

# Jose Roberto Ayala Solares

Machine Learning Scientist

roberto.ayalasolares@georgeinstitute.ox.ac.uk ✉

+447522185984 📞

Oxford, United Kingdom 📍

linkedin.com/in/jroberayalas in

@jroberayalas 🐦

github.com/jroberayalas 🐙

## 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](mailto: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](mailto: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](mailto: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

*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 and S. A. Billings

2016

Space Weather, DOI: 10.1002/2016SW001463

*Article*

### A novel logistic-NARX model as a classifier for dynamic binary classification [↗](#)

*Author(s)*

J. R. Ayala Solares, H.-L. Wei and S. A. Billings

2017

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

*Article*

### Nonlinear model structure detection and parameter estimation using a novel bagging method based on distance correlation metric [↗](#)

*Author(s)*

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

2015

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

## PUBLICATIONS

*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 Paper*

### **Optimal power allocation of a single transmitter-multiple receivers channel in a cognitive sensor network** [↗](#)

*Author(s)*

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

2012

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

*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

*Article*

### **A New Distance Correlation Metric and Bagging Method for NARX Model Estimation** [↗](#)

*Author(s)*

J. R. Ayala Solares and 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 sensor node under different rate constraints** [↗](#)

*Author(s)*

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

2012

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

## INTERESTS

AI

Data Mining

Data Visualisation

Deep Learning

Machine Learning

Keras

TensorFlow

Open Source

Reading

Research & Development