Antonio **Rueda-Toicen**

SOFTWARE ENGINEER · (DATA) SCIENTIST

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"A system of cells interlinked within cells interlinked within one stem... "

Education

Central University of Venezuela *Caracas, Venezuela*

MASTER'S DEGREE IN BIOENGINEERING *Jan. 2014 - April 2017*

- Biomedical computer vision programme.
- Thesis: Classification of brain tumors in multimodal MRI with network automata
- Advisor: Miguel Martín-Landrove

Central University of Venezuela *Caracas, Venezuela*

LICENTIATE DEGREE IN COMPUTER SCIENCE *Mar. 2007 - Oct. 2013*

- Specialization in Computer Graphics.
- Thesis: Segmentation of brain tumors in multichannel MRI with GPU-parallelized cellular automata
- Advisors: Miguel Martín-Landrove and Rhadamés Carmona

Skills

Languages English (fluent, C2-level, TOEFL IBT score 107120), Spanish (native)

Software development I've delivered production-level software for professional and academic purposes using Python (scikit-learn, pandas, OpenCV, TensorFlow, PyTorch, Flask, Django & Jinja2), R (Shiny & RMarkdown), SQL, Java (Spring, Hibernate & GWT), Javascript (Node.js, jQquery, Backbone & React), HTML5 + CSS3, Wolfram Language (Mathematica & Wolfram Cloud), Matlab (Image Processing Toolbox), C, CUDA, C#, C++, and OpenGL (GLSL). I'm also proficient in sysadmin tasks in Linux (Bash), version control and repository management with Git and Github, and document typesetting with LaTeX.

Experience

Algorithmic Nature Group, LABORES for the Natural and Digital Sciences *Paris, France*

SOFTWARE ENGINEER *January 2015 - current*

- Development of software to provide numerical estimations of Kolmogorov complexity and empirical study of the properties of Turing machines, cellular automata, and complex networks
- Development of the Online Algorithmic Complexity Calculator www.complexitycalculator.com
- Tools used: R, Shiny, Python, HTML5 + CSS3, Javascript, Wolfram Language

National Institute of Bioengineering, Central University of Venezuela *Caracas, Venezuela*

INSTRUCTOR AND RESEARCHER *April 2017 - current*

- Instructor (rank: "Professor Instructor" at the Center of Medical Visualization
- Research in biomedical computer vision focused in the segmentation and characterization of brain tumors in MRI
- Research on cellular automata, complex networks, information theory, and fractal geometry
- Supervision of biology and computer science thesis projects.
- Courses taught: "Applications of fractal geometry to biomedicine" and "Software development for scientists and engineers"

ItBit Programme on Physical and Computational Sciences

OPERATIONAL AND PRODUCTION MANAGER

Oxford, UK

January 2015 - current

- Content and platform development for Massive Open Online Courses taught by scholars from leading institutions (Karolinska Institutet, Oxford University and Carnegie Mellon University), aimed at expanding general knowledge about cutting-edge research related to foundational questions of biology, physics, and computation.
- http://www.itbit.org/about/

Santa Fe's Institute Complexity Explorer

TEACHING ASSISTANT, ALGORITHMIC INFORMATION DYNAMICS: FROM NETWORKS TO CELLS

Santa Fe, New Mexico

Jan 2015 - current

- Preparation of course material: tutorial videos and coding assignments for the Complexity Explorer project
- http://www.itbit.org/courses/information-theory-computational-biology/
- Intro video available online at https://youtu.be/uG7f4tzt6tA

Udacity

MENTOR AND PROJECT REVIEWER: DATA ANALYSIS NANODEGREE

Mountain View, California

Dec 2017 - current

- Mentoring and project review for the Data Analyst Nanodegree at Udacity
- One on one coaching directed to students learning statistics, Python, R, SQL and Tableau

Yttrium Technology LLC

LEAD SOFTWARE ENGINEER

Sunrise, Florida

October 2013 - May 2014

- Development of DICOM PACS solution for the storage and transmission of clinical medical image data
- Tools used: C#, Java, XNAT Server, DICOM

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JAVA TRAINER AND CONSULTANT

Caracas, Venezuela

January 2009 - October 2013

- Created course material to prepare students for Oracle's Certified Java Programmer exam
- Consulting: Servlets, JSPs, GWT, Hibernate, Spring

Selected Publications

Tumor Growth in the Brain: Complexity and Fractality

BOOK CHAPTER IN "THE FRACTAL GEOMETRY OF THE BRAIN": MIGUEL MARTÍN-LANDROVE, ANTONIO BRÚ, ANTONIO RUEDA-TOICEN, & FRANCISCO TORRES-HOYOS

available online

Springer Series in Computational Neuroscience

2016

Evolution Rules of Deterministic Cellular Automata for Multichannel Segmentation of Brain Tumors in MRI

CONFERENCE ARTICLE: ANTONIO RUEDA-TOICEN, RHADAMÉS CARMONA, MIGUEL MARTÍN-LANDROVE, & WUILIAN TORRES

available online, with code repository on GitHub

Proceedings of CIMENICS XII

2014

Search of Complex Binary Cellular Automata with Behavioral Metrics

JOURNAL ARTICLE: JUAN C. LÓPEZ-GONZÁLEZ & ANTONIO RUEDA-TOICEN

available online, app available at: cellular-automata.com/discoverer

Complex Systems, Vol 24, No. 1

2015

References

Hector Zenil, Oxford University and Karolinska Institute   hector.zenil@cs.ox.ac.uk

Miguel Martín-Landrove, Central University of Venezuela   mmartin@fisica.ciens.ucv.ve

Gabrielle Beans, Santa Fe Institute   gabeans@santafe.edu