

Problem statements

**1. Generative AI and Machine Learning:**

1. **Web3-driven Content Creation**: Develop a Generative AI model that creates unique digital content (such as images, music, or text) and integrates it with decentralized storage solutions like IPFS or Filecoin, ensuring immutability and accessibility through Web3.0 protocols.
2. **Decentralized Prediction Markets**: Build a predictive model using Machine Learning algorithms to forecast outcomes of real-world events, and deploy it on a decentralized prediction market platform leveraging blockchain technology. Explore how Web3.0 can enhance transparency and reliability in such markets.
3. **AI-powered Smart Contracts Verification**: Create an AI-powered solution to verify the integrity and security of smart contracts deployed on blockchain networks. Utilize machine learning techniques to identify potential vulnerabilities and ensure the reliability of decentralized applications (DApps) in the Web3 ecosystem.

**2. Blockchain and Web3.0 (featured track):**

1. **NFT Marketplace for Digital Art**: Design and develop a decentralized platform for buying, selling, and trading digital art using Non-Fungible Tokens (NFTs) on a blockchain network. Implement features like provenance tracking, royalty distribution, and secure transactions to empower artists in the Web3 space.
2. **Decentralized Identity Management**: Create a Web3 solution for decentralized identity management, enabling users to control their personal data securely without relying on centralized authorities. Utilize blockchain technology to build self-sovereign identity systems that prioritize privacy and user autonomy.
3. **Supply Chain Traceability**: Develop a blockchain-based system for enhancing supply chain transparency and traceability. Enable participants to track the journey of products from source to destination, leveraging Web3 principles to ensure data integrity, authenticity, and trust among stakeholders.

**3. AR and VR:**

1. **Web3-enabled Virtual Events**: Design an AR/VR platform that leverages Web3 technologies to host immersive virtual events, conferences, or exhibitions. Integrate features like decentralized ticketing, virtual asset ownership, and cross-platform compatibility to enhance engagement and accessibility in the Web3 era.
2. **Blockchain-powered Digital Collectibles**: Create an AR/VR experience for collecting and trading digital collectibles (e.g., virtual pets, avatars, or in-game items) as NFTs on blockchain networks. Explore how Web3 can enable interoperability and scarcity in the virtual asset economy.
3. **Decentralized Virtual Real Estate**: Build a decentralized marketplace for buying, selling, and renting virtual real estate in AR/VR environments using blockchain technology. Implement features like land ownership records, smart contracts for leasing agreements, and immersive viewing experiences to revolutionize property ownership in the Web3 space.

**4. IoT and Embedded Systems:**

1. **Web3-enabled Smart Home Automation**: Develop an IoT solution that integrates smart home devices with blockchain technology, allowing users to automate and control their home appliances securely via decentralized applications. Explore potential use cases for Web3 in enhancing privacy, interoperability, and data ownership in smart home ecosystems.
2. **Blockchain-based Energy Trading**: Create a decentralized platform for peer-to-peer energy trading among IoT-enabled devices (e.g., solar panels, electric vehicles) using blockchain smart contracts. Investigate how Web3 principles can facilitate transparent and efficient energy exchange in local microgrids.
3. **Supply Chain Monitoring with IoT and Blockchain**: Design an IoT-enabled supply chain monitoring system that utilizes blockchain technology to track the movement and condition of goods in real-time. Implement sensors and smart contracts to ensure transparency, integrity, and authenticity of data across the supply chain network in the Web3 era.

**5. Cloud:**

1. **Decentralized Cloud Storage Marketplace**: Build a decentralized cloud storage marketplace where users can buy and sell storage space using blockchain-based tokens. Implement features like distributed file storage, encryption, and incentivized sharing to create a Web3-powered alternative to centralized cloud services.
2. **Blockchain-backed Data Auditing**: Develop a Web3 solution for auditing data integrity and compliance in cloud storage systems. Utilize blockchain technology to create an immutable record of data modifications and access permissions, enabling users to verify the authenticity and security of their stored information.
3. **Tokenized Cloud Computing Resources**: Design a platform for tokenizing and trading computing resources (e.g., CPU, GPU, storage) on decentralized cloud networks. Explore how blockchain-based tokens can represent ownership and usage rights, fostering a more efficient and transparent marketplace for cloud computing services in the Web3 landscape.

[**RAIR Tech Integration:**](https://www.rair.info/) Each problem statement can incorporate RAIR Tech's software solutions for enhancing security, scalability, and interoperability in Web3 applications. Participants can leverage RAIR Tech's tools and APIs to streamline development and deployment processes while ensuring robustness and efficiency in their projects.