dan**underwood**

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contact

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languages

English mother tongue
Spanish fluency

programming

scientific:
C++
Fortran
Python
MATLAB
back end:
.NET (C#/VB)
Node.js (Express)
PHP
SQL Server/MySQL
MongoDB
front end:
Javascript
(Vanilla/jQuery/Angular.js)
CSS3, HTML5
buzzwords:
Agile
MVC
REST
Git/SVN

interests

professional
Software development
Web design
Web app creation
Data analysis
Spectroscopy
Quantum physics
Astrophysics
personal
Music
Piano
Running
Cycling
Football
Travel
Reading
Drawing
Animation
Graphic design

education

2016	**PhD** Physics	University College London
2011	**MSci** Astrophysics - *First Class Honours*	University College London

experience

2016 — **Janus Technology** — Cambridge, United Kingdom
Software Engineer
Design, coding and testing of software provided to multiple clients for a variety of different systems, including firmware and user interface applications, using a variety of technologies.

Stemcell Technologies — Vancouver, Canada
Application Developer
Development, maintenance and modernisation of in-house, PLM enterprise applications. Systematic analysis of legacy data/software and subsequent re-factoring and re-design of front-end applications to adhere to software development best practices, using a Microsoft stack.

2012–2015 — **ExoMol Group, University College London** — London, United Kingdom
PhD Researcher in Theoretical Molecular Physics
Computation of spectroscopic data to provide experimental physicists with tools for characterising and understanding astronomical and industrial environments. Extensive use of scripting and programming on Linux based systems in order to create, manipulate and analyse large data sets via the construction of bespoke quantum mechanical algorithms and mathematical models.
Responsibilities and Skills:
- Understanding of relevant fundamental physics;
- Implementation of models into programming routines (Fortran/C++), and subsequent optimisation to work on available hardware;
- Data analysis (Python/bash scripting), and publication of work to the scientific literature;
- Teaching, marking and various outreach roles to further scientific understanding.

2011–2012 — **Intuitive Ltd.** — London, United Kingdom
Developer
Full stack, agile development for the design and maintenance of a technology solution used by many large travel company websites. Back-end, server-side development (ASP.NET) for the processing of product sales, as well as front-end development of both the client CMS and customer-facing website, built on a Microsoft stack.

2011–Now — **Self-Employed**
Freelancer
Development of independent, small/medium-sized websites, for individuals and organisations, including personal webpages and staff database web interfaces using a variety of technology stacks.

publications

2013   **An ab initio variationally computed room-temperature line list for SO$_3$**
D.S. Underwood, J. Tennyson, S.N. Yurchenko, Phys. Chem. Chem. Phys. 15, 10118 – 10125
http://dx.doi.org/10.1039/C3CP50303H

2014   **Rotational spectrum of SO$_3$ and theoretical evidence for the formation of sixfold rotational energy-level clusters in its vibrational ground state**
D.S. Underwood, J. Tennyson, S.N. Yurchenko, P. Jensen, J. Chem. Phys. 24, 244316
http://dx.doi.org/10.1063/1.4882865

2016   **ExoMol molecular line lists - XIV: The rotation-vibration spectrum of hot SO$_2$**
D. S. Underwood, J. Tennyson, S.N. Yurchenko, X. Huang, D.W. Schwenke, T.J. Lee, S. Clausen, A. Fateev, MNRAS
http://dx.doi.org/10.1093/mnras/stw849

2016   **ExoMol molecular line lists - XVII: The rotation-vibration spectrum of hot SO$_3$**
D. S. Underwood, S.N. Yurchenko, J. Tennyson, A. F. Al-Refaie, S. Clausen, A. Fateev, MNRAS, Accepted
https://arxiv.org/abs/1607.01242