Pascal Lasnier

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EDUCATION

2024 – 2025 **Dept. of Computer Science & Technology, University of Cambridge** (MPhil)
Advanced Computer Science, MPhil with Distinction

Modules include Advanced Topics in Programming Languages, Advanced Topics in Computer Architecture, Advanced Topics in Computer Systems, Category Theory, Advanced Topics in Category Theory

2020 – 2024 **St. Catharine's College, Cambridge** (Undergraduate)
Engineering, Class I BA (Hons) & MEng with Merit (Class I project)

Aerospace and Aerothermal Engineering
Mechanical Engineering

2018 – 2020 **Richard Huish College, Taunton** (A-Levels)

Mathematics (A*) Computer Science (A*) Physics (A*)
Further Mathematics (A*)

2013 – 2018 **Bishop Fox's School, Taunton** (GCSEs)

7 Grade 9s (incl. Mathematics, Physics, Computer Science, and English Language)

PROFESSIONAL EXPERIENCE

Siemens Cambridge Software Internship | 2023 | C++, Rust (Wasm), TypeScript

- 12-week summer internship at Cambridge office;
- Contributed to Siemens NX C++ codebase;
- Worked with dev tools team:
  - Wrote VSCode extensions to integrate with source control;
  - Implemented asynchronous client-server system in Rust using WebSockets.

PROJECT EXPERIENCE

MPhil Research Project | 2024 – 2025 | HOL4 | *github.com/CakeML/cakeml/tree/master/compiler/scheme*

- Verified compiler for Scheme using CakeML:
  - Implemented semantics for and verified compilation between Scheme and CakeML;
  - Includes dynamic typing and first-class continuations, novel contributions to verified compilation;
  - Implemented and verified in HOL4;
- Individual project for MPhil.

4th year Engineering Project | 2023 – 2024 | Python

- Modelling of 1-D thermoacoustics networks:
  - Mathematical analysis of complex thermodynamics problem;
  - Involves constructing system as linear algebra problem using finite differences;
  - Implemented as Python API to generate solutions from thermoacoustic configuration and assumed partial solution;
- Individual project for MEng;
- Achieved First Class.

2nd year Engineering Robot Project | 2021 | Arduino C++ | *github.com/pylasnier/idp205*

- Software lead of six-person team group project to design an autonomous robot;
- Task involved navigation within an arena to search and collect small dummies;
- Developed an understanding of the limitations of microcontrollers and how to work around them, especially memory constraints;
- Learnt alternatives for debugging a microcontroller system when breakpoints, watches, and other debugging features are not available.

A-Level Computer Science NEA | 2019 – 2020 | C# | *github.com/pylasnier/functional-studio*

- Designed an explicitly simply typed pure functional programming language, featuring:
  - functions as first-class citizens and higher-order functions,
  - selection and recursion,
  - a basic type system including integers, floats, and bools (arrays are possible as indexing functions, but no polymorphism or type constructors other than function types);
- Developed an intermediate representation (IR) for this language;
- Built a translator, including a tokeniser and a parser that produce the described IR, featuring a rich error system including type checking;
- Packaged the whole interpreter with a simple IDE built using Windows Forms.

EXTRA-CURRICULAR EXPERIENCE

Captain of St. Catharine's College Badminton Club | 2023 – 2024

- Ensured smooth-running of regular college training sessions;
- Fostered inclusive and competitive environment for players to develop and grow;
- Primary responsibility for club finances and competitive fixtures:
  - Managed club budget ensuring responsible consumption and spending on shuttles and restrings;
  - Organised weekly fixtures for intercollegiate league and tournament matches;
- Oversaw success of the college team in intercollegiate competitions:
  - Maintanence of high league division (2nd of 7) with an almost entirely fresh roster of players;
  - High placements in the annual team elimination doubles tournament (Cuppers) – semi-finals in the mixed discipline, and champions in the women's discipline.

SKILLS AND ACTIVITIES

Languages	English (native), French (proficient, GCSE Grade 9)
Computing	Linux (NixOS) user, command line-confident Programming: Rust, C(++), Haskell, C#, SML/HOL4, Python, TypeScript
Music	ABRSM Grade 6 Piano (Merit) ABRSM Grade 5 Music Theory (Merit)
Sports	Badminton (University Development Squad and college captain) Olympic-style Weightlifting
Extra-curricular	Duke of Edinburgh Award: Bronze (2017), Gold (ongoing) Volunteer at local library (Taunton)

Referees available on request