

# Data Storage and Management in Computational Edge Clouds

Nitinder Mohan  
University of Helsinki  
Helsinki, Finland  
nitinder.mohan@helsinki.fi

*Abstract*—Edge and Fog clouds propose to handle data and computations closer to its source and users. Applications like industrial automation, vehicular networks and drone systems bring new challenges and require solutions tailored for computation-centric edge cloud networks. In this paper we build on existing edge and fog computing models and develop a solution to predict and store data in the local caches of these edge resources by predicting upcoming computations. The solution maximizes the cache usage of the edge resources by co-relating the computational patterns and data requirement. Our solution is based on grouping edge resource caches according to the workload groups they serve. We further develop methods for populating the caches and ensuring the coherence of the cached data. We evaluate the performance of our grouping mechanisms and show that they bring significant performance gains, both in terms of network traffic and access latency.