SYP350284: A Sidelink-enhanced Scheme for UE Selection, UE Performing Order Selection, and Model Transmission Link Selection in Split Learning

1. Scenarios & Problems:

In split Learning:

Training model = Client model (at UE) + Sever model (at gNB)

Transferred among UEs.

2. Solutions:

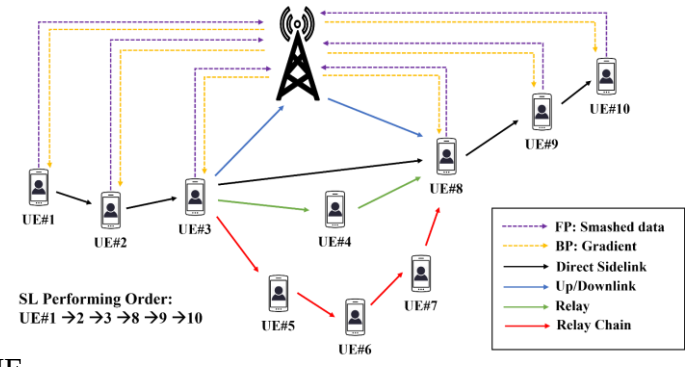
Criterion for path selection, performing order or UE selection should **consider sidelink**:

1). Privacy issue, direct sidelink of priority

2). Avoiding gNB to save uplink/downlink resources

3). Minimum transmission time

1. Given the order of selected UEs performing SL, **select the path between UEs**:



E.g., 1 →2 → 3 → 8 →9 →10.

From UE#3 → UE#4:

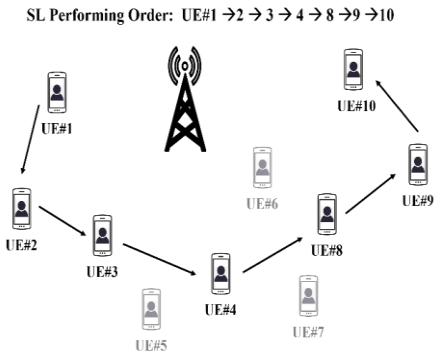
1). Direct sidelink

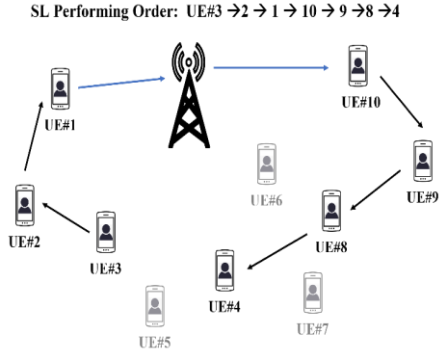
2). Up/downlink via gNB

3). Sidelink Relay

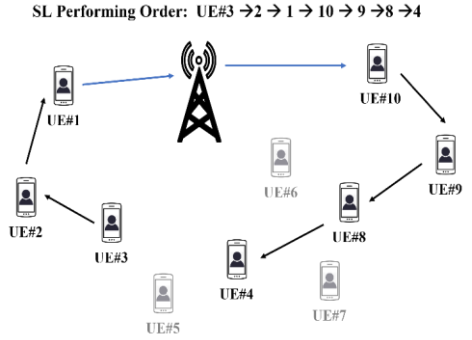
4). Relay Chain

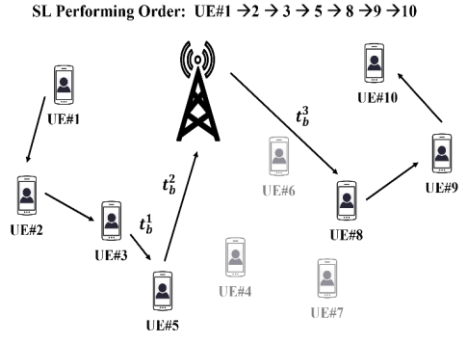
2. Given the selected UEs, but performing order is not decided





3. UEs are not selected,





3. Standard impact:

1. **TR22.876:** Study on AI/ML Model Transfer-Phase 2
2. **3GPP R19 WID** "Study on AI/ML Model Transfer Phase 2" **(S1-221225):**

For Distributed Learning, controlled by network, each device uses the localized data while **transfer the intermediate data to other nodes** the device moves a certain coverage, has low power, or for combined computation for a big mode.

Objective: Distributed AI training/inference based on direct device connection, e.g. traffic KPIs, different QoS and functional requirements on **slidelink transmission**.