PhD Program between the Freie Universität Berlin (FUB) and the China Scholarship Council (CSC)

Open PhD position at FUB for CSC scholarship candidates 2018

Please note: the PhD position is only offered to <u>Chinese</u> PhD candidates for application in the framework of the FUB-CSC PhD Program.

Department/Institute:	Department of Mathematics and Computer Science / Computer Science Institute
Subject area:	Computer Networks & Internet of Things
Name of Supervisor:	Dr. Emmanuel Baccelli
Number of open PhD positions:	2
Type of the PhD Study:	Full-time
Project title:	Securing large-scale IoT deployments

PhD Project description:

The Internet of Things aims at ubiquitous instrumentation & interconnection of every entity on the planet. The bulk of such entities will consist in low-end IoT devices, which differ starkly from high-end IoT devices such as smartphones, RaspberryPi, smart vehicles etc. Compared to high-end IoT devices, low-end devices embark 106 less memory, much less CPU capacity and consume 103 less power. So far, deployments of low-end IoT devices are rather small scale, single-purpose, and lack future-proof security:

- typically, deployed IoT software is not updated down the line (e.g. to fix bugs and vulnerabilities or to add new features), and
- IoT security schemes are usually both weak for today's standards and weaker down the line, post-quantum.

There is thus a gap to bridge towards massive deployment of IoT at Internet-scale This thesis aims to contribute to bridging this gap, by focusing on novel IoT system software, combined with new algorithms and protocols achieving future-proof IoT: efficient, reconfigurable, maintainable and secure.

Language requirements:

IELTS 6.5 or TOEFL 95 ibt.

Academic requirements:

MSc is required. Strong programming skills required. A good level in C and Python is desired, as well serious experience with Linux environment and command line. Solid skills in applied mathematics required. A good level in probability and in discrete mathematics is desired.

Information of the professor or research group leader:

Dr. Emmanuel Baccelli's main research interests involve spontaneous wireless networks, embedded software and communication techniques for the Internet of Things, design and analysis of network protocols and algorithms. Dr. Emmanuel Baccelli contributes continuously in standardization efforts within the Internet Engineering Task Force (IETF). He is the co-author of several RFCs. He has authored or co-authored tens of research papers in the field, including in the top IEEE and ACM conferences and journals. Dr. Emmanuel Baccelli co-chaired IEEE and ACM conferences and workshops, and coordinated international research projects. He is a co-founder of the open source IoT operating system RIOT and a coordinator of the RIOT developer community. In the context of RIOT, Dr. Emmanuel Baccelli leads a group of researchers and students at FU Berlin on topics around network protocols and system software for the Internet of Things. Websites: https://scholar.google.com/citations?user=L4uE45oAAAAJ ; http://www.riot-os.org/

Please note: In a first step, the complete application must be submitted to the Beijing Office for evaluation by January 4th, 2018. Please do not contact the professor before. He/She will get in contact with you after having received the complete application via the Beijing Office in January.