Applications

Lars Erik Wik

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Summary

Federated Learning (FL) solves the conflicting nature the Machine Learning (ML) models dependency on training data, and the privacy requirements introduced by GDPR. FL works by having the clients update an ML model – maintained by a centralized server – themselves. This way they don't need to share their private information. BFLC utilizes the decentralized aspect of blockchain technologies in order to remove the need for a centralized server, by instead having it implemented as a Smart Contract (SC).

Electronic Medical Record (EMR) systems today provide slow and fragmented access to medical data. MedRec is a blockchain implementation of EMRs designed to address these issues. Policies governing a particular medical record is implemented through the use of SCs. A policy may for example enforce that a certain transaction take place – representing the consent of a patient – before granting viewing permissions to a third party.

In order to avoid counterfeit parts and supply chain attacks, blockchain technologies such as SCs can be used to ensure traceability of electronic parts in the supply chain. The traceability can be ensured using a unique device ID, either through an electronic chip ID (ECID), or a physically unclonable function (PUF). Design authorities and contract manufacturers can register devices in a SC; distributors can transfer devices through special transactions; the end customer can trace the device by inspecting the blockchain.

Blockchain technologies can be used to provide safe data transfers – in terms of guaranteeing integrity – between IoT devices. This technology could for example be used to collect a tamper proof log of events from IoT devices, through interactions with SCs.