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(51) International classification	:G06N 20/00, G06F 21/62, H04L 29/06, G06F 21/60, H04L 9/32	(71)Name of Applicant : 1)NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY Address of Applicant :19, Knowledge Park-II, Institutional Area, Greater Noida – 201306, Uttar Pradesh, India. Uttar Pradesh India
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(57) Abstract :

A privacy-preserving federated learning system includes a federation controller (101), client nodes (102), a privacy engine (103), a secure aggregation engine (104), an update validation engine (105), a policy manager (106), a model registry (107), and an audit ledger (108). Local datasets remain at respective client nodes while the client nodes train a shared model and generate protected update artifacts. The secure aggregation engine combines the protected update artifacts without exposing individual updates. The update validation engine filters anomalous contributions, enabling robust, auditable, communication-efficient distributed intelligence formation under configurable privacy and governance constraints.

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