Antonio Rueda Toicen

antonio.rueda.toicen@algorithmicnaturelab.org
antonio.rueda.toicen@gmail.com

Personal website: www.digital-spaceti.me

Phone: (+58)0212-7314581

Current positions

Operational and Production Manager
ItBit Programme on Physical and Computational Sciences
since January 2015

Researcher
Algorithmic Nature Group, LABORES for the Natural and Digital Sciences
since January 2015

Researcher
Physics and Mathematics in Biomedicine Consortium *&*
Instituto Nacional de Bioingeniería
since October 2012

Teaching Assistant, Information Dynamics of Complex Networks
ItBit Programme on Physical and Computational Sciences *&*
Santa Fe Institute's Complexity Explorer
since July 2014

Education

2016   MASTER'S DEGREE IN BIOENGINEERING, Universidad Central de Venezuela
(academic requirements completed, thesis defense expected in Jan/Feb 2017)

2013   LICENTIATE DEGREE IN COMPUTER SCIENCE, Universidad Central de Venezuela

Areas of specialization

Computer Vision • Machine Learning • Complex Adaptive Systems

Publications

BOOK CHAPTERS

2016   *"Dynamics of Tumor Growth: Complexity and Fractality"*
Miguel Martín-Landrove, Antonio Brú, Antonio Rueda-Toicen, and Francisco Torres
in The Fractal Geometry of the Brain, editor: Antonio Di Ieva
Springer Series in Computational Neuroscience

JOURNAL ARTICLES

2016   *"A Decomposition Method for Global Evaluation of Shannon Entropy and Local Estimations of Algorithmic Complexity"*
Hector Zenil, Fernando Soler-Toscano, Narsis A. Kiani, Santiago Hernández-Orozco,
and Antonio Rueda-Toicen
(submitted to IEEE Transactions of Information Theory)
ArXiv preprint available online

2016   *"Unsupervised Segmentation of Multispectral Images with Cellular Automata "*
Wuilian Torres and Antonio Rueda-Toicen
accepted to the Journal of the Faculty of Engineering, Universidad Central de Venezuela

2015   *"Search of Complex Binary Cellular Automata Using Behavioral Metrics"*
Juan López-González and Antonio Rueda-Toicen
Complex Systems, 24(1)
available online

CONFERENCE ARTICLES

2016   *"Characterizing the Structure of Complex Protein-Protein Interaction Networks"*
Proceedings of CIMENICS 2016, XIII Congreso Internacional de Métodos Numéricos en Ingeniería y Ciencias Aplicadas
Allan Zea and Antonio Rueda-Toicen
available online

2016   *"Segmentation of Dynamic Contrast-Enhanced Magnetic Resonance Images of the Prostate"*
Proceedings of CIMENICS 2016, XIII Congreso Internacional de Métodos Numéricos en Ingeniería y Ciencias Aplicadas
Wuilian Torres, Leonardo Cordero, Miguel Martín-Landrove, and Antonio Rueda-Toicen
available online

2014   *"Evolution Rules of Deterministic Cellular Automata for Multichannel Segmentation of Brain Tumors in MRI"*
Proceedings of CIMENICS 2014, XII Congreso Internacional de Métodos Numéricos en Ingeniería y Ciencias Aplicadas
Antonio Rueda-Toicen, Rhadamés Carmona, Miguel Martín-Landrove, and Wuilian Torres
available online

2014   *"Unsupervised Segmentation of Multispectral Images with Cellular Automata"*
Proceedings of CIMENICS 2014, XII Congreso Internacional de Métodos Numéricos en Ingeniería y Ciencias Aplicadas
Antonio Rueda-Toicen and Wuilian Torres
available online

2014   *"Autómatas Celulares para la Segmentación y Clasificación de Imágenes Multiespectrales"*
Proceedings of V Jornadas Nacionales de Geomática y IX Jornadas de Educación en Percepción Remota en el Ámbito de Mercosur
Antonio Rueda-Toicen and Wuilian Torres
available online

Other education

2014   WOLFRAM SCIENCE SUMMER SCHOOL 2014
Project: Estimation of the fractal dimension of brain tumors.

Work experience

2013-2014   *Lead software developer*
Yttrium Technology LLC

2009-2013   *Java trainer and consultant*
Centege CA

2002-2013   *Translator & technical writer*
Translass AC

2010   *Web developer*
Softrain CA

Languages

HUMAN-TO-HUMAN

- Fluent, native level English
- Fluent, native level Spanish

I've developed commercial software using the following programming languages:

- Python
- R
- SQL
- Java
- Mathematica
- C
- C++
- C#
- CUDA
- Matlab
- Javascript
- HTML + CSS

I'm also proficient in document typesetting with LaTeX.

IT professional certifications

2016	Data Science Specialization, Johns Hopkins University, via Coursera
2009	Sun Certified Java Programmer, Sun Microsystems
2002	Microsoft Certified Systems Engineer, Microsoft
2002	Microsoft Certified Systems Administrator, Microsoft

Projects

**Segmentation of Multichannel MRI Brain Tumors
with GPU-accelerated Cellular Automata**
Fast image segmentation method for radiosurgical planning.
Code available @ Bitbucket

Online Algorithmic Complexity Calculator
The Online Algorithmic Complexity Calculator is an ongoing long term project of the
Algorithmic Nature Group implementing semi-computable measures of algorithmic complexity.
Available from www.complexitycalculator.com

Cellular Automata Discoverer
Java application that uses genetic search to find complex cellular automata with
behavioral metrics similar to Conway's Game of Life in a non-totalistic Moore neighborhood.
Available from www.cellular-automata.com/discoverer/

References

Héctor Zenil
Head of the ItBit Programme on Physical and Computational Sciences
Oxford University & Karolinska Institutet
hector.zenil@cs.ox.ac.uk

Miguel Martín-Landrove
Director of Physics and Mathematics in Biomedicine Consortium
Universidad Central de Venezuela
mmartin@fisica.ciens.ucv.ve

Gabrielle Beans
Program Manager of Online Education
Santa Fe Institute
gabeans@santafe.edu

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