

Mentor Guide for Clxend Project

1. Overview of Clxend Project

Project Description: Clxend revolutionizes digital transactions by merging blockchain for secure, transparent transfers with AI for intelligent, effortless payments. Whether through social media handles, image recognition, or traditional methods, Clxend enables fast, seamless money movement with enhanced trust and automation.

Mission and Goals:

- Build secure, intelligent payment infrastructure
- Leverage biometric and decentralized identity for authentication
- Enable compliant, transparent blockchain-based payments

Key Innovation Areas:

- Biometric + FaceAuth Identity
- Decentralized Identity (DID) frameworks
- Smart Contracts and On-Chain Crypto Transfers
- Mobile/Web UX for Financial Flows
- AI Governance and Risk Modeling

2. Mentor Objectives & Responsibilities

Time Commitments by Role (M1–M6):

- AI/Identity Research Lead: 6–8 hrs/week
- Blockchain & Transaction Architect: 6–8 hrs/week
- Full-Stack Product Engineer: 5–6 hrs/week
- Cloud & Integration DevOps: 5–6 hrs/week
- AI Governance & Risk Strategist: 4–6 hrs/week

Core Responsibilities:

- Support delivery of biometric, blockchain, and fraud-prevention features
- Review smart contracts, biometric validations, UX flows, and audit trails
- Mentor student contributors on secure and ethical design
- Help create repeatable policy compliance and governance checkpoints

3. Tech Stack and Tools by Role

AI/Identity Research Lead

- **Languages/Libraries:** Python, OpenCV, Dlib, TensorFlow, PyTorch
- **Biometric Models:** FaceNet, ArcFace, Liveness Detection Toolkits
- **DID Frameworks:** W3C DID, Hyperledger Indy, SpruceID
- **Evaluation:** MLflow, Weights & Biases, Fairness Indicators
- **Dev Tools:** JupyterLab, VSCode, Hugging Face CLI

Blockchain & Transaction Architect

- **Smart Contract Tools:** Solidity, Hardhat, Foundry, Truffle
- **Chain Platforms:** Ethereum, Polygon, Layer 2 rollups
- **Identity Integration:** EIP-712, ERC-725, ERC-4337
- **Audit & Simulation:** MythX, Slither, Tenderly, Ganache
- **Wallet Testing:** Metamask, WalletConnect, Remix IDE

Full-Stack Product Engineer (Mobile/Web/API)

- **Frontend:** React Native, React, TailwindCSS
- **Backend:** Node.js, Express, gRPC, REST APIs
- **Features:** FaceAuth login, Push Notifications, QR Payments
- **Testing:** Jest, Cypress, Lighthouse
- **Mobile DevOps:** Expo CLI, Fastlane

Cloud & Integration DevOps Engineer

- **Infrastructure:** Kubernetes, Terraform, Helm
- **Performance Tools:** Locust, K6, JMeter
- **Monitoring/Observability:** Prometheus, Grafana, ELK Stack
- **CI/CD:** GitHub Actions, ArgoCD
- **Security:** Snyk, Falco, HashiCorp Vault

AI Governance & Risk Strategist

- **Compliance:** NIST AI RMF, SOC2-lite, GDPR Toolkits
- **Audit Trail:** Apache Atlas, SQLite, Custom JSON loggers
- **Threat Modeling:** MITRE ATT&CK, STRIDE Framework
- **Fraud/Dispute Modeling:** Neo4j (graph fraud detection), TensorFlow
- **Governance Docs:** RAIL Guidelines, Red Team Templates

4. Reference Materials & Learning Links

- **Biometrics:** <https://github.com/ondyari/face-alignment>, <https://docs.sighthound.com>
- **DID & Privacy:** <https://w3c-ccg.github.io/did-spec/>, <https://identity.foundation>
- **Smart Contracts:** <https://docs.soliditylang.org>, <https://hardhat.org>
- **UX & APIs:** <https://reactnative.dev>, <https://grpc.io/docs>
- **DevOps & Monitoring:** <https://kubernetes.io/docs>, <https://www.jmeter.apache.org>
- **AI Ethics:** <https://www.nist.gov/itl/ai-risk-management-framework>, <https://raillab.org>

5. Development Environment Setup

Recommended Tools:

- VSCode, JupyterLab, Postman
- Docker Desktop, GitHub CLI, Terraform CLI
- Expo CLI, Android/iOS Simulators, Node.js v18+

Setup Guidelines:

- Use Docker Compose to deploy API/Auth/Blockchain layers
- Enable CI lint/test on PR using GitHub Actions
- Setup biometric ML model testing in a Jupyter sandbox

6. Code Check-in & Review Procedures

Branching Strategy:

- GitFlow: `feature/` → `dev` → `main`

PR Requirements:

- Link PR to Jira/GitHub Issue (e.g., CLX-102)
- Run biometrics/contract/test suite
- Reviewed by 2+ members with governance sign-off

Commit Rules:

- Semantic Commits: `feat:`, `fix:`, `test:`
- Squash Merge for feature integration

7. Project Tracking Components

KPIs by Role:

- AI/Identity: Face match accuracy, liveness bypass rate
- Blockchain: Contract coverage, testnet transaction logs
- Product: UX completion %, App Store approval time
- DevOps: Latency, KYC gateway uptime
- Governance: Threat model coverage, audit trail accuracy

Tools:

- Task Tracking: GitHub Projects / Jira
- Docs: Notion + GitHub Markdown
- Logs: Promtail + Grafana Dashboards
- Governance Artifacts: Audit logs in SQLite, Policy JSON

8. Mentor-to-Role Alignment

Role	Assigned Member	Mentor (TBD)	Time Commitment
AI/Identity Research	Vignesh AS	babulingaa@kanchiuniv.ac.in	6–8 hrs/week
Blockchain & Transaction	E Durai Prakash	babulingaa@kanchiuniv.ac.in	6–8 hrs/week
Full-Stack Product Engineer	G P Vimalashwari	babulingaa@kanchiuniv.ac.in	5–6 hrs/week
Cloud & Integration DevOps	Ranjith K	babulingaa@kanchiuniv.ac.in	5–6 hrs/week
AI Governance & Risk	Ajay S	babulingaa@kanchiuniv.ac.in	4–6 hrs/week

9. Guidelines for Open Roles

Mentors must help identify and onboard:

- Model Testing Support (AI/Identity)
- Secure Channel Architect (Blockchain)
- API/Notification Backend Developer (Product)
- Backup CI/CD & Infra Engineer (DevOps)
- AI Ethics & Compliance Co-lead (Governance)

10. Best Practices & Tips

- Follow governance-driven development lifecycle
- Use isolated sandbox environments for model and contract tests
- Maintain clear traceability: From PR → Policy → Audit Trail
- Encourage interdisciplinary pairing and mutual reviews

Mentor Action Plan by Role

- **AI/Identity:** Host liveness testing demos; validate privacy-preserving model versions
- **Blockchain:** Run contract audit workshops; simulate testnet flows monthly
- **Product:** Deliver cross-platform UI kits; test auth recovery flows
- **DevOps:** Setup gated CI/CD; enforce resource quotas and logging rules
- **Governance:** Create dispute resolution playbooks; simulate fraud scenarios quarterly

Key Reminders:

1. All biometric and blockchain PRs need risk review
2. Governance logs must be versioned and reviewable
3. Onboarding kits must include sandbox + model/contract starter packs

Delivery Timeline:

- Draft Guide: M2 W3
- Feedback Loop: M2 W4–M3 W1
- Finalization: Pre-M3 surge

11. Tool Installation Checklist by Role

Role	Tools to be Installed
AI/Identity Research	Python, JupyterLab, VSCode, OpenCV, Dlib, PyTorch, Hugging Face CLI, MLflow
Blockchain & Transaction	Solidity, Hardhat, Foundry, Truffle, Ganache, Tenderly, Metamask, Remix
Full-Stack Product	Node.js, React Native, TailwindCSS, Expo CLI, Cypress, Jest, Postman
Cloud & Integration DevOps	Docker, Kubernetes CLI, GitHub CLI, Terraform, Prometheus, Grafana, Helm
AI Governance & Security	Apache Atlas, SQLite Browser, Threat Modeling Toolkit, GDPR Toolkit, Red Team Scripts

12. Skills-to-Tool Matrix

Skill Area	Tools Mapped
Biometric Validation	OpenCV, FaceNet, ArcFace, MLflow
Decentralized Identity	W3C DID, Hyperledger Indy, SpruceID
Smart Contract Dev	Solidity, Hardhat, Tenderly
Frontend Dev	React Native, TailwindCSS
API Integration	REST, gRPC, Express, Postman
CI/CD Automation	GitHub Actions, Argo CD
Infrastructure as Code	Terraform, Helm
Monitoring & Logging	Prometheus, Grafana, ELK
Security & Compliance	Apache Atlas, GDPR Toolkit, RAIL Guidelines
Threat Simulation	MITRE ATT&CK, STRIDE, Red Team Toolkit