

# AI-Driven Payroll Audit and Attendance Reconciliation

**Sector:** Human Resources & Payroll

**Solutions:** AI-Powered Payroll Validation, Attendance–Salary Reconciliation, Risk Scoring Alerts

**Deployment:** On-premise (Integrated with HR/ERP Systems)

## 1. Assessment & Vision Setting

### Current State Analysis

The client's Accounts Payable (AP) team processed thousands of invoices every month, relying on manual reviews and rule-based checks. This exposed them to risks of duplicate payments, fraudulent vendor setups, and collusion—while audit reviews were time-consuming and inconsistent.

#### ✔ Defined Objectives

- Automate reconciliation of biometric attendance and payroll records.
- Detect anomalies such as payouts despite zero or low attendance.
- Strengthen payroll governance with AI-driven risk scoring

### Stakeholder Alignment

Collaborated across **HR, Payroll, and IT teams** to align validation logic, integrate leave/remote work systems, and ensure seamless embedding into existing payroll workflows.

## 2. Data Foundation & Consolidation

### Data Collection

- ✔ Extracted **biometric attendance logs** (check-in/out timestamps, device IDs).
- ✔ Pulled **shift schedules** from workforce management systems.
- ✔ Extracted **payroll transaction records** (employee ID, payout amount).
- ✔ Ensured a **common employee identifier** across systems.

### Data Cleaning & Preprocessing

- ✔ Standardised date/time formats across logs.
- ✔ Removed duplicates and filled missing IDs.
- ✔ Applied **fuzzy matching** to align biometric records with payroll employee data.

## 3. Feature Engineering

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- ✔ **Attendance Rate**  
Calculated as per organisational logic.
- ✔ **Zero/Near-Zero Attendance Flags**  
Employees receiving salary despite no attendance.
- ✔ **Salary–Attendance Mismatch**  
Payouts exceeding attendance thresholds without approved leave.
- ✔ **Contextual Features**  
Deployment type (on-site/remote), leave records.

## 5. Workflow Integration & Alerting

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### HR/ERP Integration

- ✔ AI model embedded in payroll workflows.
- ✔ Automated checks are executed before salary disbursement.

### Alerting & Insights

- ✔ Risk scores were generated for flagged employees.
- ✔ Reports shared with Payroll & Audit teams for verification

## 6. Governance & Compliance

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- ✔ Integrated leave and remote work logs to minimise false positives.
- ✔ Maintained **audit-ready logs** for each flagged case.
- ✔ Ensured role-based access to sensitive payroll and biometric data.

## 4. Model Development

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### Rule-Based Filters

- ✔ Salary disbursed with **zero attendance**.
- ✔ Attendance < defined threshold (e.g., <10%) without leave approval.

### AI Models

- ✔ **Anomaly Detection:** Isolation Forest to capture abnormal salary–attendance patterns.
- ✔ Risk scoring is applied to employees with suspicious records for prioritised review.

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## Outcome

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- ✔ **Faster Audit Cycles**  
Payroll-to-attendance reconciliation reduced audit turnaround time.
- ✔ **High Accuracy**  
Clear mismatches (e.g., zero attendance + salary) flagged with near-100% accuracy.
- ✔ **Strengthened Payroll Governance**  
Improved synchronisation across HR, payroll, and attendance systems.
- ✔ **Reduced Fraud Risk**  
Ghost employee payouts and inaccurate disbursements detected before salary release.