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"Towards Decentralized and Private Mobile Machine Learning"

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Abstract

Mobile devices are producing a deluge of data by leveraging a wide variety of embedded or connected sensors that capture the surrounding environment of end-users and their routines. However, this continuous data stream inevitably includes sensitive information that may jeopardize the privacy of end-users, if processed by malicious stakeholders. While machine learning algorithms are nowadays widely adopted as a convenient keystone to process large datasets and infer actionable insights, they often require to group the raw input data into a single place, thus imposing a privacy threat for end-users sharing their data. Federated learning is a natural solution to this problem but the limited resources of mobile devices and their partial device-to-device connectivity makes it challenging to adopt decentralized machine learning algorithms on mobiles. In this talk I will discuss the two main bottlenecks of decentralized federated learning on mobiles: how to store unbounded data streams on constrained mobile devices and how to improve device-to-device communications to leverage decentralized machine learning.

Biography

Olivier Ruas is currently a Postdoctoral fellow at Inria (Lille, France). He was previously a post-doctoral fellow at the Peking University (PKU, Beijing, China). Olivier holds a PhD from University of Rennes 1 (2018).
His research interests focus on the intersection between machine learning, data management and distributed systems.