

Statistical Challenges

Each node collects data in a *non-IID* manner $X_t \sim P_t$

The number of data points on each node may vary significantly

Systems Challenges

Large number of nodes causes a significant bottleneck

The storage, computational, and communication capacities of each nodes differ

Multi-Task Learning(MTL) is a natural choice to handle statistical challenges in the federated setting

Multi-Task Learning

- **MTL approach 1 :**
 - A clustered or low-rank structure between the tasks is known *a priori*
- **MTL approach 2 :**
 - The task relationships are not known beforehand
 - It can be learned from the data

MTL can address the *statistical challenges* of federated learning

Currently proposed methods for distributed **MTL** don't adequately address the *systems challenges*