

DOMINIC LINDSAY



Research Engineer & PhD Candidate (Interested in Decentralised Resource Management Systems)

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Experienced and passionate Research Engineer with strong demonstrated history of working in both academic and software industries. Currently working towards a PhD of Computer Science. Author of several IEEE publications including a best-paper award. Research focused on development of novel resource management and scheduling policies for decentralised clusters. Strong experience ranging from managing heterogenous research cluster, developing for operating systems and hypervisor, cloud native toolsets and facilitating machine learning operations.

PROFESSIONAL EXPERIENCE & PROJECTS



September 2021 – Present | **iwoca** | **Systems and Platform Engineering**

Reducing AWS costs via development of ETL pipelines, observability tools and systems performance insights. Lead design & implementation of modelling framework from RFC to implementation, prescribing a model development workflow supporting continuous training, deployment and monitoring. Scoping of Streaming platform and team, including meeting with stakeholders, identifying appropriate frameworks. (languages: Rust, Python, Terraform, Java)



September 2017 – 2022 | **Lancaster University** | **Associate Lecturer**

Teaching and coursework development, as well as lecture development and delivery across Operating Systems, Networking and Distributed Systems.



March 2021 – June 2021 | **Unikraft** | **Research Engineer Internship**

Internship objective: Develop unikraft OCI compatible runtime and integration of a unikernel build, deploy and execute workflow to Kubernetes control plain. I also develop a package command capable of packaging unikernels as OCI compatible images. (languages: GoLang, Python)



June 2020 – September 2020 | **Arm Research** | **Research Engineer Internship**

Interned as part of Security Research team, contributed to two projects. Developed memory and capability management libraries for formally verified kernel. Development of distributed trusted computation platform enabling execution of applications amongst mutually distrusting peers. (languages: Rust, GoLang)



September 2017 – January 2019 | **Demopad Software** | **Platform Software Engineer**

Platform engineering role where I contributed to development of CI/CD platform, cross compilation toolchains, Nest thermostat controller integration, and development of unified system for user customisable user interfaces and dynamic IoT gateway modules - (languages: Cpp, Lua)



July 2016 – September 2017 | **SCISYS** | **Software Engineer**

Contributor towards several projects large-scale GIS personal tracking systems using apache storm and camel (java), hardware simulation for RNLI lifeboats (Cpp) and testing siemens rail infrastructure (languages: Cpp, Java, C#).



May 2015 – September 2015 | **SCISYS** | **Software Engineer**

Managed and deployed cloud platform infrastructure, developed and contributed towards open source project 'python-beaver', developed plugins for grafana plugins displaying CEPH metrics. - (languages: Puppet, Python)

EDUCATION



September 2017 – Present | **Lancaster University** | **PhD Computer Science**

Orchestration systems for decentralised infrastructures. Investigates impact of inter-cluster characteristics such as sporadic utilisation, cross cluster latency and workload affinity. Specifically focused on development of novel scheduling policies and resource management systems for federated systems.



October 2012 – June 2016 | **Lancaster University** | **Msci Software Engineering (1st class honours)**

Core Modules: Software Design Studio – Part 1 & 2, Distributed Systems, Advance Distributed Systems, Operating Systems, Networking, Advanced Programming, Communication Systems

LARGE SCALE INFRASTRUCTURE MANAGMENT

Reliability Engineering Responsible for management of large scale research cluster composed of over 100 heterogenous CPU/GPU nodes. Facilitating a wide range of research activities: machine learning infrastructure, development of orchestration systems.

Distributed Applications Development OCI Runtimes (runc, runu, runv, podman, docker), Kubernetes Container Runtime Interface, Containerd Shim development.

REFERENCES

PhD Supervisor Dr. Peter Garraghan (p.garraghan@lancaster.ac.uk),

PhD Supervisor Dr. Yehia Elkhatib (y.elkhatib@lancaster.ac.uk),

ARM Supervisor Nick Spinale (nick.spinale@arm.com)

AWARDS

- **Best paper award at IEEE JointCloud'21** – Award for best paper at IEEE Jointcloud'21. I received the highest scores for my work 'An Empirical Study of Inter-Cluster Resource Orchestration within Federated Cloud Clusters'

SKILLS & EXPERTISE

Programming Languages: C, C++, Rust, GoLang, Lua, Java, Python, R, JavaScript, Terraform, Terragrunt, \LaTeX

Technologies: Linux, Linux internals, Docker, QEMU, LibVirt, Kubernetes, Argo, GitLab API, Apache YARN & HDFS, Apache Spark, Pandas, GRPC, Java RMI, Apache Kafka, Apache Flink

Expertise: Profiling, Resource Management and Scheduling, Networking, DNS, Systems Programming, PKI, SSL/TLS, Operating Systems, Distributed Systems concepts and design.