

Durum Patientia Frango

Educational Background

2023 PhD in Theoretical Computer Science, *Current*.

Advisors: Prof Mark Batty & Dr Michael Vollmer

2019

2023

BSc (Hons), *University of Kent, Canterbury*.

Strong foundation in Java, OCaml, Python and C++ programming skills, writing algorithms, testing and refining code, and using version control software.

Theory of Computing combined maths, modelling systems and logical semantics to describe the mechanisms behind systems, and proofs to confirm their behaviour.

Internet of Things introduced me to basic electronics, development kits with development environments, and capturing and processing data through multiple devices communicating. This enabled me to begin designing my own bespoke PCBs containing circuitry I created, code software to utilise microcontrollers, and deep diving to low level architecture to create my own versions of various development boards. To this day, I still create my own bespoke circuits and software.

Computer Systems led to valuable insight about low-level architecture, assembly, and high-level abstract structures. Programming Language Implementation built upon this to enrich my knowledge covering compilers. Understanding the multitude of complex sections that build a compiler through extending the parser, AST, CFG and Optimizer has been invaluable for my research in software verification (x86) through formal semantics.

2022

2023

Formal Verification of a MIR-to-MIR Optimisation.

Advisor: Professor Mark Batty

The goal of my final year project was to provide a first step to proving the soundness of Rust's middle intermediate representation (MIR), starting with a modest optimisation. This required a grammar that represented a set of programs that the optimisation targets, a formal semantics and a formal definition of the optimisation and applying the semantics and definitions to prove the soundness of simplify branches. The project was shortlisted for the PLDI Student Research Competition and now forms the basis of my PhD.

2016

2019

College Qualifications, *Bexhill College*.

Applied Science	180 Credit Extended Diploma	Distinction*	Distinction*	Distinction*
Information Technologies	90 Credit Certificate		Distinction*	Distinction*
Mathematical Studies	Certificate			B
7 GCSEs	Grades 7-C			Maths 7, English B

Work Experience

2019

2022

Academic Ambassador, *University of Kent*, Canterbury.

2021

2022

Developer and Maintainer, *Smart Start Minds*, London - Remote.

In my second year of University, I was invited into a start-up research firm to join a team of developers which research and develop bespoke hardware and software to improve and treat mental health conditions. Our neurofeedback hardware, in the form of non-invasive imaging (fNIRS), measures changes in the concentration of oxygenated haemoglobin. I designed a prototype web-based (offline and online) system to be used globally, alongside our hardware, to detect lulls in mental concentration. The user is prompted to perform an activity and increasing concentration to above baseline. This world-leading treatment allows conscious alteration of the nervous system at an affordable cost. The prototype enabled the company to demonstrate the viability of an automated self-treatment method to businesses and funders interested in using or developing this technology. More importantly, it demonstrated accessible and affordable treatment globally, by allowing treatment of patients in low socio-economic areas and/or patients without access to in-person healthcare, internet, or medical funding.

2022

Rolls-Royce Data Scientist, *R² Data Labs*, London - Hybrid.

During my time at R² Data Labs, I was apart of a team that developed software for customers. This involved programming in python, learning data science methods and libraries, daily stand-ups, project management with GitHub, communicating requirements with the customer and getting feedback, and following an agile work method. Our projects consisted of making NLP based software to aid the customer in completing required tasks, and presenting that data in a human-readable way. We worked through prototyping stages over multiple weeks and developed the software into minimum-viable-product, which was then delivered to the customer.

Prizes

2023

Student Research Competition, *Shortlisted*, PLDI.

2022

Undergraduate of the Year 2022, *Winner*, Target Jobs.

2022

Kent Star, *Winner*, The University of Kent.

Conferences

2020

36th Chaos Communication Congress, Technology and Cyber Security Conference, Leipzig.

2023

PLDI, *Florida*, Invited - Student Research Competition, Poster Session.

Summer Schools

2023

OPLSS, University of Oregon.

2023

VetSS, University of Sussex.

References

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