Looksy

Looksy: An Early Warning System to Detect Organized Crime from Suspicious Transactions

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https://github.com/WilliamAu1/William-Au-Portfolio/blob/main/Change%20Detection%20in%20FINTRAC%20Reporting/detect_str_chg.md

Problem: Organized Financial Crime is Hard to Detect

Criminals are **strategic**:
- Smurfing
- Money mules
- Shell companies
- Falsified invoices
- And many more strategies...

Detection techniques can be **flawed**:
- Slow statistical hypothesis tests
- Inefficient sampling for rare events
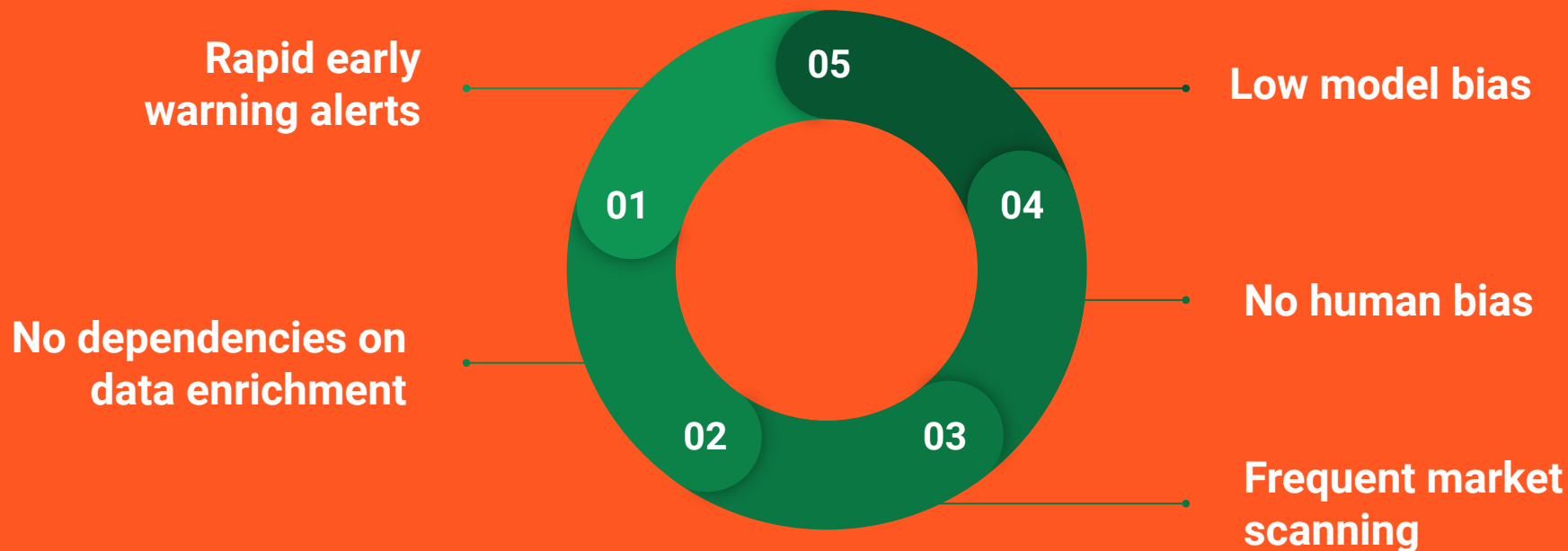- Human bias in target selection (ethnic or income marginalized neighbourhoods)

Social costs are **enormous**:
- Regulatory fines and other punishments
- Harm to financial systems including contagion
- Reputational damage to Canada and its companies
- Funding to perpetuate other forms of crime, such as human trafficking and terrorist financing

Solution: Implement a New Change Detection Model

Five Critical Success Factors

Rapid early warning alerts — 01

No dependencies on data enrichment — 02

Low model bias — 05

No human bias — 04

Frequent market scanning — 03

Concept Validation

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Indicators: The laundering of illicit proceeds from human trafficking for sexual exploitation

FINTRAC-2016-OA003
December 15, 2016

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Dave Seglins · CBC News · Posted: Feb 20, 2015 5:00 AM ET | Last Updated: February

Size of Target Transaction Population

Up to 50,000+

Suspicious Transaction Reports (STRs) Submitted Monthly

➔ Dramatic increase after 2014's international high profile money laundering case involving Manulife

➔ Many false positives lead to wasted public resources, and many false negatives lead to high societal costs

Introducing... Looksy

How Looksy Works

Data — STR volumes by neighbourhood are fed into Looksy; this can be enriched with various dimensions (e.g., specific banks, instruments)

Model — Change detection algorithm (CUSUM) is used to score the STR data to detect significant changes quickly, such as an intra-day cadence

**Ensemble** — Many combinations of model hyperparameters (random noise buffer, change threshold) are scored over the entire search space, eliminating human bias and minimizing model bias

Rapid Iteration — Fast processing means Looksy can iterate the process very frequently, allowing you to scan the environment without delay (and not allowing organized crime to gain momentum)

Looksy's Key Differentiators and Advantages
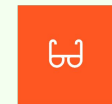
Looksy

FAST

Early warning alert system that's much faster than statistical hypothesis testing

ACCURATE

Far lower false positive cases relative to traditional sampling techniques

NO HUMAN BIAS

Elimination of human biases towards marginalized racial or income neighbourhoods
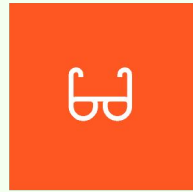
LOW MODEL BIAS

Ensemble grid search over entire hyperparameter search space

NO NEED FOR DATA ENRICHMENT

Very low data requirements with option for improved performance with enrichment

EFFICIENT

Fast processing enables frequent scoring, further improving response speed

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