

Contact

www.linkedin.com/in/mgwynne
(LinkedIn)
github.com/MGwynne (Other)

Top Skills

Machine Learning
Combinatorial Optimization
Data Science

Languages

English (Native or Bilingual)
German (Elementary)

Honors-Awards

Best Paper Award

Publications

Generalising and Unifying SLUR and Unit-refutation Completeness
Generalising unit-refutation completeness and SLUR via nested input resolution
On SAT representations of XOR constraints
Towards a better understanding of hardness
Advanced Encryption Standard II benchmarks

Matthew Gwynne

Principal Software Engineer (Machine Learning) at Observe, Inc
London Area, United Kingdom

Summary

A professional research data-scientist with experience in big tech, commodities, and banking - and a strong academic background. I enjoy working on and leading research and projects with a strong commercial focus, involving mathematical modelling, machine learning, algorithmics, mathematics, and optimisation.

My skill set is in the intersection of machine learning, formal methods, operations research and software engineering - and I tend to work in roles which incorporate applied research alongside engineering end-to-end delivery (full stack DS, research developer, machine learning engineer etc).

My academic background is in satisfiability and constraint programming / combinatorial optimisation (PhD), and since then I've been working in machine learning and optimization / operations research. I have years of experience in a variety of languages and technologies (C#, Python, Scala, Spark, Hadoop, AWS, etc), both in professional, personal and open-source projects.

Experience

Observe, Inc.
Principal Software Engineer (Machine Learning)
August 2023 - Present (1 year 11 months)
London, England, United Kingdom

Meta
(Staff) Research Data Scientist
November 2018 - August 2023 (4 years 10 months)
London, United Kingdom

J.P. Morgan
Data Scientist Manager, VP
November 2017 - November 2018 (1 year 1 month)

London, United Kingdom

Advanced Algorithmics Limited

Director

December 2016 - October 2018 (1 year 11 months)

HSBC Global Banking and Markets

Data Scientist (Contractor)

March 2017 - November 2017 (9 months)

Canary Wharf

BP - Integrated Supply and Trading

3 years 7 months

Data Scientist

August 2015 - March 2017 (1 year 8 months)

Canary Wharf

- Researching, building, deploying and maintaining predictive analytics for ship tracking / global flows (Scala, Spark, MLLib, Python/scikit-learn, R).
- Building (and leading) projects involving classification, regression and clustering models (probabilistic + non) for times-series + geospatial data (vessel tracking, weather, pricing + fundamental data) on large (scale) + small (missing data, sample size issues) problems / datasets.
- Presenting and consulting work with well engineers on use of machine learning in asset discovery (optimisation under uncertainty etc).
- Technical and professional mentor for multiple new-starters, as well as involvement/input over last 3 years in BP interviews and recruitment.
- Provided input on design/architecture for cloud-based data-lake platform (Spark, Hadoop security, ...)
- Working directly with front-office business users and senior leadership + presenting regularly.

Risk Developer

September 2014 - July 2015 (11 months)

Canary Wharf

- Supported + maintained core stress-testing, HistSim, VaR models (C#, MatLab, Excel, Python, R).
- Developed core ETL and scheduling tools for risk + finance (C# / EF / Rx / MSTest / Moq, TSQL).
- Core contributor in movement of infrastructure to AWS cloud (C# / ASP.NET MVC, EC2, Unix).

- Developed pre-trade credit-risk tool for front-office traders (Excel, C#).
- Implemented analysis tool for multi-gigabyte test-result sets (Python + Pandas).
- Implemented reporting visualisations for risk and finance daily reporting (Tableau).
- Advocate of Apache Spark within team (developed proof of concepts).
- Formally recognised as a specialist in "Big Data technologies" and "Combinatorial Optimisation" within BP (involved in group level Data Lake architecture discussions).
- Training: Oil Trading and Marketing; AWS Cloud School; MatLab Risk Analytics.

Analyst Developer

September 2013 - September 2014 (1 year 1 month)

Canary Wharf

- Developed analytics and data visualisation tools using Python (scikit-learn, numpy and pandas), Hadoop (+ Hive, Impala, etc) and Javascript (d3.js + several WebGL libraries) for Front Office.
- Setup + maintained small Spark cluster for PoC machine learning work (Spark, Python, Unix).
- Developed query tool over large geospatial datasets (Python, Impala, Hive, C ++).
- Developed learning and development mobile app with HTML5, CSS3 and Javascript (jQuery + d3.js).
- Developed numerous network and data gathering tools in C#, Python and Java.
- Developed proof of concept People Finder tool using SOLR and Neo4J graph database tool.
- Core member of team deploying a large third party data integration and analytics vendor across IST.
- Presented numerous presentations to high-level leadership teams within IST.
- All projects involved significant collaboration with parties across the organisation (including globally).
- Training: Trading Foundations; Hadoop Admin; Guerilla .NET developer; Certified Scrum Master.

Swansea University

PHD Researcher

January 2010 - September 2013 (3 years 9 months)

Swansea University

Investigating boolean functions representations, their complexity and uses.

Main research interests/area: satisfiability and constraint satisfaction, constraint modelling and power of representations (knowledge compilation/compression).

Teaching:

CS-170 Modelling Computer Systems (10/11-12/13)

CS-270 Algorithms (08/09-12/13)

CS-175 Modelling Computer Systems 2 (11/12)

CS-130 Academic Tutorials (10/11-10/11)

CS-221 Functional Programming I (08/09-09/10)

CS-332 Designing Algorithms (08/09-09/10)

Jane Systems Ltd

Software developer

April 2007 - May 2009 (2 years 2 months)

Worked as a part-time software developer for the company for several years while studying at university.

- Developed Web Applications using Sharepoint and VB.NET
- Helped convert main VB6 application to modular VB.NET system
- Worked with Windows 2003 Server, Visual Studio 2003/2005, Sharepoint Services 2003/2007
- Gained an insight into financial and human resource software.

Factorial Systems

Software developer

August 2006 - September 2006 (2 months)

Worked as a full time developer on a summer placement after my first year of university.

- Developed demo software for the company using SQL Server and .NET (C#)
- Worked with Windows 2003 Server, MS SQL Server 2005, Visual Studio 2003
- Gained an insight into project and time management

Education

University of Wales, Swansea

PhD, Computer Science · (2010 - 2013)

University of London

BSc, Mathematics and Economics · (2023)

University of Wales, Swansea

MRes, Logic and Computation · (2008 - 2009)

University of Wales, Swansea

BSc, Computer Science · (2005 - 2008)

Neath Port Talbot College

A Level Mathematics, Physics, Chemistry, Computing and AS Level Further
Mathematics · (2003 - 2005)