

Forschungspraxis

Implementation of a Demonstrator for Coded Computing

In future 6G mobile communication networks, machine learning and other complex tasks will be executed on distributed computing clusters. In order to reduce the latency, coding schemes shall be applied. Thereby, redundant computation tasks are scheduled in order to alleviate the impact of slow worker nodes.

In the context of our related research, we are planning to implement a demonstrator, which shall present a potential application of coded computation schemes and shall point out their benefits. For example, we could use coded computations to run a machine learning algorithm in a distributed manner on different worker machines.

The objective of this project is to get familiar with different coded computing schemes proposed in the literature and implement those for a small wireless distributed computing network. In the first step, a simple Python-based distributed computation cluster shall be set up using the RAY framework and Tensorflow (or PyTorch). Finally, a coding scheme shall be implemented for the distributed computation cluster.

Prerequisites

- Knowledge in channel coding
- Good programming skills in Python
- Basic knowledge of machine learning with Tensorflow
- Interest in distributed computing

Advisors

Luis Maßny