

# William Matthews MEng

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## EDUCATION

### University of Oxford, University College

*DPhil*

October 2019 - July 2023

*Oxford, UK*

- Title: Free Space Optical Wireless Communications using Silicon Photomultipliers (SiPMs) as receivers. Supervised by 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

*First Class MEng Engineering Science*

Matriculated 2015 - Graduated 2019

*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.

*Software Engineer*

July 2023 - Present

*Cambridge, UK*

- Full stack software Engineer, responsible for R&D on a new product.
- Responsibilities in development of presence detection technology (ML).

### Oxford University Racing

*Chief Software & Electrical Engineer*

May 2019 - September 2020

*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.

*Intern, Consulting Software & Electrical Engineer*

July 2018 - September 2018, July 2019 - April 2020

*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

Tensorflow, Keras, React, Simulink, KiCAD, FreeCAD, Solidworks, Wireshark, GIMP

### Methods

Discrete and Continuous Signal Processing, Machine Learning, Optimisation, Statistics, Data Visualisation

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, Financial Markets and Derivative Pricing.

## REFERENCES AND ADDITIONAL INFORMATION

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