Dr Alexander Shires

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A highly-motivated professional data scientist, I have five years experience as a researcher at Imperial College London, CERN and Technische Universität Dortmund. I am looking to apply my analytical and mathematical skills in quantitative roles to inform business decisions using advanced analytics.
Key Skills: Data Science, Statistics, Data Analytics, Programming

Employment history

Technische Universität Dortmund, Germany
Post-doctoral researcher *Jun 2013 to present*

Experimental particle physics research incorporating data analysis, software development and project coordination. My research involved searching for new fundamental particles by measuring once-in-a-billion signals hidden in background noise. To extract the data, I used in-memory and batch processing workflows to process datasets of trillions of items with sizes of several petabytes. I analysed the data by applying machine learning algorithms to separate signal events from background noise as well as using visualisation software to explore the data. As a result, I have discovered several new effects and written several scientific papers based on my results. Additionally, I have designed, implemented and maintained scientific software in Python and C++ at both user-level and for production systems with hundreds of users. As part of an international collaboration, I have worked in small teams located remotely across the UK, Germany, France and Switzerland. I have managed small teams of researchers and I have coaching skills developed through supervision of post-graduate students. Communication of my work is vital part of it's success and I have strong public presentation skills, developed while leading discussions at a number of top academic institutions across Europe.

Lead analyst: *arXiv:1406.6482*. Our task was to test two rare signals, one of which had not been modelled before. As the project lead for a small team, I developed new models to describe the data, implemented all the calculations in a coherent framework and delivered the project. As a result, we achieved a 50% increase in precision for the result and the paper is one of the highest profile results from the LHCb collaboration.

Analyst: *arXiv:1304.6325*. As part of a small team working on one of the top three projects for the LHCb collaboration, I developed and maintained a correction algorithm to translate the recorded, distorted data into the true data. Measurements of the rare signal decay could indicate hidden effects and this algorithm was critical to ensure the accuracy of the final measurement. As a result, we were able to make the world's best measurement with the data available.

Skills

Computing: Python, C++ (proficient), Fortran (intermediate), R, Java (basic)

Frameworks: numpy/scipy/pandas, scikit-learn, ROOT, boost, gsl

OSs & Tools: Windows, Linux, Git, SVN, MS Office, LaTeX, Vim, Tableau

Education

Imperial College London, UK
PhD, High Energy Physics *Oct 2009 to Oct 2013*

Research PhD including an 18 month placement in Geneva to work at CERN. I worked in a small team of researchers to deliver two projects based on the first data coming out of the LHC. These were the world's best measurements and have been widely presented internationally.

Imperial College London, UK
MSci (First Class Hons), Physics With Theoretical Physics *Oct 2005 to Jun 2009*

First Class degree concentrating on the theoretical aspects of physics, specifically to understand current research into particle physics and cosmology. This course involved specific modules in applied mathematics, statistics and computing dedicated to implementing algorithms for modelling and data analysis.

Hardenhuish School, Wiltshire, UK
A-levels, GCSEs *Aug 2005*

A-levels: Physics (A), Mathematics (A), Further Mathematics (A), Chemistry (A). GCSEs: 3 A*, 3 A, 3 B.

Previous experience

Imperial College London, UK

Undergraduate research placement *Summer 2008*

The Ganga project has developed front-end software that allows hundreds of researchers to use many distributed computing systems across the world in a coherent format. Developed and integrated autonomous remote testing for the Ganga project and added reporting options to show test failure differences between different versions. Worked with established Python framework as part of a small team of 10 developers to implement my changes.

Westinghouse Rail Systems, Wiltshire, UK

Junior engineer *Summer 2006 & 2007*

As a scholarship given to the best 3 students from local schools, worked as the sole data analyst for the first live railway trial of a multi-million pound project. Invited back for a second year to develop software in C++ on Windows to test the integration of a new railway track-side communications protocol.

Interests

My main interests are music and cricket along with a passion for city breaks around Europe. I play the trombone to a high standard and have played in orchestra and jazz bands in London, Geneva and Dortmund. When in London, I play regular amateur cricket with a team based in south west London including matches around south east England and tours abroad.

References

Available on request