

GenAI-Data Profiling for Banking Regulatory Reporting

By

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Banking Combing Compliance



The Burden of Regulatory Compliance

- Imagine a bank's compliance team buried under mountains of spreadsheets, data files, and regulations during a regulatory reporting cycle. The team must ensure that every piece of data submitted is accurate and compliant with the latest requirements.
- The regulations are constantly changing. The team painstakingly goes through each data set, manually defining validation rules, cross-checking against regulations—hoping they don't miss something critical. This process is time-consuming, error-prone, and a huge bottleneck.

Manual Processes

Teams manually validate data against regulations.


Time-Consuming

The process is slow and resource-intensive.

Error-Prone

Manual checks increase the risk of mistakes.





compliance?

The Struggle of Manual Profiling

Sarah, the lead compliance officer, spends 4-6 hours a day reviewing a handful of validation rules—none of which are reusable. Every new regulation brings a fresh set of challenges.

One day, Sarah notices that an important report has discrepancies—there's a mismatch in data on loan amounts due to regulatory changes that weren't accounted for in the original rules. There's no way to know immediately what caused the issue because of the highly manual nature of the task.



Time Intensive

4-6 hours a day reviewing rules.



Risk of Discrepancies

Data mismatches due to regulatory changes.



Financial Penalties

Late reporting and non-compliance fines.



GenAI: A Game Changer

What if Sarah could trust an AI-powered assistant that instantly understands complex regulations and can generate validation rules in real-time? With the **GenAI-powered Data Profiling Solution**, this vision becomes reality.

Now, Sarah doesn't need to spend countless hours defining rules. Instead, she can focus on strategic tasks, knowing that the system is continuously adapting to regulatory changes and automatically generating validation rules that align with the latest instructions. The **AI** is fast, **scalable**, and **reliable**.



Fast

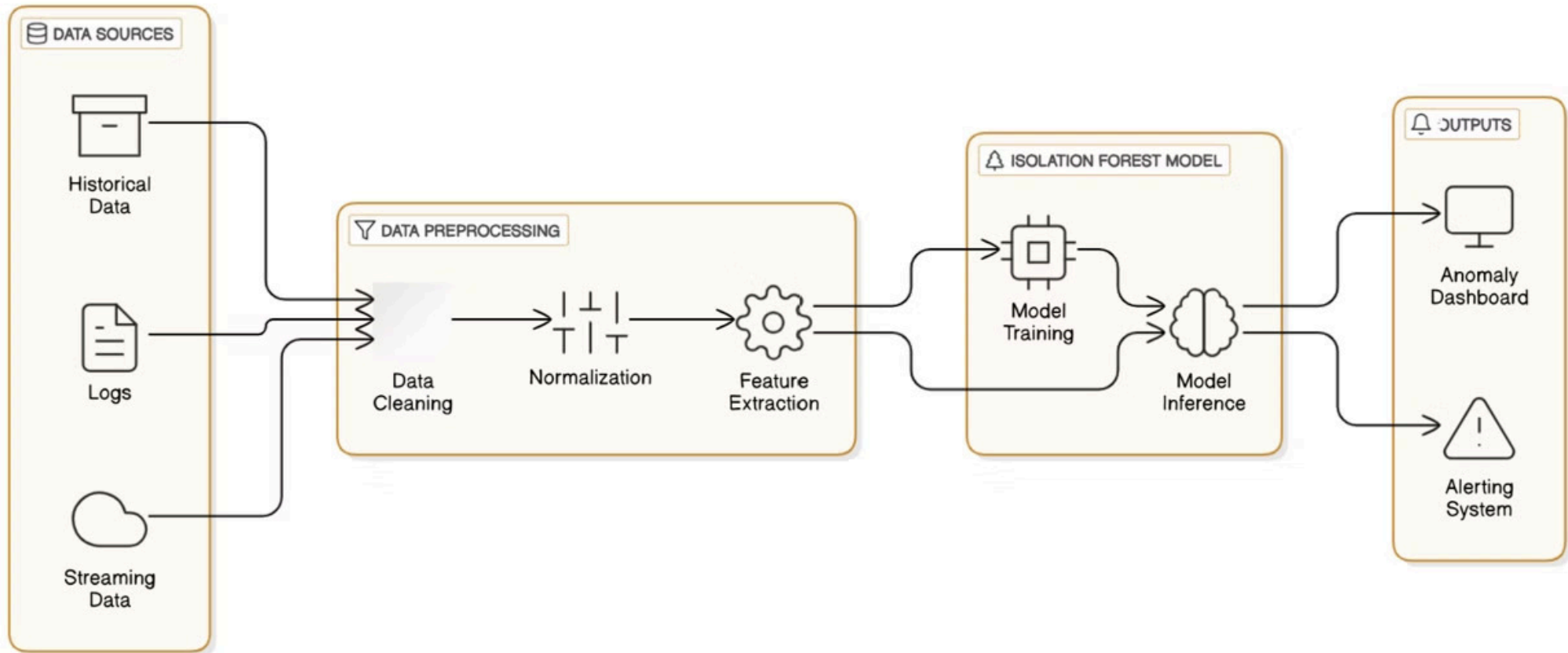


Scalable

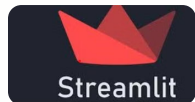


Reliable

Anomaly Detection System using Isolation Forest



Technology Stack




Demo:

Upload the Regulatory guidelines pdf

Upload a file to generate profiling rules

Choose a file




Drag and drop file here
Limit 200MB per file

Browse files

Upload the Regulatory to generate profiling rules


Upload a file to generate profiling rules

Choose a file



Drag and drop file here
Limit 200MB per file

Browse files

 rules_from_wellsn.pdf 57.6KB

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File uploaded successfully

Profiling Rules

```
{
  "data_profiling_rules": {
    "required_fields": ["Transaction_Amount", "Reported_Amount", "Account_Balance"],
    "missing_values": {
      "allowed_fields": ["Transaction_Amount", "Reported_Amount", "Account_Balance"],
      "action": "Raise alert for missing values"
    },
    "allowed_value_ranges": {
      "Transaction_Amount": ["non-negative", "no excess deviation except for cross"],
      "Reported_Amount": ["non-negative", "no excess deviation except for cross-cu"],
      "Account_Balance": ["non-negative unless marked with '00' flag for overdraft"],
      "Currency": ["ISO 4217 currency code"],
      "Transaction_Date": ["not in the future", "not older than 365 days"]
    },
    "formatting": {
      "Transaction_Date": "YYYY-MM-DD",
      "Transaction_Amount": ["numeric value"],
      "Reported_Amount": ["numeric value"]
    },
    "compliance_checks": {
      "Currency": "all monetary values must be in USD",
      "Country": "must be an accepted jurisdiction based on bank regulations"
    },
    "additional_rules": {
      "cross_currency_conversions": "permissible deviation of up to 1%",
      "mandatory_remarks": {
        "field": "Transaction_Remarks",
        "for_transactions_exceeding": "$10,000"
      },
      "high_risk_transactions": {
        "amount_threshold": "$5,000",
        "countries": ["list of high-risk countries"],
        "action": "flag for automatic compliance check"
      },
      "round_number_transactions": {
        "amounts_to_validate": ["$1,000", "$5,000"],
        "action": "conduct additional validation steps for potential money launder"
      },
      "risk_scoring_system": {
        "description": "dynamic system adjusting scores based on transaction patte"
      }
    }
  }
}
```


Remediation Actions

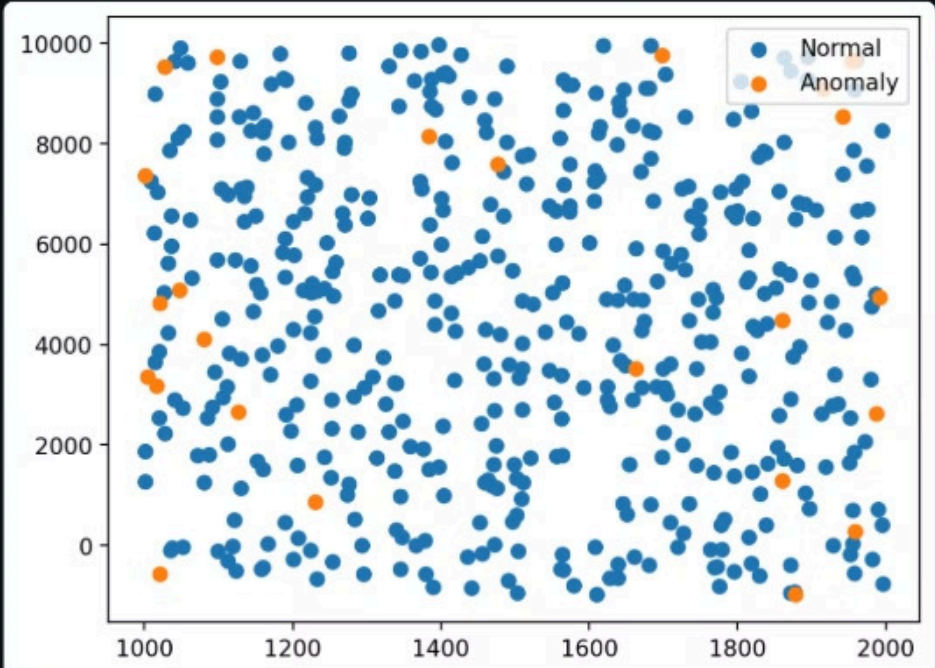
Based on the data quality issues identified in the regulatory report, the following remediation actions can be suggested to ensure compliance:

- Missing Values:** Implement a process to raise alerts for missing values in the required fields. This will help in ensuring that all necessary data points are captured and reported accurately.
- Value Ranges Compliance:**
 - Ensure that Transaction Amount and Reported Amount values are non-negative with no excess deviation except for cross-currency conversions.
 - Validate that Account Balance is non-negative unless marked with the 'OD' flag for overdraft accounts.
 - Verify that Currency values adhere to the ISO 4217 currency code standards.
 - Check that Transaction Dates are not in the future and not older than 365 days.
- Data Formatting:**
 - Enforce the YYYY-MM-DD format for Transaction Date.
 - Confirm that Transaction Amount and Reported Amount fields contain numeric values.
- Compliance Checks:**
 - Validate that all monetary values are in USD.
 - Ensure that the Country field corresponds to accepted jurisdictions based on bank regulations.
- Additional Rules:**
 - Monitor cross-currency conversions for deviations not exceeding 1%.
 - Implement mandatory remarks for Transaction Remarks for transactions exceeding \$10,000.
 - Flag high-risk transactions exceeding \$5,000 from high-risk countries for automatic compliance checks.
 - Verify round number transactions of 1,000 and 5,000 for potential money laundering risks.
 - Utilize a risk scoring system that adjusts scores based on transaction patterns and historical violations.

By implementing these remediation actions, the regulatory report data quality issues can be addressed effectively to ensure compliance with the regulatory requirements. Regular monitoring and validation of the data according to the specified rules and checks will help maintain data integrity and regulatory compliance.

Scored Data

	Customer_ID	Account_Balance	Transaction_Amount	Currency	Country	Transaction_Date	OD
0	1102	9230.1852	11124.4991	GBP	Germany	2023-10-24	No
1	1435	-225.4226	8601.5312	CAD	India	2025-01-15	No
2	1860	1298.1059	14965.4123	CAD	Australia	2023-06-26	Yes
3	1270	6382.5787	11288.5228	AUD	India	2024-02-21	Yes
4	1106	2945.1146	10607.6371	AUD	North Korea	2023-05-24	Yes
5	1071	1795.8001	11680.7934	EUR	USA	2024-09-04	Yes
6	1700	2248.1965	2155.4885	INR	India	2024-10-29	Yes
7	1020	2548.0584	3076.1235	AUD	Russia	2023-12-10	No
8	1614	8335.3677	10713.8206	USD	India	2023-06-10	No
9	1121	502.8346	7414.7825	AUD	UK	2024-09-08	No



Automated Remediation & Explanations

The AI suggests remediation actions. It generates clear explanations for each flagged transaction.

No more back-and-forth with auditors. Compliance officers can move on to the next task.

Story telling:

Thanks to Gen AI, Sarah's life has changed. Regulatory reporting no longer a stressful, manual process.

Suggests Actions

AI suggests remediation actions.

Clear Explanations

Automated explanations for auditors.



Key Benefits: The Transformation

Regulatory reporting is no longer stressful. The system saves hours every day.

The AI ensures compliance with precision. The AI-powered solution has compliance covered.

Hours

Efficiency

Saves hours every day.

100%

Accuracy

AI ensures compliance.

Auto

Scalability

Adapts automatically.