EduCred: Blockchain-Based Academic Credentials

Empowering trust and transparency in education.

The Current Challenge: Verifying Credentials

Verification Delays

Manual processes cause significant hold-ups in admissions and onboarding.

Authenticity Concerns

Employers and institutions struggle with fraudulent or unverified certificates.

Vulnerability to Fraud

Traditional systems are susceptible to loss, manipulation, and counterfeiting.

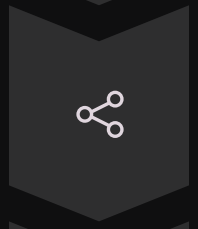
Lack of Unification

No standardized solution exists across diverse educational platforms.

Our Vision: A Decentralized Solution

Digital Issuance

Institutions can issue digital credentials securely on the blockchain.



Student Empowerment

Students gain full ownership and control to access and share their certificates.

Tamper-Proof Verification

Instant, immutable verification without the need for third-party intermediaries.

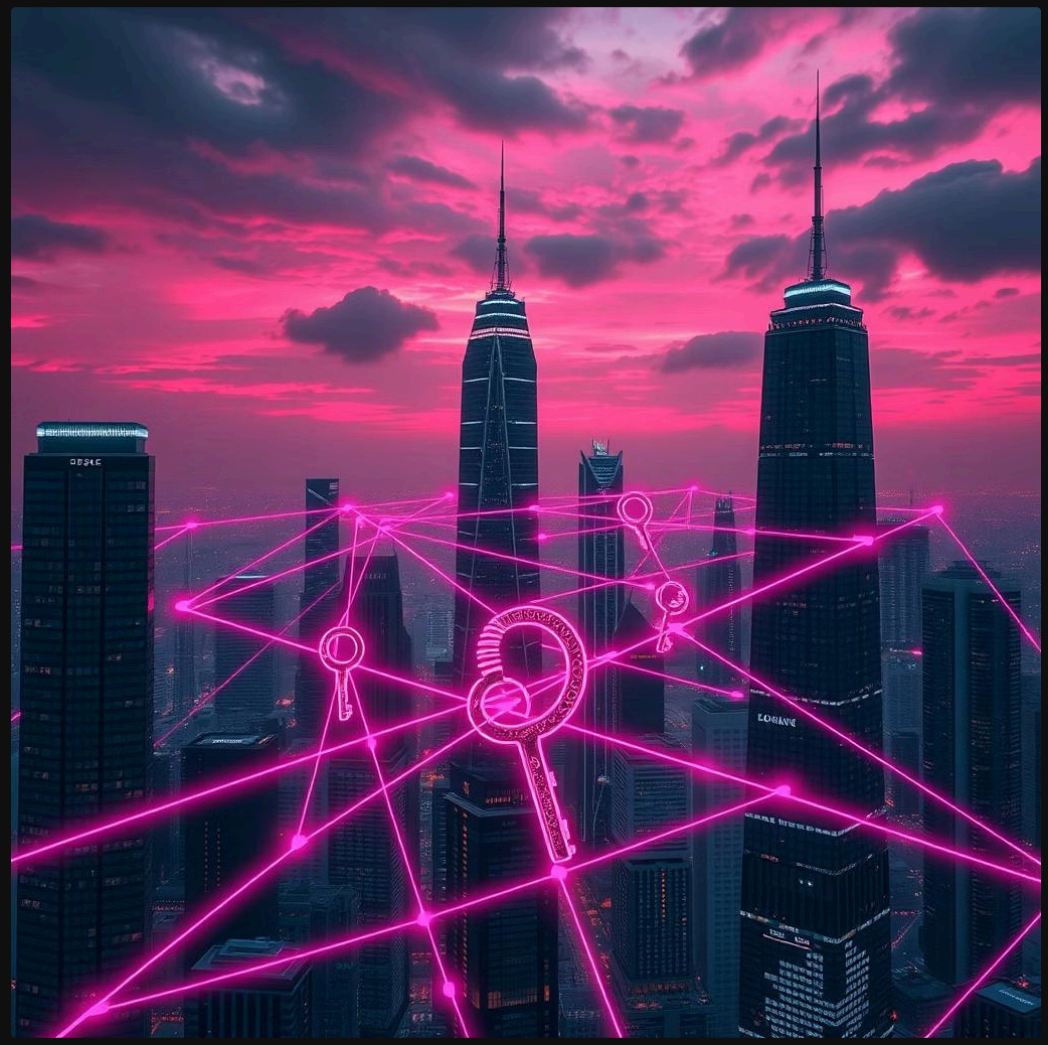
Global Interoperability

A unified, trustless system that transcends institutional boundaries.

EduCred: Blockchain-Based Credentials

EduCred transforms academic credentials into **Non-Fungible Tokens (NFTs)** on the blockchain, providing undeniable proof of ownership and authenticity.

- **Decentralized Storage:** Certificates are securely stored on IPFS, ensuring permanent availability.
- **Unique Identity:** Each certificate receives a unique, verifiable cryptographic hash.
- **Student Ownership:** Students receive verifiable ownership of their academic records as digital tokens in their wallets.



Core Features & Architecture

Key Features

- Certificates issued as NFTs for immutable ownership.
- Secure, permanent storage using IPFS technology.
- Verification via public blockchain hash for transparency.
- Intuitive role-based dashboards for Admins and Students.
- One-click sharing and instant verification capabilities.

Technology Stack

- **Frontend:** Next.js, React, TailwindCSS.
- **Smart Contracts:** Solidity on Polygon Mumbai, using Wagmi + Viem.
- **Storage:** IPFS via Pinata for decentralized data.
- **Voice Recognition:** react-speech-recognition.

User Experience: Roles & Flows

1

Admin Dashboard

Admins can mint certificates directly to student wallet addresses with a click, or use voice commands for rapid batch uploads. Full certificate history and audit trails are maintained.

- Mint certificates to student wallets.
- Button upload functionality.
- Access to certificate issuance history.

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Student Dashboard

Students access their issued digital credentials, view certificate details, and seamlessly share verifiable NFT links with employers or other institutions.

- View all issued certificates.
- Download or share NFT links.
- Publicly verifiable credentials.

How It Works: Streamlined Process

Admin Login & Wallet Connect

Secure authentication via Metamask.

Metadata Creation & IPFS Pinning

Certificate data is processed and stored on IPFS.

NFT Minting & Assignment

Smart contract creates NFT with IPFS URI, assigning it to student.

Student Access & Verification

Students view certificates; anyone can verify on blockchain.

Benefits & Future Outlook

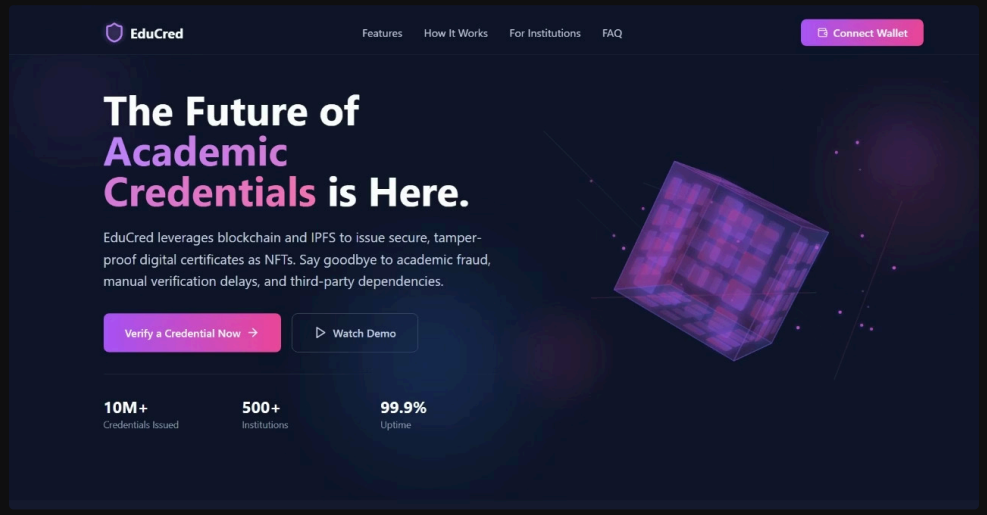
Key Benefits

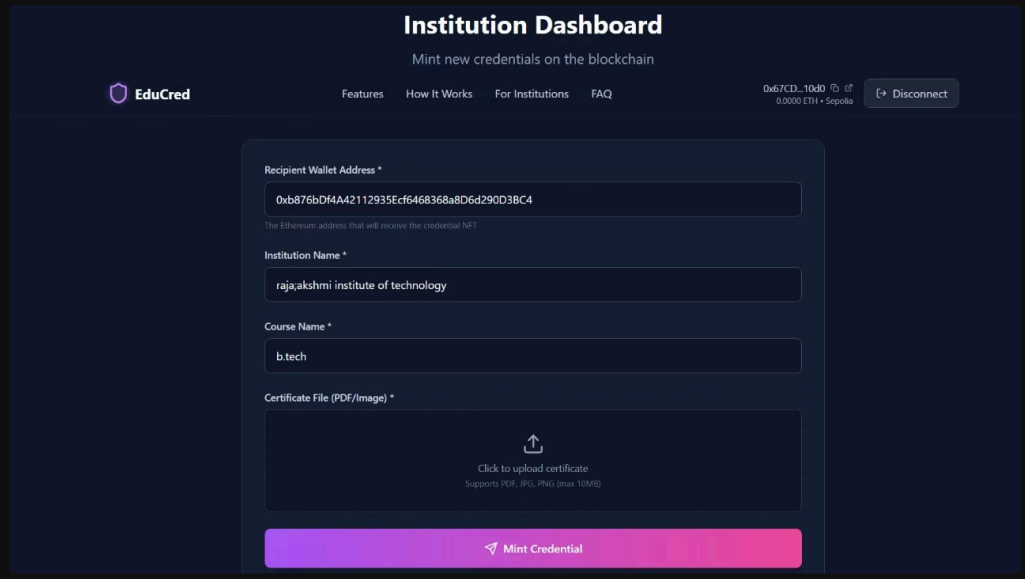
- **Fraud-Proof:** Eliminates counterfeiting and ensures authenticity.
- **Decentralized:** No central point of failure, enhancing security.
- **Instant Access:** Real-time verification and credential management.
- **Transparent:** Open and verifiable by any authorized party.
- **Scalable:** Adapts to any educational or skill platform globally.

Future Enhancements

- **Zero-Knowledge Proofs (ZKPs):** For private, selective verification.
- **Mobile Wallet Integration:** Expanding accessibility for students.
- **Analytics Dashboards:** Insights for institutions and recruiters.
- **Customization:** Flexible certificate template designs.
- **API Integrations:** Seamless connections with platforms like Coursera.

Demo :





Future Enhancement:

🔒 Zero-Knowledge Proofs (ZKPs) for private verification
📱 Mobile wallet integration for wider adoption
📊 Analytics dashboards for institutions and recruiters
🛠️ Certificate template customization
🎓 API for skill platforms like Coursera, NPTEL, etc.