

# William Matthews MEng

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## EDUCATION

**University of Oxford, University College**  
*DPhil*

October 2019 - June 2023 (expected)  
*Oxford, UK*

- Title: Free Space Optical Wireless Communications using Silicon Photomultipliers (SiPMs) as receivers. Supervised by Prof. Steve Collins.
- 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 (private, access available on request).
- Published a total of twelve papers, with two more in draft. Presented at three conferences.

**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

**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**    C++, Python 3, MATLAB, SQL, Haskell, shell, PHP, JavaScript,  $\LaTeX$ , CSS, HTML

**Workflow**    zshell, tmux, vim, git, ssh, VSCode

**Software**    Tensorflow, Keras, 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.

## HOBBIES AND INTERESTS

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

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

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