Applications – Summary

Using blockchain for cryptocurrencies was merely a beginning, as more and more people come up with other creative ideas to apply the blockchain technology. Some applications are:

- Supply chain system: By using a permissioned type blockchain, Hyperledger fabric, one could make a chain that stores the entire history of electronic parts based on their unique ID. This was, it would be easier to prevent counterfeit/recycled electronic circuits. In this permissioned blockchain, all the manufacturers would have to participate as nodes, as well as all the large distributors. Verification here is very efficient since it requires no transactions. The customer simply checks whether his device ID (Unique) matches the one stored in blockchain.
- Medial data access and permission management: Is a blockchain system designed to allow patients access to a (immutable) log of their medical information, something that is a problem nowadays. In this blockchain, the medical stakeholders themselves are to participate as miners, and in return, they get access to aggregate, anonymized data, which they may wish to use for further research or similar.
- Machine learning – With introduction of various privacy laws such as GDPR, both industry and academics had to start paying more attention to the data that is exposed through machine learning. Google proposed a centralized solution to this, called Federated Learning (FL), which simply aims to centralize it all on one server, that collects and aggregates data, so that it only publishes the aggregated data instead of individual user data. However, the bandwidth requirements are high for this to work, and as with all centralized solutions, it is only a single point of failure, vulnerable to attacks/crashes and such. The new idea is to simply remove the server and execute the tasks on distributed client nodes. The blockchain here would serve as storage for the data. This blockchain uses new consensus mechanism called committee consensus algorithm, that only uses a few nodes (committee) to validate the blockchain.
- Interplanetary File System paired with Ethereum blockchain can be used to make tamper-proof way to distribute data in Internet-of-Things.