



NAT KARMIOS

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Versatility has been the key to success in my career thus far, and moving from role to role has given me the chance to practice and hone this skill. My experience working alongside colleagues across varied departments, acquainting myself with large codebases, and finding creative solutions to problems for which I was only given a vague specification have helped me to become an agile and reactive problem solver.

I'm currently working on Gillian, a symbolic execution platform that's parametric across target languages. My primary goal is to improve the accessibility and user experience of the Gillian platform in order to broaden its user base, in the pursuit of real-world viability.

CORE SKILLS

- Deep understanding of symbolic verification
- OCaml proficiency
- Specialist courses in Hoare & separation logic
- Polyglot programming
- Full-stack development

EMPLOYMENT

Jul 2022 - present **Imperial College London** Research Engineer

- Applied principles of first-order logic, Hoare logic and separation logic to maintain and extend a symbolic execution platform for program verification
- Developed a visual debugger for symbolic execution and state matching, devising ways to clearly and concisely communicate symbolic traces to a user
- Demonstrated said debugger to a class of students, before guiding them through a lab with the tool

Apr - Sep 2021 **Netcraft** Software Developer

- Rapidly implemented new features, and amendments to existing features, to a monolithic code base
- Saw through direct deployments from code merge to live servers
- Optimised long-running processes for regular, automated use

Jul - Sep 2020 **AFS Technologies** Software Developer

- Used existing company workflow to clean and clarify an application's codebase
- Developed integration tests for said application using the Cypress framework

Aug - Sep 2019 **Bossa Studios** Software Developer (freelance)

- Rapidly developed a system to record analytics on a proprietary chat service
- Adapted said system to run 24/7 using cloud hosting services

Jul - Sep 2018 **Exceedra Software** Software Developer

- Learned to work in and around a large codebase
- Ported server-side scripts from a prototype stage to production, whilst adding features and documentation
- Integrated scripts into a Continuous Integration pipeline
- Assisted in maintenance and reconfiguration of densely populated fact-based databases

EDUCATION / QUALIFICATIONS

2018 - 2022 **Imperial College London**

MEng Computing First Class Honours

2011 - 2018 **Twyford C of E High School**

A-Levels Computer Science, Maths, Further Maths, Physics A* A* A A respectively

Miscellaneous

2016 Oracle Certified Associate Java SE 8 Programmer

PROJECTS

Gillian debugging Rich, visual debugging capabilities for Gillian, while maintaining its signature parametricity

Gillian A symbolic execution platform for program verification, parametric over target languages

Modulo A modular bot framework for Discord, written in Kotlin, with plugin support

REFERENCES

Philippa Gardner Employer reference
Imperial College London

Brendan Roberts Employer reference
AFS Technologies (formerly)

Katherine Welsford Personal Reference
Bossa Studios (formerly)

More information is available at
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Reference contact details available upon request