Matthew Lewis

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EMPLOYMENT HISTORY

- **Skyral (formerly Improbable Defence)**   2020 - Present
  Senior Software Engineer
    - **Python development**: Created a portfolio of agent-based models to aid NATO aligned organisations plan and prepare for sub-threshold warfare. Functionality included simulating civilian migration patterns, impact of infrastructure outages and the spread of misinformation.
    - **Data pipelines**: Development of an extensible data pipeline using Luigi that produces a combination of synthetic and real world human geographic data. Widespread internal adoption has led to the product being commercially licensed for use by external customers.
    - **Geospatial datasets**: Processing and extraction of geospatial data with PostgreSQL and PostGIS. Use of GeoPandas and QGIS for analysing and visualising model outputs.
    - **Model optimisation**: Delivery of high performance C++ model components to meet customer requirements for large scale real-time simulations of traffic on national road networks.

- **Football Radar**   2018 - 2020
  Engineering Manager
    - **People management**: Led the Football Modelling team. Managed a team of software developers, data scientists and system administrators.
    - **Product delivery**: Worked with the team to deliver a variety of new and upgraded predictive football models. Bespoke solutions for high value tournaments (Champions League, 2018 World Cup).
    - **System design**: Migration away from legacy monolith to new Scala services.
    - **Project management**: Managed projects using lightweight kanban. Encouraged delivering minimal viable products, with tight feedback loops and a philosophy of continous improvement.
    - **Infrastructure**: Cut annual AWS costs by £100k+ through architectural changes, reserved instances and right-sizing.

- **Football Radar**   2016 - 2018
  Software Engineer
    - **Scala development**: Delivery of company strategic next generation model, predominately written in functional Scala using Akka and Finagle. Designed and built a number of backend services, scheduled jobs, debug pages and integrations with trading systems.
    - **GPU programming**: Enabled in-play football simulations by proposing and leading project to rewrite core monte-carlo simulator in C++/CUDA. Completion of the GPU accelerated simulator enabled new trading opportunities due to lower latencies.
    - **Verification and testing**: Improved speed, usability and affordability of AWS based model backtesting infrastructure through simplification, increased parallelism and performance profiling. Outcomes included a reduction in the runtime of certain model verification jobs from 2 weeks to under 24 hours.

- **UBS**   2011 - 2016
  Software Engineer
    - **Java development**: Backend services for managing data that required long term storage.

EDUCATION

- **University of Bristol**   2008 - 2011
  2:1 Computer Science BSc (with Hons)

TECHNOLOGIES

- **Languages**: Python, Scala, SQL   **Tools**: AWS, GCP, Linux, Docker, Kafka, Terraform