# Matthew Gerring

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**PROFILE**

Expert programmer of scientific software and team lead.
Experienced with developing software for a wide range of scientific projects helping researchers deploy software solutions. Someone that makes new ideas happen. Track record of delivering complex and demanding projects on time, to budget and with a high quality level.

**KEY SKILLS**

**Stateless microservices on cloud platforms. Expert architect and programmer. Interacting with and understanding technical requirements.**

**Java: Spring Boot, Collections and concurrency, AMQ, Kafka, Swing, Temporal, SWT/RCP and many other technologies.**

**Python: numpy, scipy, scikit learn, Kafka client, others**

**Web fronted: Typescript (Angular), SQL and HTML5.**

**TDD: JUnit, Pytest, Cucumber, Squish, Selenium, many others**

**EDUCATION**

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| MEng hons Birmingham University<br>Chemical Engineering | 1993-1998 |
| Diploma Industrial Studies | 1996 |

**CAREER HISTORY**

August 2020 - Present

**Jackson Laboratories (www.jax.org)**
***Scientific Software Engineer and Senior Manager Computational Sciences***

Working as a scientific developer and senior manager for a range of projects in Java, Python, R and Typescript. Projects: Geneweaver: (geneweaver.org) a product linking genes and variants between species using a graph database (Neo4j). Cloud Image Tools: a web-based product which allows different image algorithms to be run on large (~40Gb) remote images and the results to be visualized. This product is cloud based (Kubernetes) and uses Temporal (temporal.io) to scale analysis workflows, for example finding cell walls and nuclei, cropping slides, a deep learning model to categorize apparent cell age. Cube: A suite of data analysis applications and pipelines also using Temporal including a meta-analysis algorithm for the Mouse Phenome Database deployed on Kubernetes and using Temporal. Many projects are not open source but the geneweaver artifacts and source bundles are available:
https://mvnrepository.com/artifact/org.geneweaver

October 2017 – June 2020

**Halliburton International Inc. (www.halliburton.com)**
***Scientific Software Engineer and Development Manager***

Assisted Lithology Interpretation (ALI) was a new build product using supervised machine learning to predict rock lithology. I was responsible for building a new team and leading it also for coding new Java microservices using Spring Boot and Docker. We used AWS and Azure with Kubernetes in a microservice architecture. We created stateless microservices using Java-Spring, Python and utilized technologies like Typescript, R and Scikit learn. Team management duties as well as technically creating and coding microservices (20% management, 80% technical, later I was promoted to 80% management – however I prefer a lower management commitment).

The team was designed to be a cross functional vertical team with front end developers, full stack engineers, data scientists, devops, QA / testers. The team worked with AWS, Azure and other cloud vendors and we used open-source software from Apache and Eclipse Foundation.

Apart from ALI, microservices of various types and languages were created. Python with scikit learn machine learning libraries played a critical role in delivering some microservices as well. This work was private source.

February 2009 - September 2017

**Diamond Light Source Ltd. (www.diamond.ac.uk) and ESRF**
***Team Lead***

A senior software development position at the United Kingdom's largest science project. Responsible for leading and developing Java and Python products including servers and thick clients in teams of 4 to 12 developers. Working on scalable scientific software.

I headed software development technically writing a large proportion of the new products. Highlights: a new scanning algorithm based around AMQ with python components, a brand new data analysis platform called DAWN (dawn.org) with more than 300 citations, new image processing pipelines for fast detectors, analysis of microscope image stacks, deployment of a new pipeline tool on clusters including image processing mathematics (nD analysis pipelines).

Responsible for running stand-ups and sprints, planning for future features, analysis of requirements, application architecture, and ruthlessly applying TDD methodology (while trying to ensure that everyone enjoyed themselves). Agile development practices used based on Scrum and DSDM Atern. Introduction of new technologies such as AMQ, IoT libraries and Redis.

Started new open source projects including:

- github.com/eclipse/january
- github.com/eclipse/scanning
- github.com/eclipse/richbeans
- github.com/eclipse/dawnsci

(Worked for sixteen months at the ESRF in Grenoble France during this position as part of the DAWN collaboration.)

June 2001 – December 2008

**EASA Ltd. (www.easasoftware.com)**
**Senior Software Developer**

A senior software development and lead position at a small start-up company based around Java and C++ technologies, JSF, Tomcat and a Swing thick client. The business is software consulting and sells a product which I jointly started up and took to a successful position. EASA is still flourishing, I do not have a financial stake in it.

Responsibilities: software development and user interface design, pre-sales support, managing sub-projects, technical input to business negotiation, engineering design and validation. User interfaces created using Java-Swing, deployed using Java web start, also web applications in JSF deployed in various containers including Tomcat/JBoss. Communication with the server via HTTP/servlets.

Some fun and interesting applications including: A model for separator design for a leading Oil and Gas company. A series of applications for modelling air flow in factories, hospitals, classrooms and car parks using CFD for the HVAC industry (popular in Scandinavia). An application for dental implant fitting using an ANSYS model. A database backed neutron model for use in fusion research at ITER. Design of tundish for steel manufacture using CFD. A middle-ware application for the London Metal Exchange. Risk estimation software for a leading insurance company.

A version of agile development used. TDD development practices used. Accurev and SVN source code control. JUnit for testing and Ant for product integration (Maven was still just happening then.)

June 1998 – June 2001

**ANSYS Ltd.**
**Junior Software Developer**

Software developer for software using computational fluid dynamics software. Responsible for developing various user interfaces in Java Swing and other technologies. Worked with finite element analysis solving the Navier-Stokes equations of fluid flow. Meshing and visualization were also important.

July 1997 – September 1997

**Monsanto Plc.**
**Research and Development Engineer (vacation student)**

Developing a system for processing waste product from extracting alginates for use the food industry. Responsible for designing and commissioning a new pilot system.

August 1995 – August 1996

**Great Lakes Fine Chemicals plc,**
**Process Design Engineer (sandwich student)**

Process design engineer designing and commissioning multi-purpose batch plant. Diploma in industrial studies.

**MAJOR ACHIEVEMENTS**

- A graph database for Jackson Laboratories which scales to the whole human genome and its known variants.
- First microservices designed and deployed at Halliburton for the geological space. Scalable machine learning algorithms taken to MVP and installed on many customer clouds.
- Architecture for Data Acquisition version 9 used at Diamond Light Source. Moved the server to SOA, breaking up into many separate services. Managed a large multi-disciplined team.
- Open source committer on many projects and starting new projects.
- Creation of a new data analysis workbench for use in Synchrotron facilities called DAWN www.dawnsci.org
- Jointly started the Eclipse Science Working Group science.eclipse.org
- Experienced speaker at conferences in Europe and US
- Software architecture for the EASA software including application authoring system and invention of new software.
- US Patent (2002) and UK Patent (2003)
- Creation of a custom code ability, which enabled EASA to deploy features on the fly, commercially most successful feature.
- A web service to excel which supports VB and multiple web clients by running copies of desktop excel in a pool
- Delivering a companywide software system, with hundreds of users, to Proctor and Gamble.

**OTHER SKILLS**

Courses: Java Hands On, Java Swing Technology, OO Design Patterns, C++ Hands On, UML diagramming, Software Project Planning and Management, Java for Distributed Systems, RMI JMS JNDI.
Registered Agile Practitioner

Engineering Software CFX, Fluent, ANSYS, ABAQUS, MathCAD, MatLab, Autosketch, Patran (Three dimensional engineering packages.)

**ACTIVITIES & INTERESTS**

Folk music and dancing, Diving, Skiing, Judo, Cricket, Mountain biking, Camping/fishing/outdoors, Wildlife, Writing Science Fiction Books.