



DATE: Detecting Anomalies in Text via Self-Supervision of Transformers

Andrei Manolache, Florin Brad,
Elena Burceanu

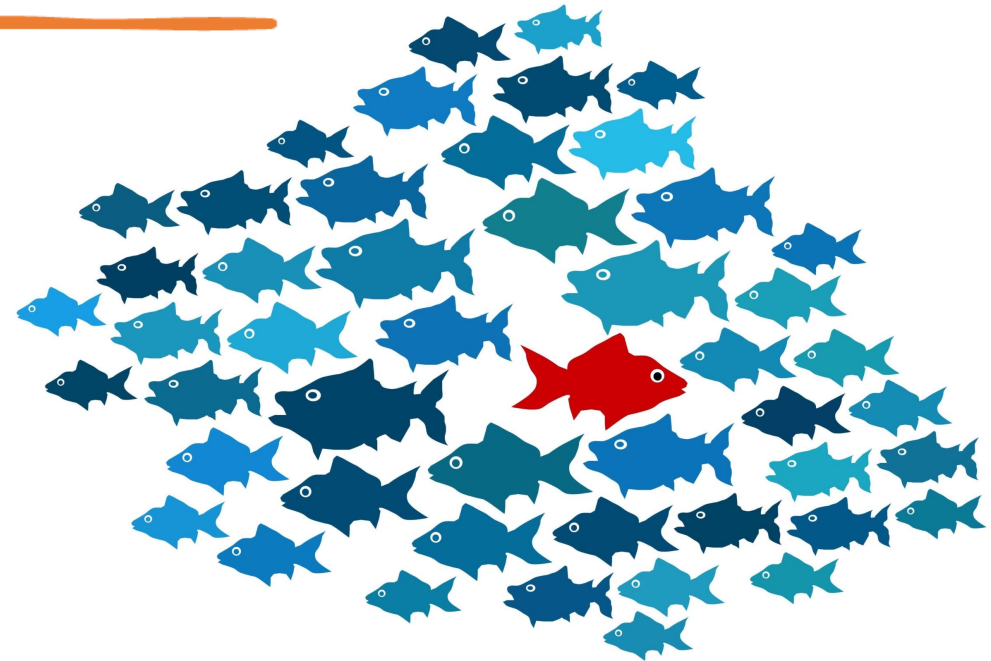


POLYTECHNIQUE MONTRÉAL

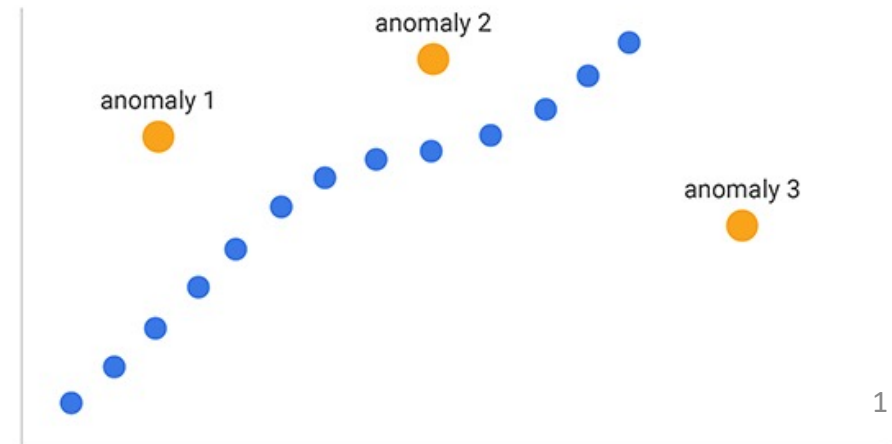
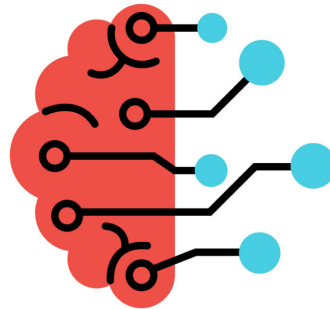


Anomaly Detection

Deviation from expected
behaviour



Neural network
→ High performance



Self-Supervision via Transformer

Input
sequence



Output
sequence

Je veux une
bonne note à
ma
présentation



I want a good
grade for my
presentation

Supervision x Unsupervision

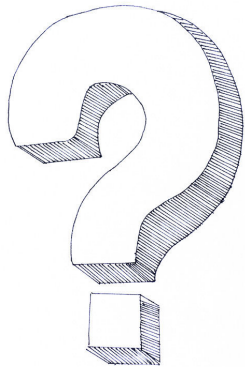


Self-supervision

Objective ?

- Anomaly Detection
- Self-supervised learning
- Transformer

→ *Detecting Anomalies in Text via Self-Supervision of Transformers*



Use ?

Credit card fraud

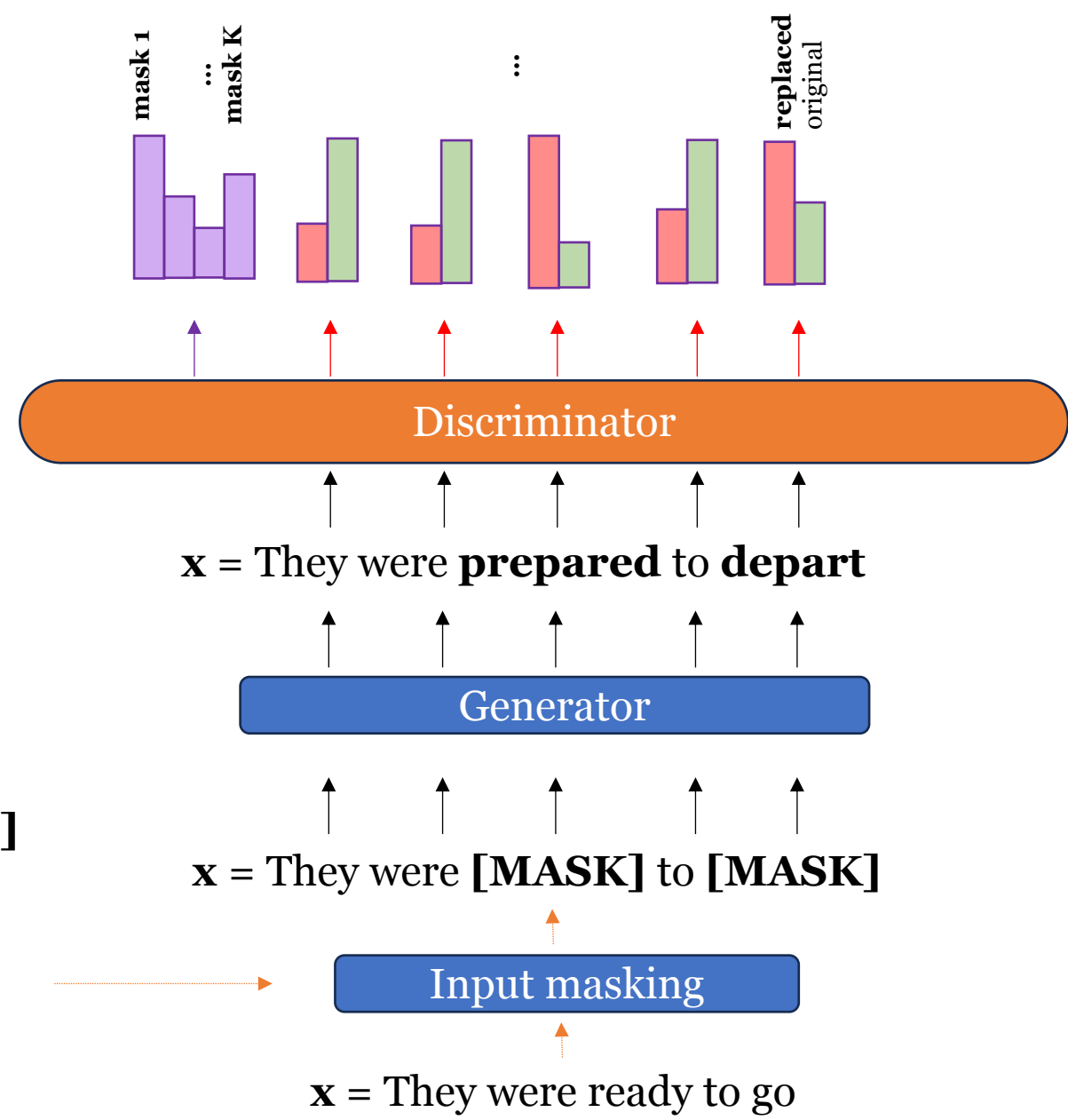
Malware / Spam detection

Intrusion Detection System

Training

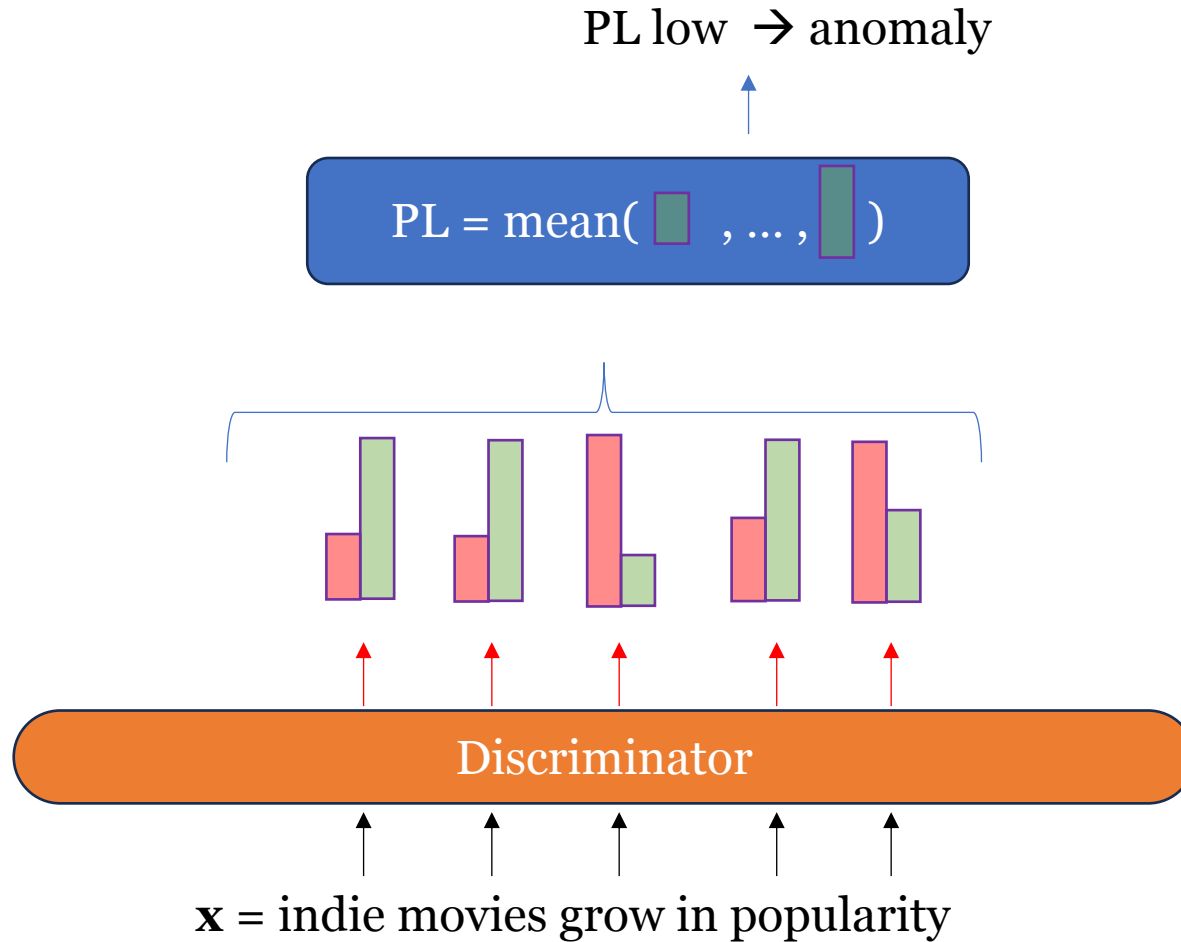
K mask patterns

- [0, 0, 1, 0, 1]
- [0, 0, 1, 1, 1]
- [1, 0, 1, 0, 1]
- ...
- [0, 0, 0, 0, 1]

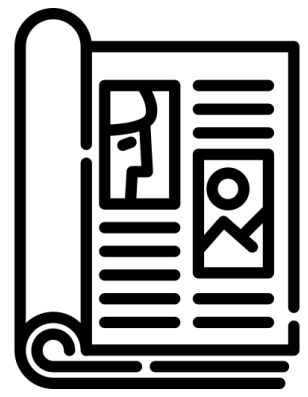


Testing

PL = Pseudo Label Score



Result



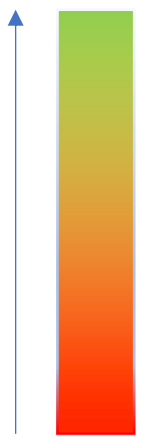
Databases



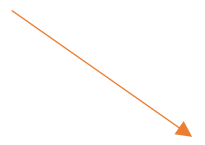
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PL

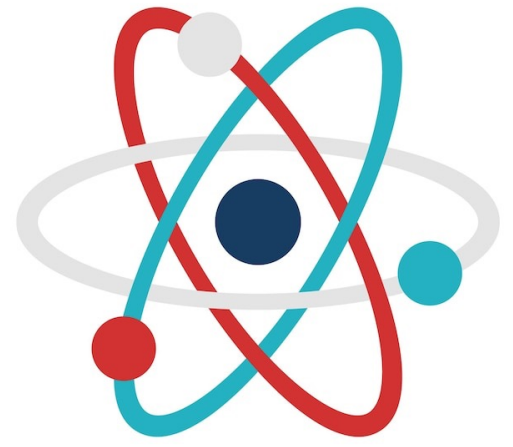


Play
Practise
Scheduled
Judge
Bankruptcy
Arguments

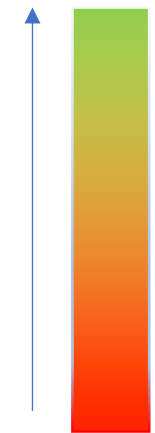


Performance = 95%

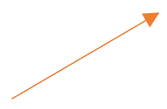
Outperforms state-of-the-art results



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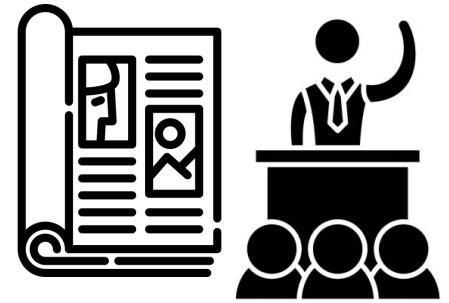


Engine
Versions
Complete
Leaders
Hall
Invade



Performance = 84%

Conclusion



Specific database

Self-supervision

Transformer

Mask pattern



Test

A former Conservative strategist was Chief of Staff to former Minister. He then played tennis with his friend.

! Anomaly

Outperform state-of-the-art