufacturing Processes Engineering, Production and Manufacturing for Medical Device Industry, Human Factors Systems Design.

COMPUTATIONAL SKILLS

Programing languages: Python, Java, C++
Applications and tools: Microsoft Office, R, Matlab
Simulation Software: SIMIO, Arena, Anylogic, Simpy (Python)
GIS Software: QGis, ArcGis, Gdal (Python), Fiona (Python)

AWARDS AND HONORS

Research Assistant Award (Department of Industrial and Systems Engineering, NCSU) *August 2015*
Fulbright Scholarship (U.S. Department of State) *May 2011*
Becas Chile (Recipient of PhD full fellowship, Chilean government) *May 2011*
Best Student of Industrial Engineering Award *May 2009*
University of the Bío-Bío Award, Accounting Mayor *December 2004*
Best Student Business School Award (University of the Bío-Bío) *October 2003*
Becas Chile (Recipient of Master of science full fellowship, Chilean government) *May 2011*
Bicentenary Scholarship *March 2001*
Fellowship for undegraduate studies in Accounting. (four years full fellowship).