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RIVERLANE

Innovate UK



ThoughtWorks

We collaborate with a growing community of quantum computing experts and enthusiasts to build Quantum Collective Knowledge (QCK) - a unified workflow to benchmark, compare and optimize classic and quantum algorithms, and forecast future developments in quantum computing. We also help to organize collaborative and reproducible quantum hackathons while sharing all experimental results on an interactive dashboard.

Some of the comments we received on our hackathons:

- "...it is a unique setup to expose people to the principles of quantum computing (which in itself is not an easy thing to do). And the magic is also with the people attending: impressive how people coming together from so many different backgrounds, with different knowledges, and competencies can team and succeed."
- "It was great fun participating in the Quantum Computing Hackathon for the space sector! Despite the relatively short duration, I definitely got to learn more about the IBM Qiskit platform and use it in a live setting. I'd definitely recommend this to others."
- "While Quantum can seem intimidating to get to grips with, by far the best way to learn is to give it a go, and that was certainly demonstrated at the hack. At the end of the Quantum Computing Hackathon, teams gathered to reflect on insights they had gained from their hands on experience with a quantum computer. Many had gone from having no knowledge of quantum computing to being able to run quantum experiments on a real quantum computer in just a few hours!"
- "A very successful challenge: lots of fun, networking and learning. Hope many will get to continue to be curious and get into learning more and more about Quantum Computing."
- "That was a unique and brilliant hackathon; a gateway to further QC for more people - :)"
- "My first hackaton! really great day! I loved it, learned a lot, good mix of people, good interaction, helpdesk, well facilitated, thank you very much!!!"
- "Great day. Really interesting talks, hands-on coding and great opportunity to talk to people with similar interests. I came away feeling that I'd learnt a lot."

[1st challenge \(VQE\)](#)

[1st hackathon \(Cambridge\)](#)

[2nd hackathon \(London\)](#)

[3rd hackathon \(Paris\)](#)

[4th hackathon \(Oxford\)](#)

[QCK dashboard](#)

[CK-Quantum workflows](#)



Since 2018, we have been collaborating with Amazon to help end-users optimize performance, accuracy and speed of AI/ML applications in the AWS cloud.

[Joint presentation at O'Reilly AI conference 2018](#)



Raspberry Pi

In collaboration with the Raspberry Pi foundation, we have applied the Collective Knowledge technology to reduce the execution time and code size of important Linux utilities by up to 40%, resulting in a lower power consumption and more responsive user experience on Raspberry Pi 3 devices.

[arXiv report](#)

[Interactive report](#)

[Results](#)

Imperial College London



We have collaborated with Alistair Donaldson's group at Imperial for many years on topics ranging from verifying correctness of GPU programs to automating and consolidating bug detection in GPU compilers. GraphicsFuzz, an Imperial spinout founded to commercialize their GPU compiler testing technology, was acquired by Google in August 2018.

[EU-funded technology transfer](#)

[EPEAC technology transfer award](#)

[CSC-Lemish repo](#)

