AI Driven Entity Intelligence Risk Analysis

Technology Hackathon 2025

Team Scam-ur-AI

Team Members

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Introduction

A significant amount of manual effort is spent in identifying the correct entities involved in transactions and analysing the transactions from a risk standpoint. This solution leverages provides publicly available data such as company registries, legal databases and news articles along with the **power of Gen AI** to provide a robust mechanism for entity recognition and accurate risk evaluation by creating a **comprehensive Risk Report**.
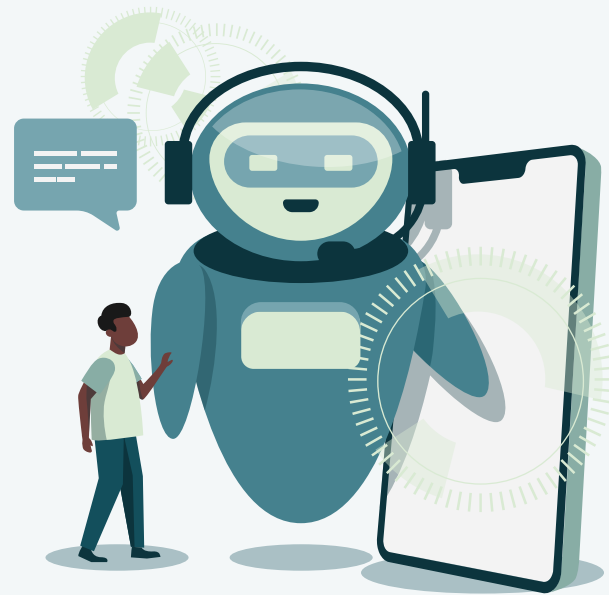
Our Approach

Approach – the Basics

Data	Entity Recognition	Info from Data Sources	Risk Score
Structured and Unstructured transaction data	Named Entity Recognition using the Gemini 2.0 Flash model to get a list of entities	Entity looked up on various data sources (ICIJ Leaks, Wikidata sanctioned entity lists, PEP lists, News articles etc) and detailed textual report produced	Transaction Text and Entity report for each entity sent to Gemini to generate Risk score, Confidence score, entity classification and reasoning

Approach

Tech Stack Used

- Frontend: ReactJS, TailwindCSS, RadixUI
- Backend: FastAPI
- Gemini API

Data Sources Leveraged

- OFAC API
- News API
- WikiData
- Sanction Lists
- ICIJ Leaks API

Approach – Risk Scoring Methodology

Risk Score is calculated by Gemini using two inputs
- **Transaction text**
- **Detailed textual report** upon the entities that includes all the information about them contained in our data sources

Contents of Detailed Text Report

Wikidata
If entity is found, is it a company/individual/other entity? If it is a company then find board members and associated cos. If it is a person then are they a PEP (Politically Exposed Person). If it is not found or is not an individual or a company then return this information.

ICIJ Leaks
The ICIJ Leaks database allows us to search for entity and its associated people and companies (if the entity is a company) and returns relevant results.

OFAC API
OFAC API allows us to search for the entity and its associated people and companies (if the entity is a company) in sanctions like SDN, INTERPOL, FINCEN etc and PEP lists. We return the sources in which entity was found or that the entity was not found in these lists.

News API
Collect news articles about the entity and check for financial misdoings, sanctions, etc in these articles and give a summary about the entity from these articles.

Approach – Risk Scoring Methodology

A typical detail textual report after entity analysis looks like this.

For the entity: YAKIMA OIL TRADING, the following information was found:
Wikidata Results Summary:
Wikidata does not have enough information to identify the entity: YAKIMA OIL TRADING.
News Articles Summary:
No news articles were found for the entity: YAKIMA OIL TRADING.
Sanction Search Summary:
The entity: YAKIMA OIL TRADING was found in the following search results: Matched with: YAKIMA OIL TRADING, LLP from the source: SDN with the similarity score: 0.8780487804878049.
ICIJ Leaks Database Search Summary:
The entity: YAKIMA OIL TRADING was found in the following search results from ICIJ Leaks Data: Matched with: YAKIMA TRADING CORP. with the similarity score: 84.21052631578947 with the reasoning being: Entity node extracted from the Paradise Papers - Barbados corporate registry data

Approach – Risk Scoring Methodology

This detailed text report informs us better about the risk level of the transaction. Moreover, using Gemini as a source further provides access to information which was not found in the data sources to further strengthen the risk scoring.
An example of the final json returned by Gemini is as follows.

```
{'Transaction ID': 'TXN-2023-5A9B',
'Extracted Entity': ['Rosneft Oil Company', 'YAKIMA OIL TRADING, LLP', 'LLP', 'Ali Hussein
Falih Al-Mansoori', 'Lasca Holding Ltd', 'NordVPN'],
'Entity Type': ['Oil Company', 'Limited Liability Partnership', 'Legal Structure',
'Individual (Director)', 'Holding Company', 'VPN Provider'],
'Risk Score': 0.85,
'Supporting Evidence': ['SDN List', 'Paradise Papers (ICIJ)', 'Paradise Papers (ICIJ)',
'Consolidated Sanctions List', 'Paradise Papers (ICIJ)', 'VPN Usage, Panama Exit Node'],
'Confidence Score': 0.88,
'Reason': 'While Rosneft Oil Company has no direct hits, the receiver, YAKIMA OIL TRADING,
LLP, appears on the SDN list and in the ICIJ leaks database (Paradise Papers). Ali Hussein
Falih Al-Mansoori, who approved the urgent transfer, is on the Consolidated Sanctions List.
The transaction was processed via Lasca Holding Ltd, which also appears in the ICIJ leaks
database (Paradise Papers). The use of NordVPN with a Panama exit node raises further
suspicion. The missing invoice and charitable donation reference (to an oil trading company)
also contribute to the elevated risk.'}
```
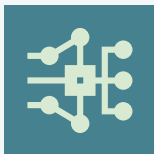
Challenges

Challenges

Handling Entities not found in any data sources like Wikidata, sanctions, news etc.
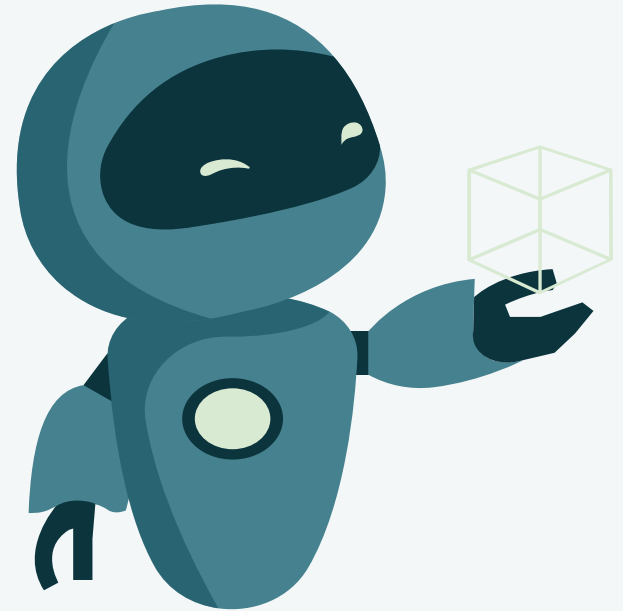
Choosing metrics by which to quantify risk and confidence in the form of a numerical score

Handling rate limitations and quotas on certain APIs like OFAC API and News API which could result in less data available for Risk Analysis

Results

User Interface

AI-Driven Entity Intelligence & Risk Analysis

Team: scam-ur-ai

Upload transaction files to analyze them for entity risk. Choose between structured and unstructured data formats.

Transaction Data   Process Transactions   Clear Data

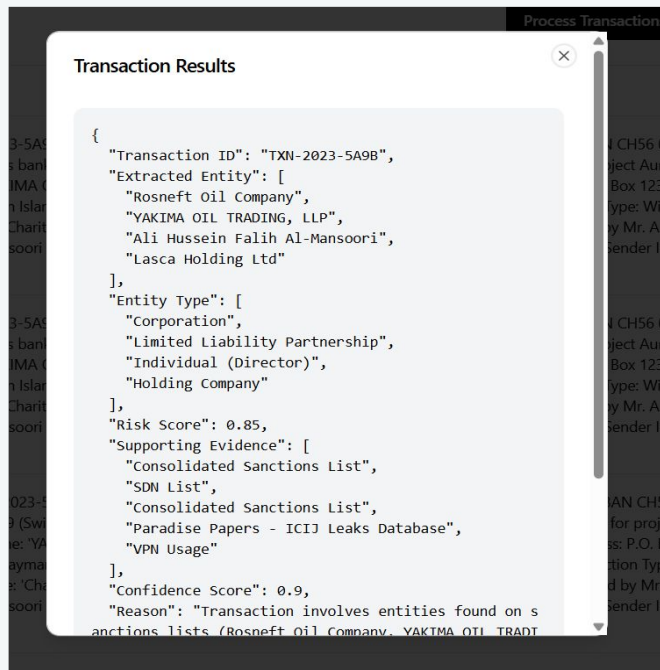| Transaction Section	View Results
Transaction ID: TXN-2023-5A9B Date: 2023-08-15 14:22:00 Sender: -Name: 'Rosneft Oil Company' -Account: IBAN CH56 0483 5012 3456 7800 9 (Swiss bank) -Address: Rue du Marche 17, Geneva, Switzerland -Notes: 'Consulting fees for project Aurora' Receiver: -Name: 'YAKIMA OIL TRADING, LLP' -Account: 987654321 (Cayman National Bank, KY) -Address: P.O. Box 1234, George Town, Cayman Islands -Tax ID: KY-45678 Amount: $49,850 (USD) Currency Exchange: N/A Transaction Type: Wire Transfer Reference: 'Charitable Donation - Ref #DR-2023-0815 Additional Notes: - Urgent transfer approved by Mr. Ali Hussein Falih Al-Mansoori (Director) - Linked invoice missing. Processed via intermediary Lasca Holding Ltd - Sender IP: 192.168.89.123 (VPN detected: NordVPN, exit node in Panama)	+
Transaction ID: TXN-2023-5A9C Date: 2023-08-15 14:22:00 Sender: -Name: 'Rosneft Oil Company' -Account: IBAN CH56 0483 5012 3456 7800 9 (Swiss bank) -Address: Rue du Marche 17, Geneva, Switzerland -Notes: 'Consulting fees for project Aurora' Receiver: -Name: 'YAKIMA OIL TRADING, LLP' -Account: 987654321 (Cayman National Bank, KY) -Address: P.O. Box 1234, George Town, Cayman Islands -Tax ID: KY-45678 Amount: $49,850 (USD) Currency Exchange: N/A Transaction Type: Wire Transfer Reference: 'Charitable Donation - Ref #DR-2023-0815 Additional Notes: - Urgent transfer approved by Mr. Ali	+ ☼

Example unstructured Transactional data has been loaded in the above.

User Interface

Transaction Data

Process Transactions | Clear Data

Transaction ID	Payer Name	Receiver Name	Transaction Details	Amount	Receiver Country	View Results
TXN007	Chabad of Crimea	Surgutneftegas	Medical equipment donation	1500000	Russia	+
TXN010	US Dept. of Energy	Rosneft	Research grant	5000000	Russia	+
TXN005	Trident Trust	Rusal	Offshore investment	5000000	Cyprus	+
TXN015	Amazon.com Inc.	FedEx	Logistics services payment	1200000	USA	+
TXN003	Wirecard AG	Commerzbank	Purchase of office supplies	15000	Germany	+ ☼
TXN023	Kim Sung-du	Al-Noor Holdings (Dubai)	"Investment in construction project"	2500000	UAE	+
TXN022	East Wind Trading LLC	B&H Scotland	"Consulting services for cultural events"	375000	UK	+

Example structured Transactional data has been loaded in the above.

User Interface

Transaction Results

```
{
  "Transaction ID": "TXN-2023-5A9B",
  "Extracted Entity": [
    "Rosneft Oil Company",
    "YAKIMA OIL TRADING, LLP",
    "Ali Hussein Falih Al-Mansoori",
    "Lasca Holding Ltd"
  ],
  "Entity Type": [
    "Corporation",
    "Limited Liability Partnership",
    "Individual (Director)",
    "Holding Company"
  ],
  "Risk Score": 0.85,
  "Supporting Evidence": [
    "Consolidated Sanctions List",
    "SDN List",
    "Consolidated Sanctions List",
    "Paradise Papers - ICIJ Leaks Database",
    "VPN Usage"
  ],
  "Confidence Score": 0.9,
  "Reason": "Transaction involves entities found on s
anctions lists (Rosneft Oil Company, YAKIMA OIL TRADI
```

Generated results with risk scores and supporting evidence

User Interface

Transaction Data

Process Transactions **Clear Data**

Transaction Section	View Results
Transaction ID: TXN-2023-5A9B Date: 2023-08-15 14:22:00 Sender: -Name: 'Rosneft Oil Company' -Account: IBAN CH56 0483 5012 3456 7800 9 (Swiss bank) -Address: Rue du Marche 17, Geneva, Switzerland -Notes: 'Consulting fees for project Aurora' Receiver: -Name: 'YAKIMA OIL TRADING, LLP' -Account: 987654321 (Cayman National Bank, KY) -Address: P.O. Box 1234, George Town, Cayman Islands -Tax ID: KY-45678 Amount: $49,850 (USD) Currency Exchange: N/A Transaction Type: Wire Transfer Reference: 'Charitable Donation - Ref #DR-2023-0815 Additional Notes: - Urgent transfer approved by Mr. Ali Hussein Falih Al-Mansoori (Director) - Linked invoice missing. Processed via intermediary Lasca Holding Ltd - Sender IP: 192.168.89.123 (VPN detected: NordVPN, exit node in Panama)	➕
Transaction ID: TXN-2023-5A9C Date: 2023-08-15 14:22:00 Sender: -Name: 'Rosneft Oil Company' -Account: IBAN CH56 0483 5012 3456 7800 9 (Swiss bank) -Address: Rue du Marche 17, Geneva, Switzerland -Notes: 'Consulting fees for project Aurora' Receiver: -Name: 'YAKIMA OIL TRADING, LLP' -Account: 987654321 (Cayman National Bank, KY) -Address: P.O. Box 1234, George Town, Cayman Islands -Tax ID: KY-45678 Amount: $49,850 (USD) Currency Exchange: N/A Transaction Type: Wire Transfer Reference: 'Charitable Donation - Ref #DR-2023-0815 Additional Notes: - Urgent transfer approved by Mr. Ali Hussein Falih Al-Mansoori (Director) - Linked invoice missing. Processed via intermediary Lasca Holding Ltd - Sender IP: 192.168.89.123 (VPN detected: NordVPN, exit node in Panama)	➕
Transaction ID: TXN-2023-5A9D Date: 2023-08-15 14:22:00 Sender: -Name: 'Rosneft Oil Company' -Account: IBAN CH56 0483 5012 3456 7800 9 (Swiss bank) -Address: Rue du Marche 17, Geneva, Switzerland -Notes: 'Consulting fees for project Aurora' Receiver: -Name: 'YAKIMA OIL TRADING, LLP' -Account: 987654321 (Cayman National Bank, KY) -Address: P.O. Box 1234, George Town, Cayman Islands -Tax ID: KY-45678 Amount: $49,850 (USD) Currency Exchange: N/A Transaction Type: Wire Transfer Reference: 'Charitable Donation - Ref #DR-2023-0815 Additional Notes: - Urgent transfer approved by Mr. Ali Hussein Falih Al-Mansoori (Director) - Linked invoice missing. Processed via intermediary Lasca Holding Ltd - Sender IP: 192.168.89.123 (VPN detected: NordVPN, exit node in Panama)	➕

⬇ Download as JSON   ⬇ Download as CSV

Download Options are available too

Results of a High Risk Transaction

Input	Output

Transaction ID: TXN-2023-8E4F
 	
    Sender: "Mossack Fonseca" (Panama, Account: PA7890123456)
    Receiver: "Commerzbank" (Germany, Account: DE89370400440532013000)
    Amount: $4750000
    Notes: "Consulting fees. Intermediary: HSBC Private Bank Suisse."
	{ "Transaction ID": "TXN-2023-8E4F",
	        "Extracted Entity": ["Mossack Fonseca", "Commerzbank", "HSBC Private Bank Suisse"
	        ],
	        "Entity Type": ["Law Firm", "Bank", "Private Bank"],
	        "Risk Score": 0.85,
	        "Supporting Evidence": [
	          "Panama Papers (Implied through entity name)",
	          "ICIJ Leaks Database"], "Confidence Score": 0.9,
	        "Reason": "The transaction involves Mossack Fonseca, a law firm heavily implicated in the Panama Papers scandal, suggesting a high risk of illicit financial activities. While Commerzbank shows no direct evidence of financial wrongdoings in the provided data, the involvement of HSBC Private Bank Suisse, which appears in the ICIJ leaks database, further elevates the risk. The large transaction amount ($4,750,000) also warrants a high-risk score."}

Results of a Low Risk Transaction

Input	Output
Transaction ID: TXN-2023-14R0S Sender: "Toyota Motor Corporation" (Japan, Account: JP123456789012) Receiver: "Bosch GmbH" (Germany, Account: DE89370400440532013000) Amount: $750000 Notes: "Automotive parts payment (Invoice #BOS-2023-789)."	{ "Transaction ID": "TXN-2023-14R0S", "Extracted Entity": ["Toyota Motor Corporation", "Bosch GmbH", "Japan", "German"], "Entity Type": ["Corporation", "Corporation", "Country", "Country"], **"Risk Score"**: **0.1**,"Supporting Evidence": ["News Articles Summary (German)", "Sanction Search Summary", "ICIJ Leaks Database Search Summary", "Wikidata Results Summary", "News Articles Summary"], "Confidence Score": 0.85, "Reason": "While the transaction involves a significant amount ($750,000), neither Toyota Motor Corporation nor Bosch GmbH appear on any sanction or PEP lists, nor are they implicated in ICIJ leaks. News articles related to both entities and associated countries do not indicate significant financial misdoings. The slight risk assigned primarily stems from a small possibility of financial misconduct found in news articles related to entities in Germany, coupled with the substantial transaction amount which warrants closer scrutiny despite the clean records."}

Resources

- [Wikidata](#)
- [OFAC API](#)
- [News API](#)
- [ICIJ Leaks Database](#)
- [Gemini API Reference](#)