Integration of Blockchain and Machine learning (M.L)

⇒ Blockchain technology - Decentralized database emphasize on data security and privacy

⇒ Consensus mechanism make sure data is legitimate and secure

issue → majority attack
→ double spending
} Data analytics required

↓

M.L.

eg. → Smart applications - 5G, UAV, smart cities

↓

Generate huge amount of data

↓ - Data is concern security issues

- to handle data → ↓ B.T. used

↓

contained a time stamped series of tamper proof records.

↓

managed by a cluster of distributed computers

B.T. → immutability
→ Decentralization
→ transparency
} opens door for various applications

↓

Digital Currency

{ → majority attack (51% attack)
→ Sybil attacks for fake identity generation } - to handle these

⇒ Robust intrusion detection is require

to detect intrusion and attack patterns

⇓

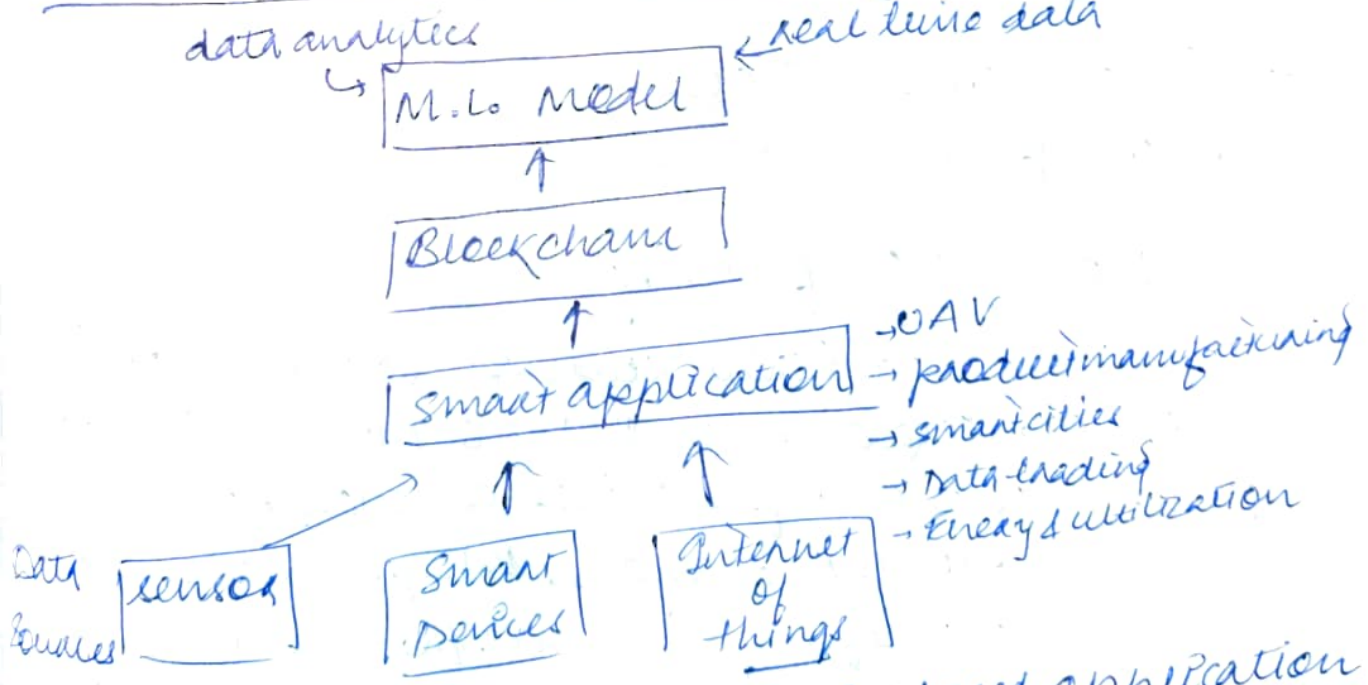
M.L. (analyse the traffic)

⇒ M.L. helps computer to study, think and act without intervention of human.

⇒ In smart application data should be secure. BT ensures data security & ML provides confidence to predict untrustworthy nodes based on past pattern

⇒ ML focuses on building application that learns through experience, application specific.

ML → Supervised
→ unsupervised
→ Reinforcement
} learning



Integration of ML in Blockchain based application

⇒ could be based on specific segment of chain rather than entire data

⇒ could be used - fraud detection & identity theft detection.

⇒ Benefit when ML is applied →

i) Legitimate user authentication

ii) Blockchain integrates public ML models into smart contracts to ensure team and condition are sustained.

iii) BT is incentive based system, it encourages user to contribute data, → helps to improve ML model performance.

iv) ML models can be updated on chain environment of BT with small fee

v) like Ethereum, deal with thousands of decentralized machines all over the world, thus guaranteed users that it is never completely unreachable or offline.

⇒ Smart Applications

A) Customer Service

B) Product Manufacturing -

C) Unmanned Aerial Vehicle - (drone) Kuznin proposed blockchain based UAV-Net model - includes devices such as N/w of satellites, cellular base stations and ground control stations. BT - preserve the integrity of data, Communication B/n satellite & B.S. is prone to electromagnetic jamming. BT based technology enables to store relevant coordinates & operates autonomously within jamming zone.

D) Smart cities - like smart homes, smart parking system, smart weather and water system, smart vehicular traffic, surveillance system,

healthcare, etc.

⇒ challenges →

⇒ Privacy.

⇒ Memory

⇒ Implementation.

⇒ security.