

# Sam Spedding – Curriculum Vitae

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## PERSONAL PROFILE

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A high-achieving C++ engineer with a strong mathematical mind and a diligent but playful approach to problem solving. Has a keen desire to contribute towards projects promoting sustainability or social justice.

## EDUCATION

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**Mathematics (MSci, Integrated Masters), University of Bristol** **2017 – 2021**  
**First-Class Honours: Years 1 - 3 average: 86%, Year 4 Average: 89%**

- Focussed on applied topics such as fluid dynamics, differential equations and general relativity
- Fourth-year research project: Hydrodynamics of Swimming Bacteria
  - Used numerical, asymptotic and exact methods for solving Stokes' fluid flow around a cylindrical bacterium, and adapted hydrodynamics of liquid crystals to model a bacterial colony.
- Third-year research project: Simulating Crowd Dynamics.
  - Used Python to numerically analyse data from a crowd simulation made in C++

**Hereford Sixth Form College** **2015 – 2017**

- A Levels: A\* A\* A\* A\* in Maths, Further Maths, Physics and Spanish
- Distinction in British Mathematical Olympiad 2017 (top 250 participants nationwide)

**Wigmore High School** **2010 – 2015**

- GCSEs: 6 A\*s (including Maths and English Language); A\*\* (in Further Maths); 3 A's

## WORK EXPERIENCE

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**C++ Software Engineer** **March 2022 – Present**  
**Datamine Software Ltd., Bristol**

- Create and maintain cutting edge geological resource modelling desktop applications using C++14.
- Lead developer on a brand new geological modelling application. Personally responsible for fundamental architectural and design decisions.
- Conceptualize and implement novel algorithms for processing geological data to create accurate structural models. Created a unique interactive tool to model geological faults and visualise them in 3D.
- Enhance and maintain existing structural modelling tools. Refactored swathes of legacy code resulting in speedups of 2000% in Datamine's flagship minimum curvature implicit modelling tools.
- Collaborate closely with product owners and consultants to design and implement attractive UI.

**Graduate Software Engineer** **August 2021 – March 2022**  
**Micro Focus – IDOL Connectors Team, Cambridge**

- Self-taught C++17 and modern coding standards with minimal supervision and support.
- Developed tools that connect to a wide variety of online data repositories and extract both structured and unstructured data.

**Online A-Level Maths and Further Maths Tutor** **2018 – 2021**  
[mytutor.co.uk/tutors/92167/](http://mytutor.co.uk/tutors/92167)

- Built friendly but professional relationships with tutees and their parents, schedule and plan lessons, and tailor my teaching and communication styles to suit the needs of the pupil and build confidence.
- 5-star average rating from over 100 reviews from tutees, having completed over 400 lessons.

**APDE Maths Café Leader** **2019 – 2021**  
**School of Mathematics, University of Bristol**

- Ran the drop-in session for Year 2 module ‘Applied Partial Differential Equations’, and provided hints, tips and solutions to homework problems, as well as peer-to-peer support for students seeking advice.

**Group Research Studentship** **Summer 2020**  
**School of Mathematics, University of Bristol**

*A Phase Space Analysis of 2 Degree-of-Freedom Hamiltonian Systems in Chemical Reaction Dynamics.*  
Supervisors: Dr. Shibabrat Naik, Prof. Stephen Wiggins  
Github repository: <https://github.com/samspedding/hamiltonian-systems>

- Used Numpy and Scipy Python libraries to conduct a numerical analysis of a variety of Hamiltonian systems with applications in isomerisation dynamics, computing statistical-mechanical quantities to compare with theory.
- Used Matplotlib library to display high-dimensional data in new and insightful ways, including phase-space colour maps and animations of trajectories.
- Presented findings in a fifteen minute group presentation. Learnt a lot about communicating mathematical concepts to relative non-specialists and organising a talk as a group.

## **ADDITIONAL SKILLS**

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**Software:** 3 years’ industry experience with modern C++. Confident using Python for various scripting, scientific computing and data visualisation purposes. Experienced user of git, Azure Devops, and Jira. Proficient in L<sup>A</sup>T<sub>E</sub>X and MS Office.

**Languages:** Intermediate level Spanish (A level).

## **INTERESTS**

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- Blues and jazz pianist who occasionally dabbles in classical piano.
- Fascinated by philosophy, history and politics, especially that which focusses on global power structures and separation from our origins as animals.