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(54) **GRADIENT ACCUMULATION FOR FEDERATED LEARNING**

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(57) **ABSTRACT**

A UE may identify, in each round other than an initial round, a first plurality of local model update elements of a present round. The first plurality of local model update elements of the present round may be associated with an updated local machine learning model. The UE may transmit to a base station, in each round other than the initial round, over a multiple access channel via analog signaling, a second plurality of local model update elements of the present round based on a third plurality of local model update elements of the present round. The third plurality of local model update elements of the present round may correspond to a sum of the first plurality of local model update elements of the present round and a local model update error of a previous round immediately before the present round. The analog signaling may be associated with OTA aggregation.

1200

1202

Reception Component
1230

Federated Learning Component
1240

Communication Manager 1232

Transmission Component
1234

Baseband Unit 1204

Cellular RF Transceiver
1222

104