

# John Joseph Valletta

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## Profile

A data scientist who spent the past decade working on a wide spectrum of datasets, ranging from intricate mechanical systems to complex human diseases. By combining expertise from the fields of control engineering, machine learning and statistical modelling, I have developed data analytics methodologies to extract knowledge from complex and noisy datasets and visualise them.

## Education and Qualifications

**University of Southampton, UK**

**2007 – 2011**

*Ph.D.*

- **Thesis:** Dynamic Modelling of the Effect of Habitual Physical Activity on Glycaemic Control and the Microvasculature in People with Type 1 Diabetes

**University of Sheffield, UK**

**2006 – 2007**

*M.Sc. Control Systems Engineering (Distinction)*

- **Project:** Model Structure Selection and Validation for Linear and Nonlinear Dynamic Models

**University of Malta, Malta**

**2001 – 2005**

*B.Eng (hons.) Electrical Engineering (First Class)*

- **Project:** Adaptive Fuzzy Control of an Inverted Pendulum System

## Employment History

**University of Exeter, UK**

**2014 – present**

*Medical Research Council (MRC) Research Fellow*

- Integrating multi-omics and immuno-epidemiology data for biomarker discovery in malaria

**McLaren F1 Racing Ltd., UK**

**2011 – 2013**

*Aerodynamic Applications Engineer*

- Developed data analytics frameworks to translate noisy wind tunnel and track data into knowledge about air flow structures to direct the aerodynamic design process of F1 cars

**University of Southampton, UK**

**2010 – 2011**

*PhD Plus Research Associate (now renamed EPSRC Doctoral Prize)*

- Decomposing microvascular blood flow signals to identify potential biomarkers with links to cardiovascular risk factors and endothelial dysfunction

**Hyperdrive Technologies, UK**

**Aug 2010 – Oct 2010**

*Research Engineer (Internship)*

- In-depth market research into hybrid powertrain to support the business plan of a start-up

**University of Southampton, UK**

**2007 – 2010**

*Teaching Assistant*

## Teaching Experience

### Workshops

- “*Life beyond the P value - from elementary to advanced data analysis*”, BioMalPar XIV: Biology and Pathology of the Malaria Parasite conference, Heidelberg, Germany, May 2018
- “*Python for scientific research*”, University of Exeter, June 2017
- “*Introduction to machine learning for the life sciences*”, University of Exeter, June 2015

### Undergraduate modules

- Scientific computing, Ecology and Evolution of Disease, Engineering Principles, Electrical Systems

### Supervision

- “*Text mining of Twitter data*”, Mathematical Sciences Project, Jakub Kryczka, 2018-19
- “*Gaussian Processes for short time-series modelling*”, Mathematical Sciences Project, Alex Holt, 2018-19
- “*The Effects of Physical Activity on Capillary Blood Glucose Concentration in Type 1 Diabetes*”, Undergraduate Independent Research Project, Suzanne Shuttleworth, 2009

## Awards and Grants

- 2017** University of Exeter researcher-led initiative award fund (£1,500) to run the workshop “*Python for scientific research*”
- 2015** University of Exeter researcher-led initiative award fund (£1,000) to run the workshop “*Introduction to machine learning for the life sciences*”
- 2011** Blue Riband Poster Prize at the 26th Meeting of the European Society for Microcirculation
- 2011** Conference Attendance Fund (£500) (University of Southampton) to present at the annual European Association for the Study of Diabetes conference in Lisbon, Portugal
- 2010 - 2011** EPSRC Ph.D. Plus Fellowship (now renamed to EPSRC Doctoral Prize)
- 2010** Conference Attendance Fund (£500) (University of Southampton) to present at the annual European Association for the Study of Diabetes conference in Stockholm, Sweden
- 2009** International Travel Grant (£500) (Royal Academy of Engineering) to present at the annual IEEE Engineering in Medicine and Biology conference in Minnesota, USA
- 2007 - 2010** Ph.D. Studentship (University of Southampton)
- 2007** Laverick-Webster-Hewitt Prize for outstanding academic performance (University of Sheffield)
- 2006 - 2007** EPSRC M.Sc. Studentship
- 2005** Best Academic Performance Prize (University of Malta)

## Publications

- J.J. Valletta**<sup>1</sup>, Y. Bediako<sup>2</sup>, R. Adams<sup>2</sup>, A. Reid<sup>2</sup>, F.M. Ndungu<sup>2</sup> et al., “A systems approach reveals immune signatures associated with repeated clinical malaria episodes in children”, *submitted - Nature Medicine*
- T. Holding, **J.J. Valletta** and M. Recker, “Multi-scale immune selection and the transmission-diversity feedback in antigenically diverse pathogen systems”, *The American Naturalist*, 2018
- J.J. Valletta** and M. Recker, “Identification of immune signatures predictive of clinical protection from malaria”, *PLoS Computational Biology*, 13(10):e1005812, 2017
- J.J. Valletta**, C. Torney, M. Kings, A. Thornton and J. Madden, “Applications of machine learning in animal behaviour studies”, *Animal Behaviour*, 124:203-220, 2017
- S.M. Ewings, S.K. Sahu, **J.J. Valletta**, C.D. Byrne and A.J. Chipperfield, “A Bayesian network for modelling blood glucose concentration and exercise in Type 1 diabetes”, *Statistical Methods in Medical Research*, 24(3):342-372, 2015
- J.J. Valletta**, A.J. Chipperfield, G.F. Clough and C.D. Byrne, “Daily energy expenditure, cardiorespiratory fitness and glycaemic control in people with Type 1 diabetes”, *PLoS ONE* 9(5): e97534, 2014
- J.J. Valletta**, A.J. Chipperfield, G.F. Clough and C.D. Byrne, “Metabolic regulation during constant moderate physical exertion in extreme conditions in Type 1 diabetes,” *Diabetic Medicine* 29(6):822-826, 2012
- J.J. Valletta**, A.J. Chipperfield and C.D. Byrne, “Gaussian process modelling of blood glucose response to free-living physical activity data in people with Type 1 diabetes,” in *Proceedings of the 31st IEEE Engineering in Medicine and Biology Annual Conference, (EMBS 09)*, Minnesota, USA, pp. 4913-4916, 2009.

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<sup>1</sup>joint first authors