

ICML '26, July 6-11, 2026, Seoul, Korean



GFedCL: Graph-Based Federated Continual Learning with Spatial and Temporal Awareness

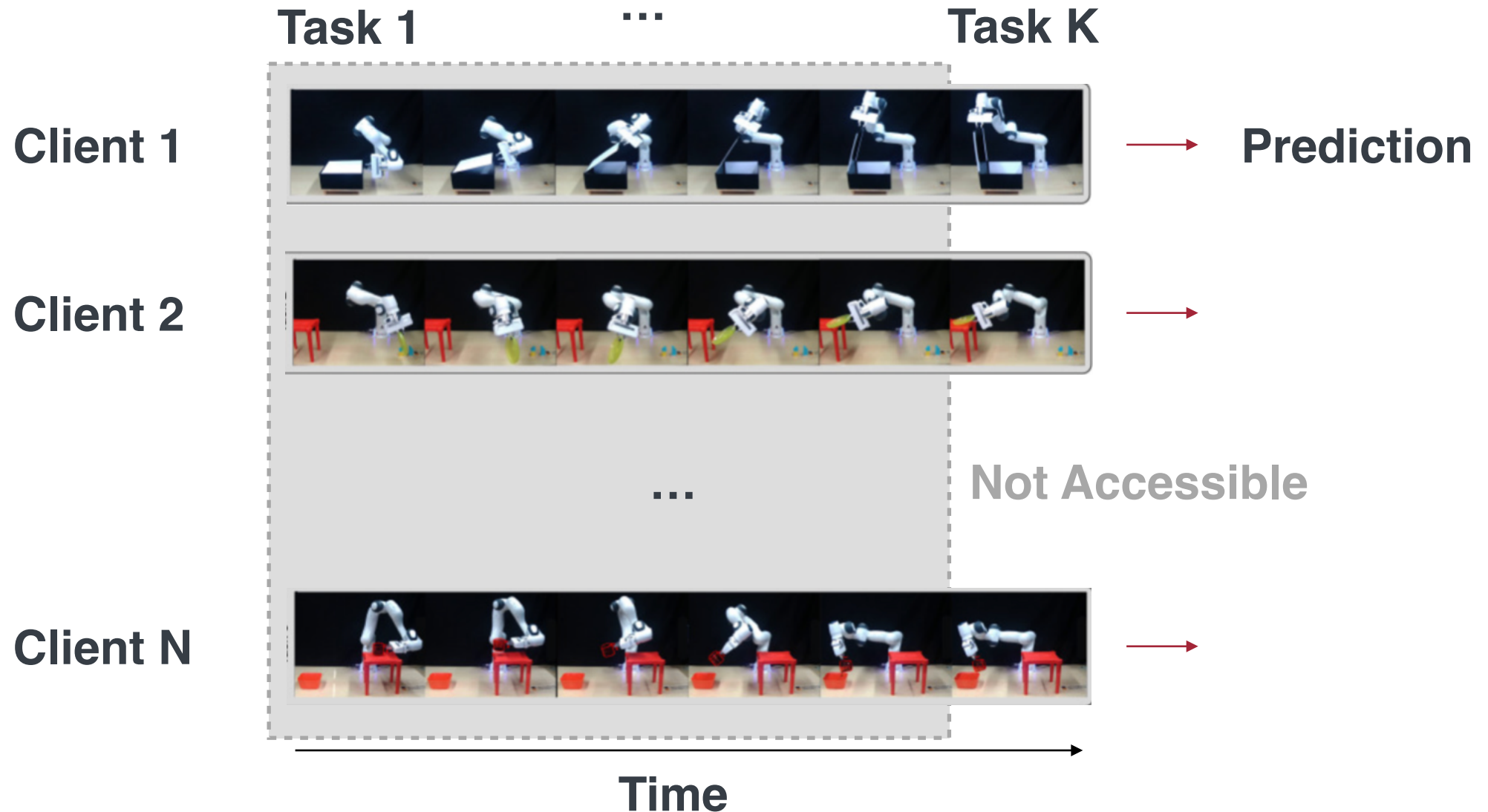
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Federated Continual Learning (FCL)



Current Studies

Regularization-Based FCL

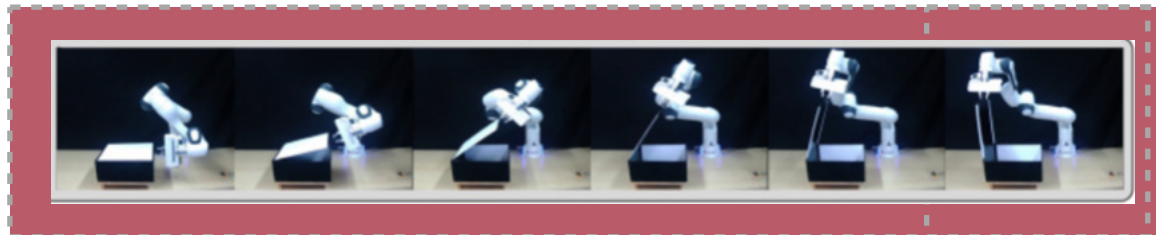
Architecture-Based FCL

Relay-Based FCL



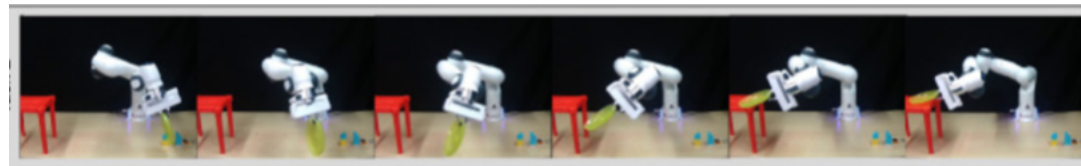
Problem: Current Replay-Based Methods Ignore Auxiliary Conditioning

Client 1



$$\{(\mathcal{X}_j, \mathcal{Y}_j)\}_{j \in [K]}$$

Client 2



$$G \in \mathbb{R}_+^{N \times N}$$

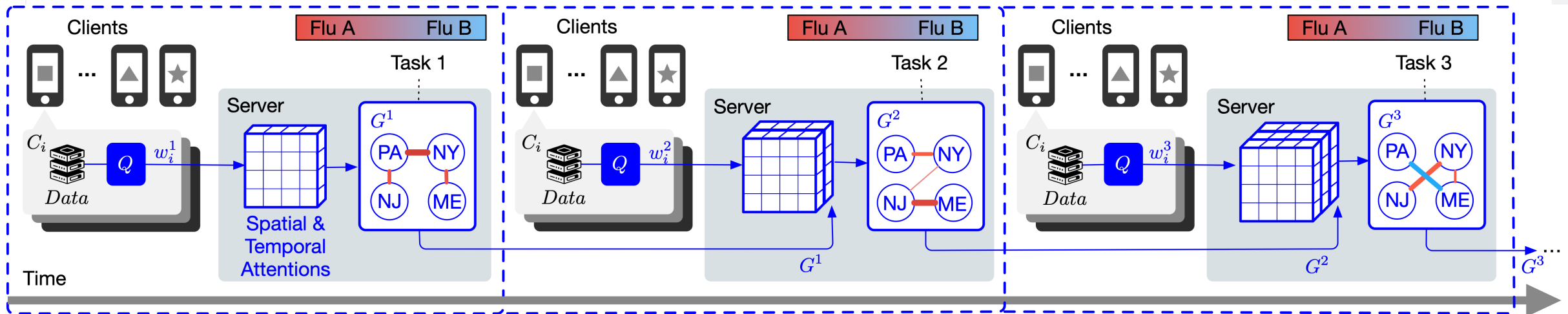
...

Client N

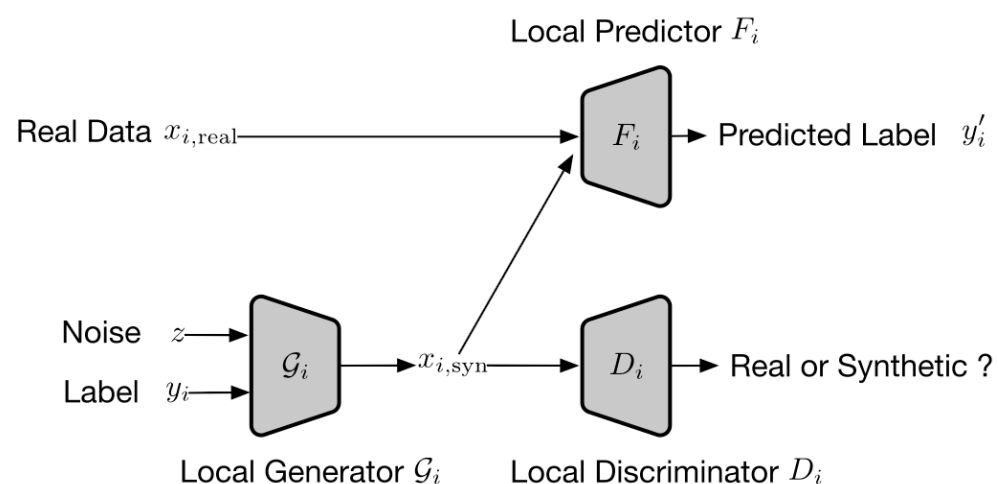


Time

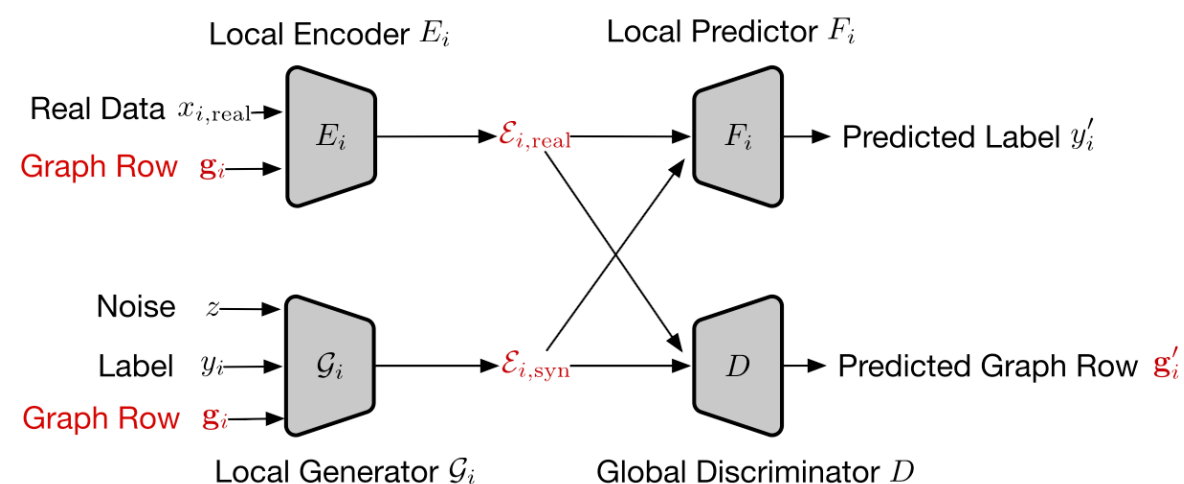
Relational Graph Generation



Utilizing Relational Graph to Align Real and Synthetic Data Embeddings



Previous Replay-Based Methods



GFedCL (Ours)

Summary of GFedCL

A Replay-Based Methods

Generate Synthetic Data Embeddings

The Distribution of Synthetic Data Embeddings Matches Real Ones

State-of-the-art Performance on Synthetic and Real-World Datasets

Code: <https://github.com/IntelliSys-Lab/GFedCL>



Personal Website: <https://ryougish1k1.github.io/>



IntelliSys Lab: <https://intellisys.haow.us/>

