

Ph.D. in Information Technology: Thesis Defense

September 19th, 2019

Room PT1 – 10.00 am

Xuesong PENG – XXX Cycle

“Monitoring Data Utilization in Fog Computing Environments”

Advisor: Prof. **Barbara Pernici**

Abstract:

The management of the big amount of data generated by a monitoring system requires extensive use of computational and storage resources, and intensive use of bandwidth to move data from the edge where they are generated to the cloud where they are stored. This might introduce delays with the growth of data volume. In this paper, we propose a monitoring service able to dynamically reduce the amount of data moved in a fog environment, exploiting the dependencies among the monitored variables through correlation analysis. The service enables the identification of variables that can be transmitted at a reduced rate and the training of prediction models based on correlated variables. The prediction models are dynamically validated and retrained if needed. The deployment on a fog computing infrastructure of the monitoring services needed to realize the reduction is studied comparing different configurations. The approach is demonstrated in a smart city case study.

PhD Committee:

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