joshuablinkhorn@
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Programming

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

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 JavasScript 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 I 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.