

# William Matthews MEng

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## EDUCATION

**University of Oxford, University College**   October 2019 - April 2023 (expected)  
*DPhil*   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**   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.
- 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**   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**   C++, Python 3, MATLAB, SQL, Haskell, shell, PHP, JavaScript,  $\LaTeX$ , CSS, HTML  
**Workflow**   zshell, tmux, vim, git, ssh, VSCode  
**Software**   KiCAD, Tensorflow, FreeCAD, Solidworks, Simulink, 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 interests in Compressed Sensing, Financial Markets and Stochastic Calculus.

## REFERENCES AND ADDITIONAL INFORMATION

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

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