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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

(54) **Title:** SYSTEMS AND METHODS FOR FEDERATED LEARNING USING PEER-TO-PEER NETWORKS

(57) **Abstract:** Systems and methods for federated learning using peer-to-peer networks are disclosed. A method may include: electing a participant node as a collaborator node using a consensus algorithm; the collaborator node generating and broadcasting a public/private key pair; the participant nodes generating public/private key pairs for each communication with the collaborator node, encrypting and broadcasting a message comprising a parameter for a local machine learning model for the participant node and its public key with the collaborator node's public key, the collaborator node decrypting the encrypted messages, updating an aggregated machine learning model with the decrypted parameters, encrypting and broadcasting update messages each comprising an update with each participant node's public key; the participant nodes decrypting one of the messages with their private keys, and the participant nodes updating their local machine learning models with the update.

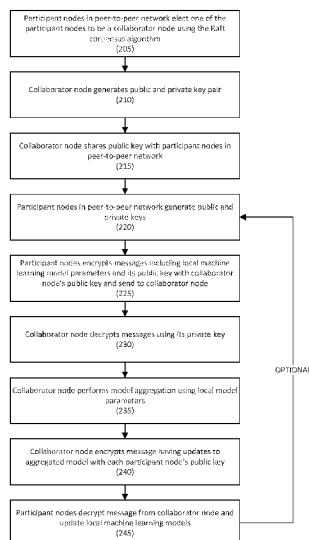


FIGURE 2

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