PhD Position in Hardware and Software Co-Design for Security and Virtualization Performance

Applications are invited for a fully funded PhD studentship (home or overseas) to analyze and co-design hardware and software support to improve the performance of trusted execution environments and virtual machines,under the supervision of Dr. Lluís Vilanova [1], a faculty member of the world-leading "Large Scale and Distributed Systems" (LSDS) group [2] and co-director of the "Cloud, Data and Exascale Computing Hub" at Imperial-X [3].

[1] https://www.imperial.ac.uk/people/vilanova

[2] https://lsds.doc.ic.ac.uk

[3] https://ix.imperial.ac.uk/research-area/cloud-and-big-data-computing

This project aims to analyze the existing system and hardware support for trusted execution environments (e.g., Intel SGX) and/or virtualization technologies, in order to fundamentally improve their performance by proposing and developing new solutions that span across the hardware, operating system and application layers.

To apply for this position, you will need to have solid programming and analytical skills and a strong background in at least one of the following areas:

- Operating systems
- Computer architecture (micro-architecture and hardware-software co-design preferred)
- Machine virtualization
- Secure execution environments (e.g., Intel SGX, AMD SEV, ARM TrustZone)

Skills in any of the following areas will also be considered in addition to those described above:

- Memory hierarchy design
- Encryption

The Department of Computing is a leading department of Computer Science in the UK and the world and has consistently been awarded the highest research rating. In the 2021 REF assessment, the Department claimed the top spot for computer science and informatics. Overall, Imperial College London ranked first in the UK for research outputs, first in the UK for research environment, and first for research impact among Russell Group universities.

Applicants are expected to have a First Class or Distinction Masters level degree, or equivalent, in a relevant scientific or technical discipline, such as computer science or mathematics. Applicants must be fluent in spoken and written English.

The position is fully funded, covering tuition fees, travel funds and a stipend/bursary. The position is available to home and overseas students.

How to apply

To apply for this position, please follow the application guidelines at: http://www.imperial.ac.uk/computing/prospective-students/courses/phd/phd-application-guidelines/

In the application form, please write "CSVP" in the "Proposed Research Topic" field, and "Lluis Vilanova" in the "Proposed Research Supervisor" field.

Early applications are encouraged. Informal inquiries about this position are also encouraged and can be directed to Lluís Vilanova <vilanova@imperial.ac.uk>. This position will be based at the South Kensington campus in central London. Applicants are advised to visit

http://www.doc.ic.ac.uk/~lvilanov/opportunities/phd/ for information in applying for a PhD position with Dr. Lluís Vilanova, as well as for links to more general information on becoming a PhD student in the Department of Computing.

We are committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people. We encourage applicants from underrepresented backgrounds to apply.