

# Thomas Bower

bower.t@protonmail.com | +44 7951 886027 | Bridgend, South Wales, UK

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Seasoned software developer with more than 12 years of experience. Committed to providing high-level solutions that drive business and provide outstanding cost efficiency. Seeking an exciting position with the responsibility of mentoring and training others in best practices.

## EXPERIENCE

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### Senior Software Developer

Weaver Labs, London

July 2021 – present

- Telecoms sector - B2B private 5G Network as a Service provider in commercial and research sectors
- Contributed to systems architecture, design and implementation
- Primarily working in Python, but also Javascript frameworks including NodeJS and NextJS
- Working using AGILE framework, using an incorporated CI approach to repository management
- Development of an asynchronous socket communication Python library - WireMQ
- Contributed to project REASON, delivered a distributed monitoring system for 5G network components using WireMQ, Prometheus, InfluxDB, Grafana, Docker, K8s
- Contributed to project ARANA, delivered a full stack solution for fan engagement to promote the use of the private 5G network, including mobile app development
- Contributed to project REASON+ as a cybersecurity specialist, implemented security policy, CI/CD jobs for automating tests and code compliance checks
- Contributing to project ARANA+, where I am responsible for upgrading from a proof of concept to a production grade fan engagement mobile app

### Woodworking

*Self-employed, Bridgend*

January 2015 – present

- Creating wooden crafts including picture frames, clocks, furniture, and jewellery
- Selling crafts online
- Customer engagement with bespoke orders

### Research Associate

*Cardiff University, Cardiff*

January 2019 – July 2021

- Improved collaboration of research group by implementing shared codebases on GitLab
- Improved modularity and maintainability of codebase by splitting large components into RESTful microservices deployed using Docker Swarm
- Reduced maintenance workload of microservices by automating TLS certificate generation and automating API documentation generation
- Automation in compliance for building information modelling standards
- Communication with industrial partners
- Mapping and coding of compliance standards for construction projects
- Designing and implementing systems for automatic compliance checking using ontology
- Natural language processing and fuzzy logic
- Increased awareness of project and ideas with Conference attendance and article publication

### Software engineer

*LUSAS, London*

January 2016 – January 2019

- Delivered soil structural modelling algorithms, allowing the company to expand into the geotechnical market
- Conducted primary experimental data to validate the algorithms, giving customers assurance of model accuracy
- Introduced a new method to derive soil parameters, making the user experience easier
- Coding in FORTRAN90 following the company's style guide
- Documentation of code and results
- Integrated with non-linear Newton-Raphson algorithm and iterative approach to converge on stable solutions
- Identifying convergence issues and optimising boundary conditions

## Cycle Courier

*Deliveroo, Cardiff*

January 2016 – January 2019

- Customer and client facing role
- Road safety and route planning
- Public engagement via online blog

## KTP Associate

*Cardiff University / LUSAS, Cardiff / London*

January 2013 – January 2016

- Knowledge Transfer Partnerships facilitate the transfer of research from academic institutions directly into industry.
- Literature review of subject area
- Development of two advanced soil models: Duncan-Chang and Hardening Soil for use in LUSAS Finite Element Analysis software
- Development of a new soil-fibre micro-mechanical model
- Presenting at national and international conferences
- Supervising two MSc students and ensuring reliable experimental data
- Managing budget and training
- Teaching and assessing 4th year undergraduate programming course

## Computer Technician

*Self-employed, Hemel Hempstead*

2012 – 2019

- Established a small computer repair business. This involved market research, advertising, and client tuition.

## EDUCATION

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### PhD: Constitutive Modelling of Soils and Fibre-Reinforced Soils

2013 - 2017

Cardiff University

### MEng in Civil Engineering 1st class honours

2009 - 2013

Cardiff University

### A-levels

The Hemel Hempstead School

2002 - 2009

|             |                     |                        |         |                  |
|-------------|---------------------|------------------------|---------|------------------|
| Mathematics | Further Mathematics | Information Technology | Physics | Music Technology |
| A           | B                   | A                      | B       | A                |

## SKILLS

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Python, Flutter, Full stack + API, Docker, Testing, FORTRAN90, MATLAB, MathCAD, HTML/CSS/Tailwind, NodeJS, MongoDB, SQL variants, LUSAS, Topbraid, Revit/AutoCAD, SketchUp, LATEX, Prezi, MS Office, Linux, Time management, Teamwork, Project management, Enterprise integration patterns

## PUBLICATIONS

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**Madhukumar, H., Bower, T. A., Vasilakos, X., Ullauri, J. P., Lema, M and Simeonidou, D** (2024). A Scalable and Distributed Hierarchical Architecture for Network Monitoring-on-Demand. *3rd International Conference on 6G Networking (6GNet), Paris, France*

**Breher, K., Terry, L., Bower, T., and Wahl, S.** (2020). Choroidal Biomarkers: A Repeatability and Topographical Comparison of Choroidal Thickness and Choroidal Vascularity Index in Healthy Eyes. *Translational Vision Science & Technology*

**Bower, T. A., Jefferson, A. D. and Cleall, P. J.** (2020). A reformulated hardening soil model. *Proceedings of the ICE - Engineering and Computational Mechanics*

**Bower, T., Jefferson, A. D., Cleall, P. and Lyons, P.** (2016). Modelling soil-fibre composite behaviour using a micromechanical approach. *7th European Congress on Computational Methods in Applied Sciences and Engineering, Crete, Greece, 5 - 10 June 2016*

**Bower, T., Jefferson, A. D., Cleall, P. and Lyons, P.** (2016). A micro-mechanics based soil-fibre composite model for use with finite element analysis. *UK Conference of the Association for Computational Mechanics in Engineering, Cardiff, UK, 31 March - 01 April 2016*

## AWARDS

**Institute of Civil Engineers - Telford Premium Award** – for paper: A reformulated hardening soil model

## INTERESTS

- Carpentry and woodworking
- Piano, organ, bass guitar, electric guitar, banjo, mandolin, harmonica
- Table tennis
- Cycling
- Hiking
- Surfing, bodyboarding, skateboarding, snowboarding
- Duke of Edinburgh Gold award
- Footpath clearing with the Pencoed Trailblazers