Tuomas Laakkonen

Personal Information

Name:	Tuomas Laakkonen
Phone:	(+44) 7739522308
Email:	tuomas.laakkonen18@imperial.ac.uk
Portfolio:	tuomas56.github.io/portfolio

Education

Imperial College London *Undergraduate* *(2018-present)*	• BSc in Pure Mathematics • Second year grade: 1st class (75.8% average). • Current modules include Computational Linear Algebra, Numerical ODEs and Stochastic Simulation. • Previous modules covered include Mathematical Computation (94%), Multivariable Calculus (93%), Linear Algebra (92%), Individual computational (99%) and Group (86%) Projects, and others.
Marlborough College, Wiltshire *Academic Scholar* *(2013-2018)*	A Levels: • 4 A*'s and 1 A in Mathematics, Further Mathematics, Computer Science, Physics and Chemistry respectively. • A* in an EPQ related to Computer Science and AI. GCSEs: 10 A*s and 2 As including A*s in Mathematics, Computer Science, and triple Science and an A in Electronics.

Coursework and Projects

Individual Research Coursework *Imperial (2019)*	• Title: "Accelerating Gillespie's SSA with Dynamic Compilation" • Created a compiler to accelerate chemical reaction simulations using Rust and LLVM. The speed mostly matched or exceeded the industry standard StochKit software. • Achieved a 99% final score.
Group Research Coursework *Imperial (2020)*	• Title: "Coprime Density and the Reimann Hypothesis" • 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. • Achieved an 86% final score.
Computer Science Coursework *Marlborough College* *(2018)*	• Developed a computer algebra system in Haskell designed for use by A-Level students, supporting integration, differentiation, root-finding and statistical operations. • Achieved a 100% final score.
Others *(2016-2020)*	• Personal project (2019) implementing the Quadratic Sieve in Rust, a modern fast number-theoretic algorithm to factorise integers. • Project for the Engineering Education Scheme (2016) developing embedded indoor navigation systems in C++. • Numerical Analysis Coursework (2018) implementing the QR and LU decomposition algorithms.

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.