

Christian Pardillo Laursen

Education

- 2021-current **PhD Computer Science**, *University of York*.
- 2020-2021 **MPhil Advanced Computer Science**, *University of Cambridge*.
- Research project: Formalization of Hypermaps in Isabelle - 86%
 - Algebraic Path Problems - 78%
 - Automated Reasoning - 74.5%
 - Multicore Semantics and Programming - 75%
 - Mobile Robot Systems - 71.5%
 - Advanced Operating Systems - 74%
- 2017-2020 **BSc Computer Science**, *University of York*, First Class Honours (with Distinction).
- 3rd Year - 88.5%
- IET Award - Best Performance in the Third Year**
- 2nd Year - 85%
- Departmental Award for Best Performance in the Second Year**
- As part of my coursework, I undertook a large software engineering group project, in which I adopted the role of team leader.
- 1st Year - 78%

Experience

- 2020 - 2021 **Master's Project**, *University of Cambridge*.
- Formalization of Hypermaps in Isabelle/HOL*
- Project to translate the foundations of the four colour theorem Coq proof to Isabelle/HOL. For this, I am developing a theory of hypermaps, which are used in the Coq proof to reason about planar maps.
- June–August **Summer Research Project**, *YorRobots, University of York*.
- 2020 *Deductive Verification of Cyber-Physical Systems with Isabelle/UTP*.
- Supervisors: Simon Foster and Mark Post
- Developed a method for verifying a model of a robotic control algorithm and soundly refining it to a C program using the Isabelle proof assistant. As a case study, I formalized a model of a differential drive robot and verified collision avoidance for a simple, abstract navigation algorithm. During this project I also contributed to the development of Isabelle/UTP.
- 2019 - 2020 **Undergraduate Dissertation**, *University of York*.
- Integrating Theorem Proving with Computational Algebra Systems*
- Supervisor: Simon Foster
- Wrote a plug-in for the Isabelle theorem prover that allows it to obtain symbolic solutions to ordinary differential equations from the Wolfram Engine, which powers Mathematica. I have co-authored a paper based on this project together with another student and our supervisor, available at <https://arxiv.org/abs/2102.02679>

Skills

Programming	Familiar with most programming paradigms. Experienced with Standard ML, Haskell, Python, C, and a variety of other languages.
Formal methods	I have experience using the Coq and Isabelle/HOL proof assistants, as well as the FDR4 model checker and the Z specification language.
Computing theory	Experienced in the design and analysis of algorithms for a wide variety of applications, such as concurrency, automated proof, and machine learning.
Mathematics	Knowledge of category theory and related areas, obtained by self-study.
Linux	Adept at using the command line, together with an understanding of Linux and knowledge of advanced operating systems topics.
Languages	Fluent in Spanish, English, and Danish. B1 in German.