Reed Roberts
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PROGRAMMING SKILLS

- **Languages**: C++, Python, SQL

- **Technologies**: AWS Stack, Kafka, SQL/NoSQL databases, Web Platforms and API Gateway Services, Linux

EXPERIENCE

- **Cirdan Capital** — London, England
  Senior Quant Developer — *2021 - Present*
  - **Structured Product Pricing Platform**: Lead a team working closely with trading and risk management teams to architect a platform for realtime pricing of structured products. Created and lead the development of an ETL platform to schedule snapshots of market data (Prefect). Oversaw the development of connectors for relevant market data via Refinitiv, GS, Bloomberg and Interactive Brokers (Asyncio, FastAPI, Websockets). Created an ETL job system for normalizing and marking volatility surfaces, forward curves, equity spots, projected dividends, repos and correlation matrices. Worked closely with market leaders in the space (Numerix) to create and implement financial algorithms. Managed relationships with stakeholders, drove weekly meetings, requirement gathering and planning.
  - **Auto-Hedging Platform**: Developed a serverless API for the generic hedging and book keeping Cirdan's products. Worked across front office, middle office and back office teams to implement hedge calculators, controls, external reconciliation and settlement.
  - **Product Lifecycle Management**: Built out the central product management database which formed the spine of the company's data capabilities (Postgres on AWS RDS). Exposed the database via Chalice API on AWS Lambda, using SQLAlchemy. Implemented atomic and idempotent CRUD API functionality for complex relational data. Built scheduled and event-driven ETL (Cloudwatch, S3, SNS, Workmail triggered events).
  - **AWS Cloud Infrastructure**: Managed the migration of bare metal services to AWS with zero downtime (Docker, nginx, ECS/EC2/ECR, Cloudformation). Managed the full stack of AWS networking for the entire company including IAM, Security Groups, VPCs, Internet/NAT Gateways, Subnets and ALBs.
  - **BAU**: Experience on the ground making strategic and tactical decisions during market hours. Maintained the infrastructure of the entire publishing process; market data ingestion - pricing - and contribution to exchanges for all of Cirdan's products.

- **4Sight Imaging** — Manchester, England
  Software Engineer — *2017 - 2021*
  - **Machine Learning**: Introduced and implemented CNN technologies like YOLO for vehicle type and vehicle colour classification. Created data pipelines using the COCO API, DVLA databases, and our own internal API to quickly create, test, deploy, and iterate new classifiers. Experience with pyTorch and Darknet frameworks.
  - **Computer Vision**: Optimized novel high-performance OCR algorithms for ANPR. Implemented optical flow to measure and quantify traffic density. Familiarity with tracking algorithms, color theory, and image encoding as well as in-depth knowledge of optical physics. Heavy-use of OpenCV in both C++ and Python.
  - **Self-directed Research**: Lead the company's research and development to keep up-to-date with cutting edge machine learning and computer vision technology. Self-directed data collection, analysis and development of novel algorithms.
  - **Product Development**: Designed and engineered new software products from the ground up from research to sale.
  - **Core Development Methodology**: Experience including OOP, design patterns, systems design, databases, version control, DevOps and agile methodology. Language work predominantly C++.

- **Oxford Department of Plant Sciences** — Oxford, England
  Internship - Computational Biology — *Summer 2015*
  - **Software Project**: Developed a program named OrthoFiller. This project dealt with developing software for the bioinformatics community. This internship provided valuable experience with bioinformatics, the Python and software projects in an academic setting.

- **Petrotel** — Dallas, USA
  Internship - Cloud Migration — *Summer 2013*
  - **Web Design**: Assisted the company in its transition to Google Cloud Services.

Education

- **University of Manchester**   Manchester, England
  BSc. Physics With Honours; Specialized in computational physics   *2014 – 2017*
  - **Relevant Courses**: Computing and Data Analysis, 1st; Programming for Physicists, 1st; Computational Physics, 2:1; Object Oriented Programming, 1st; Lab Work (All Years), 1st
- **ACS International School**   Surrey, England
  International Baccalaureate; Higher: Math, Physics, Chemistry; Lower: English, History, Japanese   *2012 – 2013*

Personal

- **University of Manchester Gaming Society**   Manchester, England
  President   *2015 - 2017*
  - **Leadership**: Lead and grew one of the largest student societies at the University of Manchester with over 300 active members. Managed a team of 10 volunteers to organize weekly events. Under my management we secured financing and sponsorship, and organized events with over one thousand students in attendance.
- **Interests**: Astrophotography, Dungeons and Dragons, Cycling, Cooking

Projects

- **Electronic Simulation**: Designed a C++ program for the efficient simulation of complicated AC circuits.
- **Data Analysis**: Assisted in writing software in Python and Matlab to quickly perform chi-squared analysis of a dataset for the University of Manchester Physics Department.