



Software Engineer (Debug & Analysis)

Job Specification

About Optalysys

Optalysys is a pioneering deep-tech company developing new ways to power the future of computing. By harnessing light, we are creating advanced photonic technologies that help the world's most demanding systems run faster and more efficiently. Our work supports breakthroughs in areas such as artificial intelligence and computing infrastructure. At Optalysys, we're bringing together talented people who are passionate about building technology that expands what computing – and humanity – can achieve

We are committed to building a home for exceptional talent.



About the Role

Role: Software Engineer (Debug & Analysys)

Department: Architecture

Location: UK - Remote, with willingness to travel to any UK or US Optalysys hubs

Employment Type: Permanent, Full-Time

Level: Senior / Principal

The role is within Optalysys' newly formed Architecture group which is tasked with architecting a novel photonics computing system for various target markets, such as AI and Fully Homomorphic Encryption (FHE). The Software Engineer will work in the team developing software tools which will target the photonics compute engine.

As a debug & analysis specialist, you will play a critical role in developing the debug, observability, and validation infrastructure for both simulation and hardware environments. You will build tools that enable rapid application bring-up, deep system insight, and efficient debugging of a novel compute architecture.

This is a highly cross-disciplinary role requiring strong expertise in software engineering, system architecture, and debugging & visualizing complex systems.

Key Responsibilities

You will be working alongside other engineers developing a full system simulation environment. The major tasks will be:

- Lead the architecture, specification, and development of an in-house debugging, performance and observability environment
- Build tools to enable introspection, traceability, and root-cause analysis across the full system stack
- Ensure seamless operation across simulation environments, pre-silicon models and real hardware platforms
- Contribute to the development of a full-system simulation environment for photonic compute systems
- Integrate debugging and observability capabilities into in-house simulation frameworks
- Collaborate with toolchain developers to ensure end-to-end workflow consistency across simulation, debug, verification and deployment
- Contribute to mission-mode software definition and requirements capture
- Define debug and observability requirements at system level
- Support development of software interfaces to photonic compute hardware



Required Experience & Skills

The debug & analysis tools must express a high performance and complex compute path in a form that is easy to understand. These will be highly visual tools, so a strong background in UI/UX is required. You will need to be collaborative, an excellent communicator, and able to work in a fast-changing environment.

You will have:

- Experience developing high performance and interactive data driven browser-based visualisations, e.g. WebGL
- Knowledge of WebAssembly and integration of Rust or Python into web applications
- Knowledge of the python based event simulators, e.g. SimPy
- Knowledge of debugging frameworks
- Knowledge of performance analysis
- Experience in using various testing frameworks
- Experience in writing specifications, test plans and reports
- The ability to communicate clearly with both expert and non-expert audiences

Preferred / Additional Experience

- Familiar with AI/ML, HPC, or Cryptography applications
- Knowledge of RUST
- Knowledge of using JIRA
- Knowledge of CI/CD pipelines
- Knowledge of GIT

Benefits

We offer competitive compensation. The base salary range for this role is determined based on location, experience, educational background, and market data.

Salary Range: total compensation goes beyond base salary, it also includes comprehensive health care plan, Pension matching program, generous time off, annual performance-based bonus, and other rewards that recognise your impact and contribution.

Benefits eligibility may vary depending on your employment status and location. Optalysys recruits, employs, trains, compensates, and promotes regardless of race, religion, color, national origin, sex, disability, age, veteran status, and other protected status as required by applicable law.

How to apply:

Please send a copy of your CV to recruitment@optalysys.com with a cover letter