



Trusted Computation Offloading in Edge-Based IoT Networks

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Date: Dec 16th, 2020

Time: 14:00 – 15:00

Teams Link: [Join Seminar](#) (We'd appreciate if you could optionally [register](#) to join our mailing list)

Abstract:

Wireless Internet of Things (IoT) devices will be deployed to enable applications such as sensing and actuation. These devices are typically resource-constrained and are unable to execute computationally intensive jobs. Therefore, these jobs can be offloaded to resource-rich nodes at the edge of the IoT network for execution. However, the timeliness and correctness of edge nodes may not be trusted (e.g., during high network load or network attacks).

To ensure job offloading to a correct edge node, we investigate the applicability of the notion of trust. Traditionally, trust is computed at the application level, with suitable mechanisms to adjust for factors such as recency. However, these existing trust models do not work well in IoT networks due to resource constraints. In this work, we take a novel look at trust evaluation and develop a proactive technique for trust assessment. We develop a SW device called a Trust Tracker that provides higher-level applications with up-to-date trust information of the resource-rich nodes. We investigate its power and its ease of implementation. We also investigate the problem of probabilistic offloading. We will also show some results from our small-scale deployment of trust trackers. This work has been done in conjunction with Dr Matt Bradbury and Prof. T. Watson and will appear in the Proceedings of Infocom 2021.

Bio:

Dr Arshad Jhumka is an Associate Professor in the Department of Computer Science at the University of Warwick. He currently heads the Reliability and Fault Tolerance group, which comprises of 12 PhD students and postdocs. His research interests lie at the intersection of formal methods and dependability properties of distributed systems and networks. Some of his current works are increasingly looking at AI-driven dependability in large-scale systems.

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