



School: Campus:

Academic Year: Subject Name: Subject Code:

Semester: Program: Branch: Specialization:

Date:

Applied and Action Learning

(Learning by Doing and Discovery)

Name of the Experiment :

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

Algorithm:

1. Introduction to Web3:

Web3 represents a decentralized internet powered by blockchain, where users own data and interactions via cryptographic identities like wallets and smart contracts.

2. Role of AI in Web3:

AI enhances the intelligence of decentralized applications (DApps) through prediction, personalization, and real-time automation.

AI models can be hosted and queried in decentralized compute systems (e.g. Fetch.ai, Ocean Protocol).

3. AI + Blockchain Integration Models:

On-chain AI: Smart contracts interacting with lightweight ML models (limited due to gas constraints).

Off-chain AI Oracles: AI models hosted off-chain provide results to smart contracts via oracles like Chainlink.

4. Decentralized AI Marketplaces:

Networks like SingularityNET let users buy/sell AI services using cryptocurrency.

Decentralized Data Layer for AI: Data lakes on Filecoin/IPFS allow secure and permissioned data training.

5. Use Cases of AI + Web3:

- Fraud detection in decentralized finance (DeFi)

- Autonomous economic agents in IoT

- Decentralized social media content moderation

- Personalized AI agents for identity and credentials

* Softwares used

No coding or implementation – purely research and presentation based (AI models, Web3 concepts, decentralized data frameworks).

* Implementation Phase: Final Output (no error)

During the practical session, students formed groups and prepared a 5–7 slide presentation demonstrating the connection between AI and blockchain in real-world applications. Each group selected a specific AI + Web3 use case and presented a visual flow with architecture diagrams.

1. Use Case Demonstration:

- Example chosen: Autonomous Fraud Detection in DeFi using AI Agents
- AI model trained off-chain reads real-time blockchain transaction data via oracles

2. The AI sends fraud alert score back to smart contract for blocking suspicious transfers

- Architecture Diagram Shared (Sample Flow):
- User → Blockchain Network → Oracle → AI Engine → Smart Contract → Action on-chain
- Diagram illustrated how off-chain AI interacts with on-chain logic

3. Live Demo (Optional):

- Simulated decentralized sentiment analysis model (mock predictions) interacting with a governance smart contract
- When sentiment score < threshold → Contract triggers automated proposal vote

4. Tools Used:

- Blockchain: Ethereum Testnet (Goerli/Sepolia)
- AI Model Hosting: Local Python-based ML script (mock deployment)

5. Wallets: MetaMask for user interaction

- Diagramming Tool: Draw.io / Figma for architecture visualization

6. Presentation Summary:

- Highlighted the hybrid nature of AI + Web3 systems
- Discussed challenges: Gas cost, model verification, privacy of training data

7. Emphasized future opportunities like on-chain AI agents, DAO-powered AI funding, decentralized compute networks

*** Observations**

1. AI and Web3 combined enable distributed intelligence, which is not controlled by any single entity.
2. Decentralized storage (IPFS, Filecoin) and smart contracts enable fully transparent AI workflows.
3. AI agents in decentralized environments may enhance privacy and decision-making through encrypted computation.
4. High costs and slow execution on-chain limit AI deployment directly on blockchain — hybrid systems are preferred.

ASSESSMENT

| Rubrics | Full Mark | Marks Obtained | Remarks |
|--|-----------|----------------|---------|
| Concept | 10 | | |
| Planning and Execution/ Practical Simulation/ Programming | 10 | | |
| Result and Interpretation | 10 | | |
| Record of Applied and Action Learning | 10 | | |
| Viva | 10 | | |
| Total | 50 | | |

Signature of the Student:

Name :

Regn. No. :

Page No.....

Signature of the Faculty:**As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.*