

# TUOMAS LAAKKONEN

## PERSONAL INFORMATION

---

NAME: Tuomas Laakkonen  
PHONE: (+44) 7739522308  
EMAIL: [tuomas.laakkonen18@imperial.ac.uk](mailto:tuomas.laakkonen18@imperial.ac.uk)  
PORTFOLIO: [github.com/tuomas56/portfolio](https://github.com/tuomas56/portfolio)

## EDUCATION

---

Imperial College London <i>Undergraduate</i> (2018-present)	<ul style="list-style-type: none"><li>• BSc in Pure Mathematics</li><li>• Second year grade: 1st class (75.8% average).</li><li>• Current modules include Computational Linear Algebra, Numerical ODEs and Stochastic Simulation.</li><li>• Previous modules covered include Mathematical Computation (94%), Multivariable Calculus (93%), Linear Algebra (92%), Individual computational (99%) and Group (86%) Projects, and others.</li></ul>
Marlborough College, Wiltshire <i>Academic Scholar</i> (2013-2018)	<p>A Levels:</p> <ul style="list-style-type: none"><li>• 4 A*'s and 1 A in Mathematics, Further Mathematics, Computer Science, Physics and Chemistry respectively.</li><li>• A* in an EPQ related to Computer Science and AI.</li></ul> <p>GCSEs: 10 A*'s and 2 As including A*'s in Mathematics, Computer Science, and triple Science and an A in Electronics.</p>

## COURSEWORK AND PROJECTS

---

Individual Research Coursework <i>Imperial (2019)</i>	<ul style="list-style-type: none"><li>• Title: "Accelerating Gillespie's SSA with Dynamic Compilation"</li><li>• Created a compiler to accelerate chemical reaction simulations using Rust and LLVM. The speed mostly matched or exceeded the industry standard StochKit software.</li><li>• Achieved a 99% final score.</li></ul>
Group Research Coursework <i>Imperial (2020)</i>	<ul style="list-style-type: none"><li>• Title: "Coprime Density and the Reimann Hypothesis"</li><li>• Expanded and rewrote an existing paper on the probability of numbers being coprime. Contributed simulations of rate of convergence and an analytic proof of a main theorem.</li><li>• Achieved an 86% final score.</li></ul>
Computer Science Coursework <i>Marlborough College (2018)</i>	<ul style="list-style-type: none"><li>• Developed a computer algebra system in Haskell designed for use by A-Level students, supporting integration, differentiation, root-finding and statistical operations.</li><li>• Achieved a 100% final score.</li></ul>
Others (2016-2020)	<ul style="list-style-type: none"><li>• Personal project (2019) implementing the Quadratic Sieve in Rust, a modern fast number-theoretic algorithm to factorise integers.</li><li>• Project for the Engineering Education Scheme (2016) developing embedded indoor navigation systems in C++.</li><li>• Numerical Analysis Coursework (2018) implementing the QR and LU decomposition algorithms.</li></ul>

## PROGRAMMING LANGUAGE SKILLS

---

Rust  
*3 years experience*  
*10K+ lines written*

- Projects include: A prototype operating system with support for text output, keyboard input and basic user executables. A multithreaded path tracer for diffuse, metallic and glossy objects. A compiler for a simple systems programming language.

Haskell  
*3 years experience*

- Projects include: A computer algebra system, a regular expression engine, and a Lisp interpreter.

Python (2 and 3)  
*6 years experience*  
*10K+ lines written*

- Projects include: Compiler and interpreter projects for Lisp and a custom language, GUI and web-based projects, and creative coding.

Others

- JavaScript, including a database tool for searching past papers.
- x86 Assembly including a freestanding interpreter for Lisp.
- C and Go, including a prototype operating system project.

## INTERESTS

---

Programming (compiler and OS development in Rust), Digital Electronics (Arduino, 6502-based retro computers), Music (Flute, Saxophone) and Fencing.

**References available upon request.**