William Matthews DPhil MEng

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SUMMARY AND OBJECTIVES

I am a curious and creative problem solver with a strong background in engineering, photonics, and software development, having earned both an MEng and DPhil from the University of Oxford. With my work I look forward to becoming an expert in any field I apply myself to, especially when both deepening and broadening my knowledge helps me solve hard technical problems. I enjoy building systems through a combination of tried and tested engineering practices and more exploratory research and development.

I am a self-taught (now professional) software engineer and for my career going forward I hope to continue tackling interesting problems. For my next role I seek a challenging and rewarding position where I can contribute to the development of sophisticated systems. I am eager to join a forward-thinking, technology-driven organisation where I can continue to grow, learn, and contribute meaningfully alongside motivated people.

As a team player, hard worker, and a lifelong learner I strive to make a lasting positive impact wherever I work.

EDUCATION

University of Oxford, University College October 2019 - December 2023
DPhil *Oxford, UK*

- Silicon Photomultipliers as Optical Wireless Receivers in Ambient Light. Supervisor Prof. Steve Collins.
- Published a total of thirteen papers, with one in draft. Presented at three conferences.
- Achieved world-record data-rates using a SiPM as a receiver with On-Off Keying and OFDM.
- Created a high-performance Monte-Carlo simulator of SiPMs in C++.
- Invented and optimised novel optics for solid-state solid angle filtering.

University of Oxford, University College Matriculated 2015 - Graduated 2019
First Class MEng Engineering Science *Oxford, UK*

- Mathematics and Statistics-dense course. Specialisms in Information (ML, Signal Processing, Communications), Robotics (Control, Planning, Machine Vision), Math, Plasmonics and Semiconductors.
- Earned a Scholarship for First Class performance.
- 3rd Year Projects: 'Control of an Ammonia-Based ESS' & 'Optimal FIR Filter Generation'.
- 4th Year Project: 'Graph Modulation: Ultra-efficient Communication and Storage for 6G Systems'. Supervised by Prof. Justin Coon.
- Created an 8 bit CPU with a team of two in Cadence Virtuoso.

EXPERIENCE

Avos Ltd. July 2023 - Present
Software Engineer *Cambridge, UK*

- Product-driven startup in business communications.
- Full stack software engineer with a focus on backend and R&D.
- Using Golang, Python (for R&D), PostgreSQL, k8s and React.
- Core responsibilities in NLP (mostly with LLMs), data curation, and retrieval.
- Experienced in image and text embedding, vector databases, search engines, and RAG.
- Developed entire pipelines for data ingestion, prompt construction, LLM output processing, and more.
- Became the go-to person for NLP and ML, and led the direction of the use of AI within the product.
- Read multiple papers a week and implemented research into the company's products where appropriate.
- Wrote recommendation systems to surface relevant information for each user.

- Additional responsibilities in code generation, CI, managing k8s infrastructure, owning multiple production services.

Oxford University Racing May 2019 - September 2020
Chief Software & Electrical Engineer *Oxford, UK*

- Managed a team of ten people. Led the development for key electric vehicle systems.
- Responsible for all low voltage electrical systems and software on the vehicle.
- Developed a continuous integration system for vehicle control unit software.

PrOXisense Ltd. July 2018 - September 2018, July 2019 - April 2020
Intern, Consulting Software & Electrical Engineer *Harwell, UK*

- R&D-driven startup in gas turbine sensors.
- Solely responsible for creating critical software to process sensor data, as well as processing raw signals for customer demonstrations, sensor calibration, and internal R&D use.
- Created a thermal simulation program to guide future thermal product sensor development.
- Using Kalman filters, improved sensor accuracy and precision for blade tip timing and clearance measurement by a factor of 200 through my own initiative.
- Processed and presented results to clients, leading towards two new contracts.

TECHNICAL STRENGTHS AND CAPABILITIES

Languages	Go, C++, Python 3, MATLAB, SQL, bash, Type/JavaScript
Markup	HTML, CSS, LaTeX
Workflow	zshell, tmux, vim, git, ssh, VSCode
Software	React, Simulink, KiCAD, FreeCAD, Solidworks, Wireshark, GIMP
Methods	Discrete and Continuous Signal Processing, Machine Learning, Optimisation, Statistics, Data Visualisation

Comfortable with Torch, Keras and Tensorflow.
Daily-drives GNU/Linux. Experienced at designing, building, and testing RF circuit boards, 3D printing.

HOBBIES AND INTERESTS

Running, Hiking, Squash, OpenStreetMap Contributor.
I enjoy fiddling with my blog (when I can find the time), and working on various software projects. I am a collaborator on the github.com/liushuangls/go-anthropic Go module and contribute to open source software often.

Additionally building a small CRUD app which uses computer vision to analyse receipts.

REFERENCES AND ADDITIONAL INFORMATION

References available on request. Additional information available on https://willmatthews.xyz.