Constantin Petrescu

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EDUCATION

University of Surrey, *PhD Computer Science* 2019 – 2023

- Teacher Assistant for COM2040 (Further Programming Paradigms) and COM1029 (Software Engineering)
- Supervisor of Final Year Projects for BSc and MSc, and Research Summer Internships
- Organised weekly reading groups for the current research group

Royal Holloway, *MSc Information Security* 2018 – 2019

University College London, *BSc Computer Science* 2015 – 2018

PUBLISHED WORK

C. C. Petrescu, S. Smith, A. Butler, R. Giavrimis, S. K. Dash. **Bimodal Vetting of Integration Tests.** *Under review*

- An information-theoretic approach to detect what functions should be considered for integration testing
- We propose Natural Call Graphs, weighted graphs, to capture the relationship between the caller and the callee
- The tool achieves an accuracy of 80% on the vetted dataset.

C. C. Petrescu, S. Smith, R. Giavrimis, S. K. Dash. **Do Names Echo Semantics? A Large-Scale Study of Identifiers Used in C++'s Named Casts.** *Journal of Systems and Software from Elsevier*

- A technique to judge the fidelity of type conversions using the identifiers in an assignment
- A study of how explicit type conversions are used in Chromium
- This technique identifies 25.6% of incorrect implementations cases and 28.04% of imprecise names cases

R. Giavrimis, A. Butler, C. C. Petrescu, M. Basios, S. K. Dash. **Genetic Optimisation of C++ Applications.** *ASE Late Breaking Results Track. In Nov 2021*

- Data structures or library interfaces optimisations using a genetic algorithm
- Improvements for three open-source libraries up to 16.09% CPU usage, 27.90% runtime, and 2.74% memory

WORK EXPERIENCE

Research Intern, *UCL* Jun 2018 – Mar 2019

- Developed a neural network model to predict multiple tokens to improve code completion for C/C++; Data gathering was done through NLP by building a Clang plugin to process open-source projects

Software Engineer Intern, *Emotech* Jun – Sep 2017

- Improved the architecture of existing scraper to allow multiple scrapers to gather data at the same time. Increased the speed of scraping by 30x and added functionality to make it easy to run and manage
- Developed 4 full-stack websites, migrated and improved functionality, UI and security
- Set up a set of servers on AWS capable of auto scaling according to the usage demand

Software Engineer, *Freelance* Jan – Jun 2017

- Developed a responsive flight tracking website using agile principles. Front-end: HTML, CSS, JS, jQuery; Back-end: Node.JS, Express.JS; Database: MySQL; Data gathering was done using a Java web crawler

PROJECTS

Smarter Code Completion – UCL final year project Oct 2017 – May 2018

- Added a feature in code completion for TypeScript to predict external API calls using machine learning

UCL Robots race (2nd place) Jun 2017

- Created and optimised algorithm to solve mazes – 1st phase: robot explores; 2nd phase, robots solves maze

SKILLS & INTERESTS

Hackathons: Yoyo Playground – order and pay app at restaurant/cafe (**1st place**), Microsoft UCL Data Science Student Challenge – app which predicts sleep quality through machine learning (**top 5 apps**)

Technical Skills: C/C++, Python, Java, JavaScript, Web Development, C#, Build systems (gn, ninja), Testing systems (PyTest, Nose2), Compilers (LLVM), Database (MySQL, ScyllaDB), Data Visualisation (MatPlotLib, Plotly)

Interests: Basketball (college team), Bouldering, Cycling, Rubik's Cubes (solving 3x3 in under 40 seconds), Chess