Dr Anthony Peter Rushton MPhys (Hons) PhD
Anthony.P.Rushton@gmail.com

http://arushton.github.io

Summary

I am a data scientist/software developer passionate about making the world better with Big Data and AI technologies. I am a self-motivated, focused individual with proven skills in solution development and logical problem solving, with strong expertise in software development and advanced statistical knowledge. I have over 15 years' experience of solving Big Data problems from working in world-leading academic and corporate institutes. As well as having a strong background in software development, I have excellent project management experience working on projects at both an international level and within an Agile framework. I also have excellent written and oral communication skills, with multiple scientific publications and high-level presentations to international audiences.

Specific Skill Areas

♦ **Big Data/Machine Learning:** Quantitative data analysis, logical problem solving, programming in multiple scripting and coding languages including Python, Matlab, C++, CUDA & SQL, data mining, timing & spectral analysis. Knowledge of Big Data tools including Hadoop (MapR), Apache Kafka, SPARK, Drill and NoSQL databases (such as MongoBD/HBase). Management of large data sets (>>TB) and the setting up of batch analysis pipelines. Validating and refining theoretical models against physical data. Machine learning skills, such as logical regression, SVR and random forest, as well as using deep learning Frameworks such as Google TensorFlow.

♦ **Supervision and Leadership:** Experienced Agile development (e.g. as Scrum Master) over short sprints. Supervised junior team members and students (e.g. Physics tutor at Oxford University). Course demonstrator/trainer on C++, Python and statistics for the physical sciences. Work group leader for EU FP7 COST action ('*Black Holes in a Violent Universe*'). Workshop facilitator in the ATM industry.

♦ **Communication skills:** Adept at communicating scientific results and ideas to multiple audiences in a variety of venues and using a variety of media including scientific journals, technical reports, conferences, grant and observing proposals, press releases, and public open days. Experienced workshops facilitator and organiser of large international conferences (e.g. organised and a executed NATS R&D one-day workshop and multiple astrophysical conferences).

♦ **Project management experience:** Responsible for successfully bidding on €250k Marie Curie Intra European fellowship together with its subsequent management. Experience working collaboratively on EU R&D FP6 and FP7 projects. Member of multiple international research collaborations and have acted as Management Committee leader on work packages within these collaborations. Responsible for the entire lifecycle of projects including initial design, implementation, validation and final reporting of results. Adept at adapting to and working in new environments and cultures as demonstrated by long-term residence and working in multiple countries (e.g. UK, Sweden & Germany).

Employment

07/2016-present   <u>Senior Research Analyst</u>
NATS Analytics, Whiteley, Hampshire, UK

- *Big Data* science studying: voluminous, high velocity and varied formats of data.
- Development of *disturbed data tools* with Apache Hadoop, Kafka, SPARK, HIVE & Drill.
- Use of *Machine Learning* libraries, such as Scikit-Learn, SPARK MLlib and TensorFlow.
- *Continuous integration* using Jenkins, Git and JIRA.
- *Agile* development using scrums, backlogs and sprints.
- *Full-stack development*, linking front-end JavaScript libraries (such as BootStrap, jQuery, and AngularJS) to back-end SQL databases using frameworks like Django, Flask and Node.JS.

- *Cloud deployment* with Microsoft Azure and other VM providers.

03/2013-07/2016 **Senior Research fellow**
Department of Physics, University of Oxford, UK
- Scientist working on technologies for the *Square Kilometre Array (SKA).*
- Astrophysicist studying black hole physics.
- *Project manager* for EU Horizon 2020 (R&D framework).
- Built decision making tools for the *robotic automation* of data collection.
- *Lead author publications* in international peer-reviewed journal (e.g. Month Notices of the Royal Astronomical Society).
- Departmental tutor for the Astrophysics Masters degree at Oxford University.
- *Invited speaker* at international conferences.

02/2010-03/2013 **Fellowship with European Southern Observatory (ESO)**
Onsala Space Observatory, Gothenburg, Sweden
3 year fixed term

- Led an *independent research project* to study black holes.
- Led data analysis for the *commissioning* of a new observatory (ALMA telescope in Chile).
- Led the Swedish participation in a European FP7 R&D project (title NEXPReS).
- Provided project operational support.
- *Supervised* undergraduate and postgraduate students.

Education

2005-2009 **Ph.D Radio Astronomy**
Jodrell Bank Observatory, University of Manchester
Thesis title: Sensitive and high resolution observations of radio-emitting X-ray binaries
Supervisor: Professor Ralph Spencer

- *Data Storage* and processing of large volumes of radio telescope data.
- *Network* testing and configuration of 10 Gbps transatlantic data links.
- *Synchronisation* and correlation of telescope arrays.
- Astronomical studies of black holes.

2001-2005 **MPhys, Physics with Astrophysics (2:1)**
University of Manchester

1994-2001 **GCSEs and A-Levels**
Saint Ambrose College for boys, Hale Barns, Cheshire

References

Emeritus Professor Ralph Spencer (PhD supervisor)
Former Director of Jodrell Bank (retired)
Jodrell Bank Centre for Astrophysics
University of Manchester
Manchester
M13 9PL
United Kingdom
Telephone: +44-(0)161-275-4086
Email: Ralph.Spencer@manchester.ac.uk

Professor Rob Fender (Advisor/Collaborator)
Professor of Astronomy at Brasenose College
Denys Wilkinson Building
Keble Road
Oxford
OX1 3RH
United Kingdom
Telephone: +44-(0)1865-273-435
Email: rob.fender@physics.ox.ac.uk