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Programming

Python ●●●●●
JavaScript ○●●●●
TypeScript ○●●●●
C ○●●●●
PHP ○●●●●
C++ ○●●●●

Python Libraries

chess ●●●●●
pytest ●●●●●
polars ○●●●●
fastapi ○●●●●
pygame ○●●●●
pandas ○●●●●
pydantic ○●●●●
polyfactory ○●●●●
sqlalchemy ○●●●●
aws CDK ○●●●●

Python Ecosystem

uv ○●●●●
mypy ○●●●●
pip ○●●●●
poetry ○●●●●
alembic ○●●●●
conda ○●●●●

Databases

Snowflake ○●●●●
PostgreSQL ○●●●●
MySQL ○●●●●
Redis ○●●●●
SQLite ○●●●●
SQLServer ○●●●●
DynamoDB ○●●●●

Infrastructure

Docker ○●●●●
AWS ○●●●●

Distributed Systems

Dask ○●●●●
AirFlow ○●●●●
Celery ○●●●●

Dr. Joshua Blinkhorn

Software Engineer and Computer Scientist

LinkedIn profile Academic CV Publication list GitHub profile

Profile. I am a trained mathematician working as a software engineer, specialising in the Python programming language. Starting in BASIC on the Commodore 64, I have had a lifelong relationship with computer programming and mathematics. I hold a PhD in proof complexity, at the intersection of logic, artificial intelligence and computational complexity. I specialised in quantified Boolean formulas, which describe two-player games with complete information, such as chess and Go.

Commercial Software Engineering

Software Engineer - Schroders (FTSE 100 company)

December 2023 - Present

Working for the UK's largest asset manager requires excellence in all aspects of the software development cycle. My responsibilities include:

- design and implementation of big data ETL data pipelines
- leading the development of an AI chatbot backend API
- deployment of AWS infrastructure and ephemeral environments
- repository setup and dockerised CI/CD pipeline configuration
- coordination of daily standups and production releases
- direct communication with business analysts and stakeholders
- mentorship of an apprentice software engineer

Python Developer - BMLL Technologies

February 2023 - November 2023

I worked in the exchange data team under the Agile methodology:

- delivered a complete financial index data product
- flawlessly upgraded the codebase from Python 3.8 to 3.11
- diagnosed and corrected race conditions in AWS spot termination
- maintained and extended the C++ codebase

Junior Python Developer - BMLL Technologies

January 2022 - February 2023

- built ETL pipelines for a sparse time-series database
- delivered the Aquis Stock Exchange data parser
- handled major exchange protocol upgrades seamlessly
- created custom database seeding for local integration testing

Freelance Software Engineering

SingleView Data Insights Application Completed November 2021

A data insights application written in HTML/CSS/JS, with a PHP/MySQL backend, and a shell-scripted installation procedure.

Arithmetic Learning Program Completed April 2016

A visual children's arithmetic game written in C++.

Postage Quoter Completed July 2014

A Windows GUI application for calculating postage costs.

Power Stats Map Completed March 2014

A JavaScript map widget reporting live statistics for a client's website.

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Scripting

SQL ○ ● ● ● ●
Bash ○ ○ ● ● ●
LaTeX ○ ○ ● ● ●
HTML ○ ○ ○ ● ●
CSS ○ ○ ○ ○ ●

Operating Systems

Mac OS ● ● ● ● ●
Windows ● ● ● ● ●
Ubuntu ○ ● ● ● ●
Arch Linux ○ ○ ○ ● ●

Code Essentials

git ○ ● ● ● ●
emacs ○ ● ● ● ●
VSCode ○ ○ ● ● ●

Platforms

GitHub ○ ● ● ● ●
JIRA ○ ● ● ● ●
ADO ○ ○ ● ● ●

Mathematics

Logic ● ● ● ● ●
NT ● ● ● ● ●
Algebra ● ● ● ● ●
Analysis ○ ● ● ● ●
Statistics ○ ○ ● ● ●

Spoken Languages

English ● ● ● ● ●
German ○ ○ ○ ● ●

Musical Instruments

Guitar ○ ● ● ● ●
Drum Kit ○ ○ ● ● ●
Bass ○ ○ ● ● ●
Voice ○ ○ ● ● ●
Piano ○ ○ ○ ○ ●

Academic Record

For complete details, see my academic CV and online publication list. Here are some of my most notable academic achievements:

- awarded Best Paper at the flagship A-ranked conference *SAT*
- authored publications at A*-ranked conferences *IJCAI* and *LICS*
- published six journal articles and eleven conference papers
- gave invited talks at IMSc Chennai, India and TU Wien, Austria
- gave a conference talk at MIT, Boston, USA
- presented research at nineteen venues in six different countries

Postdoctoral Research and Lecturing - University of Jena, Germany *December 2019 - September 2021*

- wrote and delivered a semester of lectures on proof complexity
- oversaw postgraduate modules on software engineering
- taught algorithms for cryptography and Boolean satisfiability
- supervised a postgraduate student through to master's thesis
- conducted research into open problems in proof complexity

PhD in Theoretical Computer Science - University of Leeds, UK *September 2015 - December 2019*

- assisted undergraduate modules on procedural programming
- accepted without master's due to outstanding bachelor results

BSc Mathematics (*first class*) - Open University, UK *September 2008 - June 2015*

- obtained 98% (coursework) and 96% (examinations) average marks
- scored high above first-class honours threshold (80%)
- demonstrated excellent self-motivation and self-study skills

Music and Music Technology

Prior to my completing my PhD I was employed in the music industry. I worked extensively as both a musician and a sound engineer.

- engineered live front-of-house and onstage sound
- delivered in stressful and time-critical environments
- produced, engineered and mixed multi-track studio recordings
- enabled musicians to capture their best performances
- performed as guitarist, drummer, percussionist, bassist and vocalist
- self-taught on all instruments

Personal Interests

I love to write music; you can hear some of my acoustic recordings online. Over the years I have performed in ensembles ranging from jazz quartets to rock bands, through to Ceilidh bands and solo concerts.

I enjoy hiking and recently trekked the Peaks of the Balkans trail over two weeks in Albania, Kosovo and Montenegro.

I am a keen runner; I have completed two half-marathons. I play competitive chess and recently won first place in the intermediate section of the Malahide Millennium Tournament. I train chess with a spaced-repetition coaching tool that I wrote in python.