

Blockchain in Institute Manpower Management

Ensuring Transparency, Authenticity and Trust

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Outline

- 1 Why Blockchain is Needed
- 2 Certificate Verification Mechanism
- 3 Conclusion

Problems in Traditional Systems

- Recruiters can alter vacancy details after approval.
- Certificates can be forged or manually edited.
- Verification is slow and centralized.
- No permanent audit trail of approvals or hires.

Why Use Blockchain?

- **Immutability:** Once uploaded, data like stipend or requirements cannot be changed.
- **Transparency:** Every action (approval, selection) is publicly traceable.
- **Authenticity:** Certificates are verified using document hashes on-chain.
- **Decentralized Trust:** Eliminates single-point manipulation.
- **Auditability:** Anyone can verify every step from request to selection.

Benefits per Role

Department

- Ensures fixed stipend and eligibility.
- Tracks all requests and approvals.

Recruiter

- Instantly verify applicant certificates.
- Prove legitimacy with CA-issued certificate.

Applicant

- Verify recruiter authenticity before applying.
- Avoids resubmitting paper-based documents.

How Certificate Verification Works

- ➊ **Authority (CA)** issues signed certificate (PDF + .sig) to each applicant.
- ➋ Hash of the certificate PDF is stored on-chain using `uploadStudentCert()`.
- ➌ Authority's own public certificate hash is also stored on-chain.
- ➍ **Applicant** sends PDF + signature to recruiter.
- ➎ **Recruiter** verifies signature locally using CA's certificate.
- ➏ Recruiter logs verification result via `confirmFileVerification()`.

Why It's Secure

- Modified PDFs fail hash check → instantly detected.
- Fake certificates fail signature check using CA's public key.
- Blockchain acts as immutable proof of authenticity.

Result

Only genuine, CA-signed certificates can be accepted.

Summary

- Blockchain ensures immutability, transparency, and authenticity.
- Certificates and vacancies become tamper-proof.
- Verification is trustless and automatic.
- Strengthens fairness and digital trust in institutional hiring.

Questions?

Thank you!

Questions / Discussion