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# RUPERT HORLICK

## Education

- 2016 – 2017 **MEng Computer Science**, *University of Cambridge*, Distinction (predicted).  
Modules – Category Theory, Multicore Semantics & Programming, Advanced Functional Programming, A Mathematical Theory of Distributed Games and Strategies, and Interactive Formal Verification.  
  
Masters Thesis – Formalised the theory of Generalised Species in Homotopy Type Theory (HoTT) using Agda. In HoTT, types have an  $\infty$ -groupoid structure, so we developed the theory for groupoids internally, rather than building a Category Theory library.
- 2013 – 2016 **BA (Hons) Computer Science**, *University of Cambridge*, 1 (81%, Rank: 8/81).  
Dissertation – Built the Path ORAM cryptographic primitive in OCaml on MirageOS, to allow search over encrypted documents. I analysed the performance and security properties in the 10,000 word dissertation.
- 2007 – 2012 **Secondary Education**, *St. Paul's School*.  
A-Level Computing – A\*, Maths – A\*, Further Maths – A\*, Physics – A\*  
AS-Level Chemistry – A  
GCSE 10 A\*s, 1 A

## Experience

- Summer 2016 **Research Intern**, *Microsoft Research Cambridge*.  
Worked under Simon Peyton-Jones on a project to add functions and rich data structures to Excel. I prototyped an interesting new data structure and prepared demos. The demos were presented to project managers in Redmond and were well received. I also worked on a refactoring project, which picked out common expressions in cells using anti-unification (a dual to unification), and extracted them into a new function.
- Summer 2015 **Software Engineering Intern**, *Money&Co*.  
Automated a large Excel financial projection in Java, using object-oriented functors to handle dependencies between calculations. The software was deployed and is now used daily by a team of financial analysts.
- Summer 2014 **Software Engineering Intern**, *Money&Co*.  
Rebuilt the company website from scratch using Bootstrap, HTML, jQuery, Less, and Java. I designed standards and templates to make the project maintainable and expandable.

## Other

### Technical Skills

- Haskell, ML, and OCaml
- Java, C++, and C
- git, Octave, and  $\text{\LaTeX}$
- HTML, CSS, and Javascript

### Interests

- CSIA Level 1 Ski Instructor
- Bouldering
- Mindfulness
- Anarchist Theory