

# William Matthews

DPhil MEng

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## 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 three more 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.

### 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.
- 4<sup>th</sup> Year Project: 'Graph Modulation: Ultra-efficient Communication and Storage for 6G Systems'. Supervised by Prof. Justin Coon.

## EXPERIENCE

### Avos Ltd.

July 2023 - Present

Software Engineer

Cambridge, UK

- Full stack software Engineer, responsible for R&D on a new product.
- Working with ML models.

### 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, among other circuits.

### PrOXisense Ltd.

July 2018 - September 2018, July 2019 - April 2020

Intern, Consulting Software & Electrical Engineer

Harwell, UK

- 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 custom thermal simulation package 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/C++, Python 3, MATLAB, SQL, Haskell, shell, PHP, Type/JavaScript,  $\LaTeX$ , CSS

### 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. Wrote an autograd from the ground up.

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

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## HOBBIES AND INTERESTS

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Fishing, Pool, Squash, Gym, OpenStreetMap Contributor.

Enjoys solving Project Euler problems, working on my blog, and other electrical/software projects.

Current reading in Compressed Sensing, Machine Learning, Statistics, and Derivative Pricing.

Attempting research into ML in my own time, with a goal to publish a paper in the field within two years.

## REFERENCES AND ADDITIONAL INFORMATION

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