




UMER MAJEED

Web3 Engineer


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Citations: 600+

SUMMARY

Innovative Web3 Developer and Ph.D. candidate in Computer Science & Engineering with expertise in Solidity, Python, JavaScript, and Node.js, specializing in blockchain technologies and DApps. Proven track record in implementing smart contracts, DAOs, ERC-20, and ERC-721 projects. Published researcher dedicated to advancing federated learning and blockchain applications. Aim to bring cutting-edge expertise to a dynamic Web3 development team. Adept in multiple languages and frameworks, poised to contribute valuable insights to the field.

SKILLS -

PLs & Frameworks: Solidity, Python, JavaScript, Node.js, R, TypeScript, SQL, React.js, Next.js.



Technologies: Remix, hardhat, brownie, Web3.js, ethers.js, MetaMask, Infura, Alchemy, Eternal, Chai, Ganache, surya, openzeppelin-solidity, Truffle.

Familiar OS: Ubuntu, Windows

KEY RELEVANT PUBLICATIONS -

Umer Majeed et al., "DAO-FL: Enabling Decentralized Input and Output Verification in Federated Learning with Decentralized Autonomous Organizations," TechRxiv. Preprint, Dec 2023.   



Developed **DAO Membership Tokens (DAOMTs)** for governance, implementing **mintable and soul-bound tokens** to facilitate decentralized decision-making. Engineered a decentralized framework for **input and output verification** in federated learning, leveraging **DAOs and ERC-721 tokens** to enhance **security and transparency**.

Umer Majeed et al., "FL-Incentivizer: FL-NFT and FL-Tokens for Federated Learning Model Trading and Training," IEEE Access, Jan 2023.   

Incentivized learners to submit local models to the federated learning server by implementing a **reward system** using **ERC-20 tokens** for participants. Developed a mechanism to commercialize the federated learning global model by tokenizing it as **ERC-721 based dynamic NFT**.

Umer Majeed et al., "ST-BFL: A Structured Transparency empowered cross-silo Federated Learning on the Blockchain framework," IEEE Access, Nov. 2021.  

Developed a **blockchain-based framework** enhancing data privacy in federated learning through **structured transparency** and **homomorphic encryption**. Implemented **smart contracts** and output verification mechanisms to ensure accountability and integrity in collaborative machine learning processes.

Umer Majeed et al., "Blockchain for IoT-based Smart Cities: Recent Advances, Requirements, and Future," Journal of Network and Computer Applications, Vol. 181, pp.1-22, May 2021.  

Conducted a comprehensive literature review to formulate blockchain genesis and enhancements in **blockchain technology** in terms of **consensus algorithms** and platforms. Identified applications and challenges for **blockchain-enabled smart cities**.

RELEVANT CERTIFICATIONS AND MOOCS -



Blockchain Specialization - University of Buffalo - Coursera - -

This specialization provides a comprehensive overview of essential concepts in **Blockchain** technology. Participants delve into the foundations of **Cryptography**, exploring techniques that ensure secure transactions and data integrity. They gain insights into **Consensus Protocols** such as Proof of Work (PoW) and Proof of Stake (PoS), which are crucial for maintaining the integrity of decentralized networks. The program emphasizes the development and deployment of **Smart Contracts** using **Solidity**, focusing on best practices for creating secure and efficient contracts. Additionally, participants learn to build and manage **Decentralized Applications (Dapps)** leveraging frameworks like **Truffle Suite** and platforms such as **Hyperledger Fabric**. The curriculum also covers important topics like **Blockchain Security**, ensuring a solid understanding of vulnerabilities and protective measures, while providing a thorough overview of the broader **Blockchain Ecosystem**.

1. Blockchain Basics - Completed - Dec. 2018 - 
2. Smart Contracts - Completed - July 2019 - 

3. Decentralized Applications - Completed - Jan. 2020 - 
4. Blockchain Platforms - Completed - Feb. 2020 - 

Ethereum Developer Degree - learnweb3.io - In Progress -

1. **Freshman Graduate** -  - Fundamentals of **blockchain**, **Ethereum**, and **Solidity** for building **dApps** and understanding **decentralized systems**.
2. **Sophomore Graduate** -  - Deep understanding of **gas**, **mining**, **PoW**, **PoS**, and **EVM**. Learn to build full **dApps** with **custom contracts**, **NFTs**, **DAOs**, **ICOs**, and **DEXs** using **React** and **Next.js**.
3. **Junior** - In Progress - Exploring **Layer 2** solutions, **ENS** integration, local **smart contract testing**, **IPFS**, **Ceramic**, **Chainlink VRF**, and **The Graph's Indexer**.
4. **Senior** - In Progress - Mastering advanced Web3 topics including **Merkle Trees**, **Flash Loans**, **Smart Contract Security**, **MEV**, and **Gas Optimization**.

Web3 and Blockchain Fundamentals - INSEAD - Coursera - Audit Completed - Feb. 2024 -

This course covers essential concepts in **Web3**, including the foundational technologies that support decentralized applications, the roles of **smart contracts**, **digital assets**, and **governance tokens** within the ecosystem. Participants explore the implications of **DAOs** (Decentralized Autonomous Organizations) and identify key **blockchain design principles** along with the challenges associated with implementing blockchain technology in real-world scenarios.

Cryptography, Private & Secure AI/Data Science Courses - OpenMined -

1. **Our Privacy Opportunity** - Completed - Mar. 2021 - Explore structured transparency, **privacy techniques**, and the **privacy-transparency trade-off**.
2. **Foundations of Private Computation** - Ongoing - Progress 80% - Implement **federated learning**, **secure multi-party computation**, **homomorphic encryption**, and **differential privacy**.
3. **Introduction to Remote Data Science** - Completed - Feb. 2022 - Use **remote execution tools**, deploy **Domain Nodes**, and apply **privacy-preserving techniques** for distributed data science.

IBM Blockchain Foundation for Developers - IBM - Coursera - Completed - Aug. 2018 - 🌐 - ⚙️

This course provides a comprehensive overview of **business networks** utilizing blockchain technology, emphasizing **Hyperledger Composer** and **Hyperledger Fabric**. Participants learn about essential concepts, key use cases, and the process of transferring assets within a blockchain network. The course also covers **access control** mechanisms, **network consensus** methods, and the roles and responsibilities of individuals involved in building and maintaining a blockchain business network.

Crash Course on Python - Google - Coursera - Completed - March 2020 - 🌐 - ⚙️

This course offers a comprehensive introduction to **Python syntax**, focusing on programming fundamentals and automation tasks relevant to IT roles. Participants learn about essential concepts such as **Python automation**, **code reuse**, and **refactoring**. The curriculum covers error handling techniques and includes a structured **problem-solving framework** to tackle complex programming challenges. Hands-on exercises enable learners to apply their skills in writing efficient Python scripts and manipulating data effectively.

PROJECTS & PORTFOLIO - 🌐

Whitelist DApp - 🌐, GitHub - 📄, Sepolia Ether Scan - 🌐

This DApp allows users to whitelist up to **10 addresses** for the presale of **NFTs**. It is built using **React.js**, **Next.js**, and **ether.js**, featuring **Web3Modal** integration for seamless connection to users' wallets.

NFT Collection DApp - 🌐, GitHub - 📄, Sepolia Ether Scan - 🌐

This DApp mints up to **20 NFTs**, allowing only whitelisted addresses from the above DApp to mint during the presale period. Once the presale ends, it opens up for public minting. Built using **React.js**, **Next.js**, and **ether.js** with **Web3Modal** for wallet connections.

Basic DApp - 🌐, GitHub - 📄, Sepolia Ether Scan - 🌐

A basic DApp that sets a person's mood in a smart contract. It utilizes **ethers.js** for interacting with the Ethereum blockchain, allowing users to store and retrieve mood data securely.

ERC20 Based Cryptocurrency - GitHub - 📄, Sepolia Ether Scan - 🌐

This project involves creating a fungible token adhering to the **ERC-20 standard** as a custom cryptocurrency. Developed using **Remix IDE** and **MetaMask** for deployment and testing.

Basic NFT Contract - GitHub - 📄, Sepolia Ether Scan - 🌐

This project focuses on building a basic **NFT (Non-Fungible Token)** contract on the Ethereum network using **Hardhat** and **OpenZeppelin Contracts**, demonstrating the creation and management of NFTs compliant with the **ERC721 standard**.

EDUCATION

2017 - Present	Master & Ph.D. (Combined) in Computer Science & Engineering Department of Computer Science & Engineering, Kyung Hee University, Yongin, South Korea	CGPA 4.11/4.3
2011 - 2015	BS Electrical (Telecommunication) Engineering National University of Sciences & Technology (NUST), Islamabad, Pakistan	CGPA 3.83/4.00

EXPERIENCE

2015 - 2016	PHP developer <ul style="list-style-type: none"> Developed robust back-end applications using Core PHP and CodeIgniter framework. Implemented jQuery and JavaScript to facilitate smooth communication between the user interface and server-side components via AJAX requests, enhancing the interactivity of web application. Employed SQL queries to interface with MySQL databases, ensuring data integrity and reliability while developing robust solutions for efficient data management. 	Artologics, Islamabad, Pakistan
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PHP / SQL / CodeIgniter / jQuery / AJAX / JavaScript / APIs

BADGES

Founder's Badge - LearnWeb3 Badges

www.opensea.io/assets/matic/0x60f028C82f9f3bF71e0C13fE9e8E7f916b345C00/262556

The founder's badge was airdropped to students who were early adopters of LearnWeb3.

LANGUAGES

English - Proficient (written and verbal), **Urdu** - Native, **Korean** - Beginner (TOPIK Level 2)