Jose Roberto Ayala Solares

Machine Learning Scientist

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SKILLS & COMPETENCES

Exploratory Data Analysis		Communication	
Predictive Modeling		R	
Quantitative Analysis		Python	
Machine Learning		SQL	
Deep Learning		MATLAB	

WORK EXPERIENCE

Machine Learning Scientist
The George Institute for Global Health - University of Oxford

10/2017 – Present — *Oxford, United Kingdom*

- Employing and developing machine and deep learning algorithms that can find patterns in large multi-modal data.
- Evaluating and implementing innovative strategies for managing the healthcare challenges facing the world in the 21st century.

Contact: Dr. Kazem Rahimi – kazem.rahimi@georgeinstitute.ox.ac.uk

Postgraduate Researcher
The University of Sheffield

10/2013 – 09/2017 — *Sheffield, United Kingdom*

- Improving machine learning algorithms for modeling and analysis of environmental systems using NARX models.
- Developing a package in the R programming language for construction, validation and testing of NARX models.
- Working with space weather data for the prediction of terrestrial magnetosphere activity.
- Working with oceanographic data for the analysis and forecasting of the Atlantic Meridional Overturning Circulation.

Contact: Dr. Hua-Liang Wei – w.hualiang@sheffield.ac.uk

EDUCATION

Ph.D. in Automatic Control and Systems Engineering
The University of Sheffield

10/2013 – 09/2017 — *Sheffield, United Kingdom*

Data Science Specialization
Johns Hopkins University on Coursera

09/2014 – 05/2015

M.S. in Applied Mathematics and Computational Science
King Abdullah University of Science and Technology

08/2009 – 12/2011 — *Thuwal, Saudi Arabia*

B.S. in Mechatronics Engineering
Instituto Tecnológico y de Estudios Superiores de Monterrey

08/2004 – 12/2008 — *Mexico City, Mexico*

PROJECTS

Deep Medicine Project (10/2017 – Present)

- Using and analysing some of the largest and most complex biomedical datasets that have ever been collected to generate insights into complex disease patterns, risk trajectories and treatment effects.

Development of a package in R for artificial organic networks (05/2017 – Present)

- Developing a package in the R programming language for the recently developed artificial organic networks technique.
- Version 0.2.0 currently available on GitHub.

TEACHING EXPERIENCE

Mathematics and Data Modeling

The University of Sheffield

01/2014 – 05/2017 *Sheffield, United Kingdom*

- Intermediate level course that aims to develop student skills in the theory and application of core mathematics tools required for systems engineering and the application of these in system simulation and data-based modeling.

Contact: Dr. Hua-Liang Wei – w.hualiang@sheffield.ac.uk

Numerical Methods for Engineers

Instituto Tecnológico y de Estudios Superiores de Monterrey

05/2012 – 06/2013 *Mexico City, Mexico*

- Intermediate level course that uses analysis and mathematical thinking to solve complex engineering problems through the use of numerical methods and computational tools. The course implemented the use of the Acadox educational platform for the first time in Latin America.

Contact: Rodrigo Regalado García – rregalad@itesm.mx

Python Programming for Robotics

Instituto Tecnológico y de Estudios Superiores de Monterrey

05/2012 – 06/2013 *Mexico City, Mexico*

- Introductory level course that uses analysis and mathematical thinking to solve complex problems in robotics through the use of the Python programming language.

Contact: Rodrigo Regalado García – rregalad@itesm.mx

LANGUAGES

Spanish
Native or Bilingual

English
Native or Bilingual

Esperanto
Upper-intermediate

French
Beginner

PUBLICATIONS

Ph.D. Thesis

Data Mining and Machine Learning for Environmental Systems Modelling and Analysis

Author(s)
J. R. Ayala Solares

2017
University of Sheffield

Journal Article

A novel logistic-NARX model as a classifier for dynamic binary classification

Author(s)
J. R. Ayala Solares, H.-L. Wei, S. A. Billings

2017
Neural Computing and Applications, DOI: 10.1007/s00521-017-2976-x

Journal Article

Modelling and prediction of global magnetic disturbances in near-Earth space: A case study for Kp index using NARX models

Author(s)
J. R. Ayala Solares, H.-L. Wei, R. J. Boynton, S. N. Walker, S. A. Billings

2016
Space Weather, DOI: 10.1002/2016SW001463

Journal Article

Power Minimization of a Wireless Sensor Node Under Different Rate Constraints

Author(s)
J. R. Ayala Solares, L. Sboui, Z. Rezki, M.-S. Alouini

2016
IEEE Transactions on Signal Processing, Vol. 64, No. 13, DOI: 10.1109/TSP.2016.2548991

PUBLICATIONS

Journal Article

Nonlinear model structure detection and parameter estimation using a novel bagging method based on distance correlation metric

Author(s)

J. R. Ayala Solares, H.-L. Wei

2015

Nonlinear Dynamics, DOI: 10.1007/s11071-015-2149-3

Book Chapter

The Power of Natural Inspiration in Control Systems

Author(s)

H. E. Ponce Espinosa, J. R. Ayala Solares

2015

Springer, DOI: 10.1007/978-3-319-26230-7_1

Nature-Inspired Computing for Control Systems. Studies in Systems, Decision and Control.

Conference Proceedings

A New Distance Correlation Metric and Bagging Method for NARX Model Estimation

Author(s)

J. R. Ayala Solares, H.-L. Wei

2014

The University of Sheffield Engineering Symposium Conference Proceedings, Vol. 1, DOI: 10.15445/01012014.31

Conference Paper

Optimal power allocation of a single transmitter-multiple receivers channel in a cognitive sensor network

Author(s)

J. R. Ayala Solares, Z. Rezki, M.-S. Alouini

2012

IEEE International Conference on Wireless Communications in Unusual and Confined Areas (ICWCUCA), 2012, DOI: 10.1109/ICWCUCA.2012.6402479

Conference Paper

Optimal power allocation of a sensor node under different rate constraints

Author(s)

J. R. Ayala Solares, Z. Rezki, M.-S. Alouini

2012

IEEE International Conference on Communications (ICC), 2012, DOI: 10.1109/ICC.2012.6363758

Master Thesis

Optimal Power Allocation of a Wireless Sensor Node under Different Rate Constraints

Author(s)

J. R. Ayala Solares

2011

King Abdullah University of Science and Technology

INTERESTS

AI | Data Mining | Data Visualisation | Deep Learning | Machine Learning | Keras | TensorFlow | Open Source | Reading | Research & Development