

A person in a red jacket stands on a rocky cliff overlooking a fjord at sunset. The scene is split into a red-tinted left half and a natural-color right half. The person is looking out over the water and mountains.

//ADASTRA

Alerting Solution for Improved Cost Efficiency

How to leverage ML to detect
anomalies

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**Big Data & AI World
Booth K25**





Agenda

Context & Goal 1

Tools 2

Anomalies Alert 3

Alert Classification 4

Tableau Live Demo 5



Adastra Group Worldwide

2000+

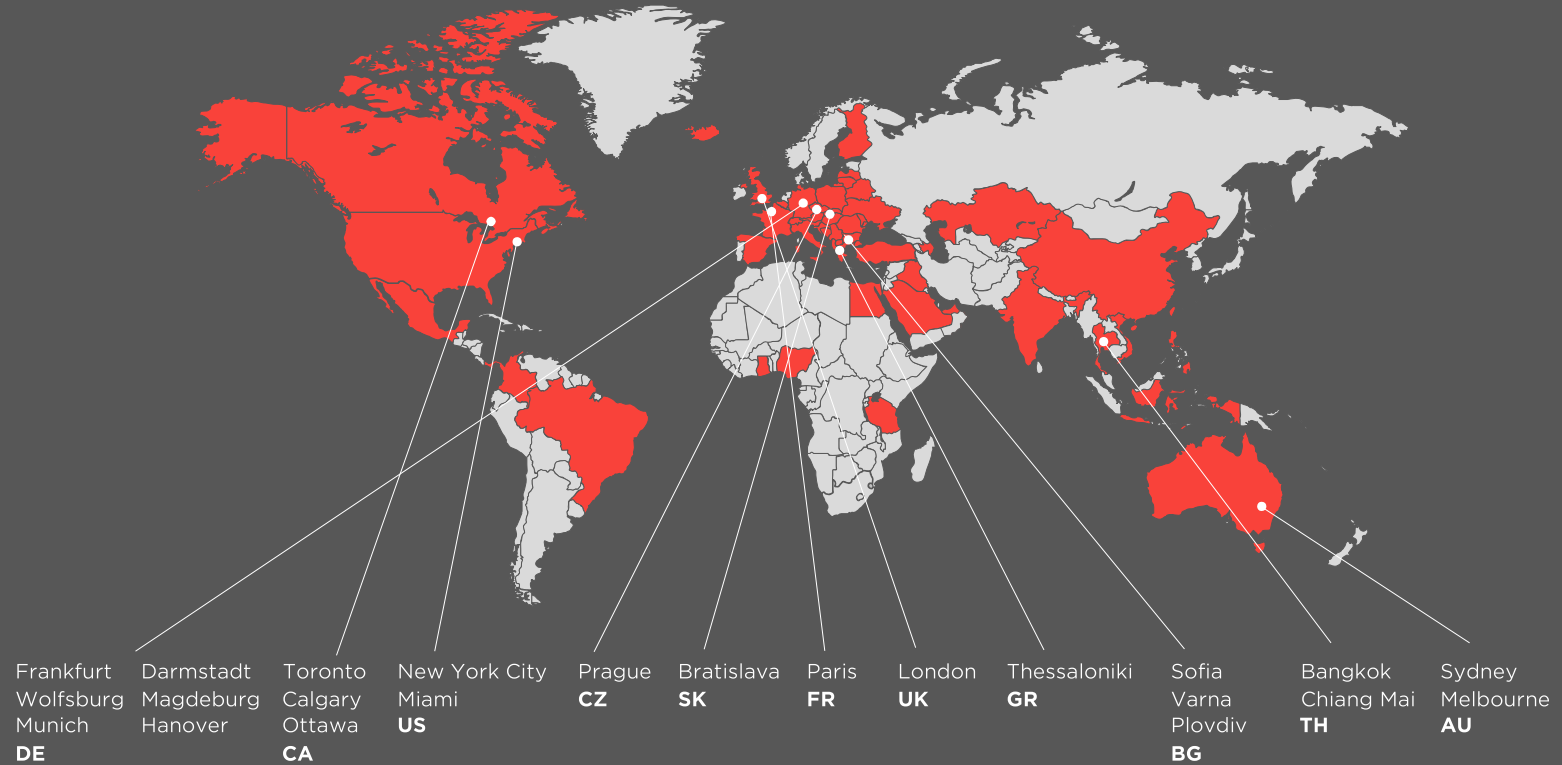
Professionals
worldwide

5000+

Projects in 42
countries

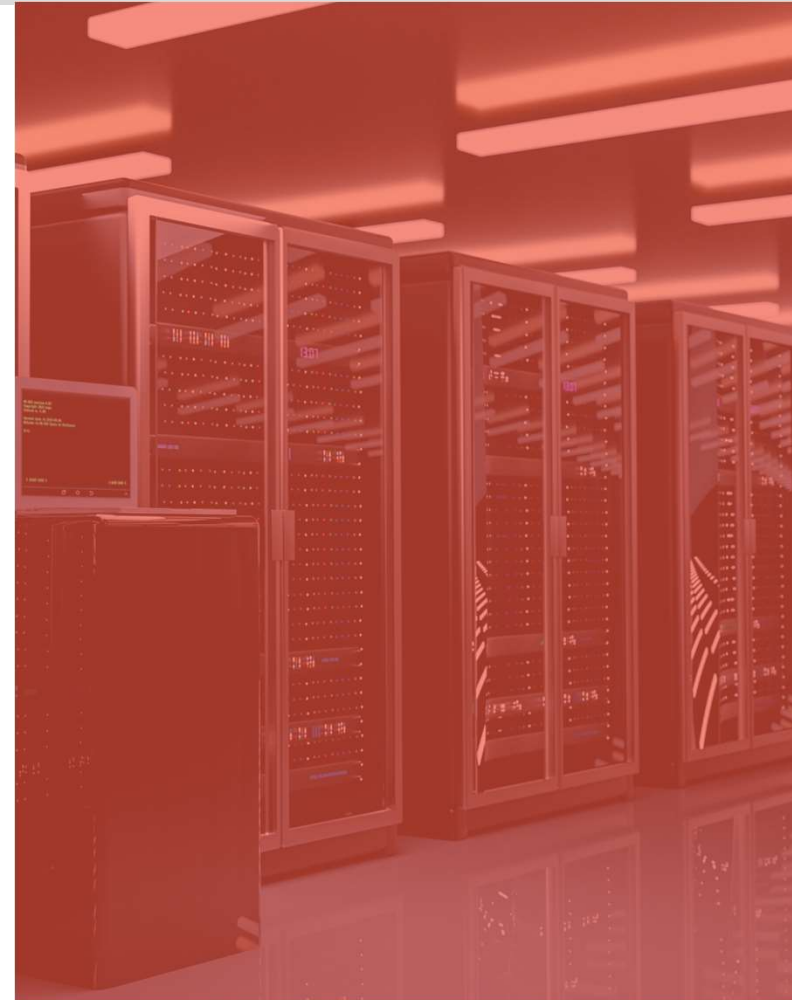
23

Offices in 11
countries



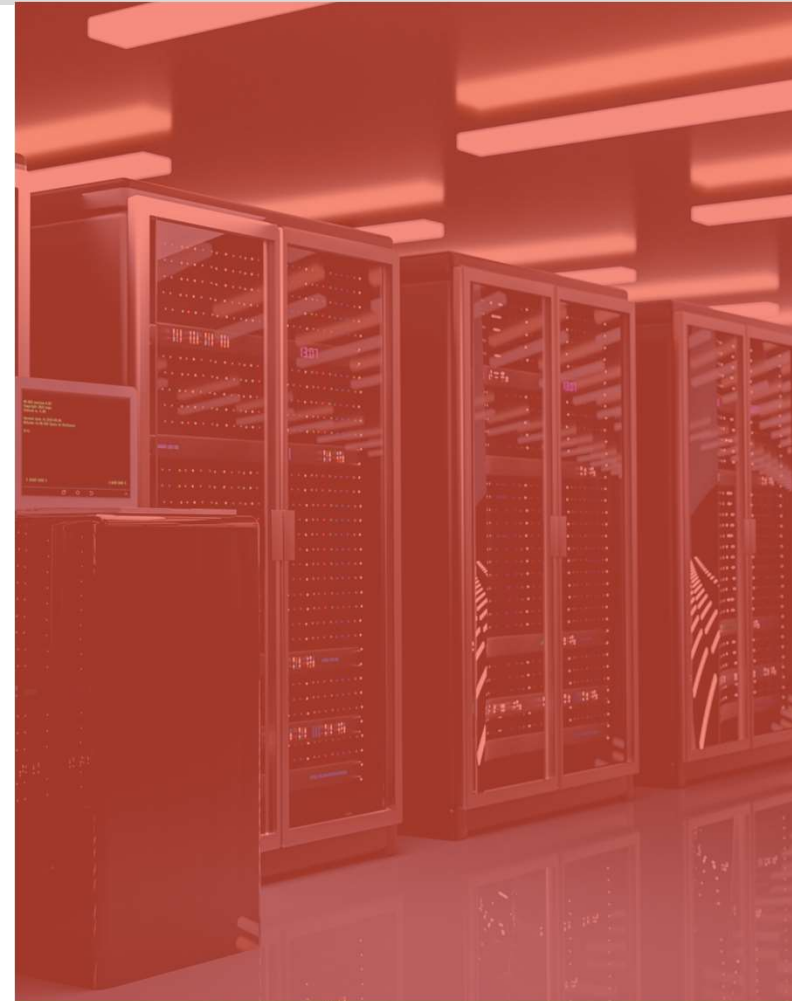


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- / Each application sends multiple queries to the databases
 - / Queries → transaction
 - / Consume resources





- / Our client has an IBM **Mainframe** platform running many databases which belong to different applications
- / Each application sends multiple queries to the databases
 - / Queries → transaction
 - / Consume resources
- / Transaction efficiency and performance are checked according to several metrics:
 - / Get Pages
 - / **CPU** → Users are charged for the CPU usage
 - / Number of SQL queries
 - / Etc..





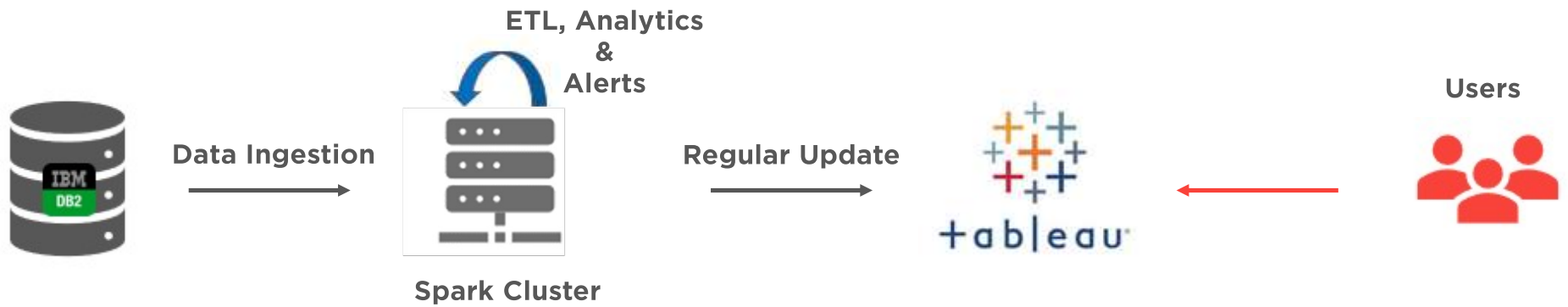
Goal

- / Decrease the mean time to detect abnormal behavior in transactions
- / Promptly alert the App owners to fix anomalous transactions





- / Where: Spark cluster (in the Cloud e.g., AWS, Azure, GCP or on prem)
- / Back-end: Python, PySpark, SQL and Bash
- / Front-end: Tableau





Detect Anomalies

Linear Regression

/ To detect the collective anomalies and upward trends

Prophet

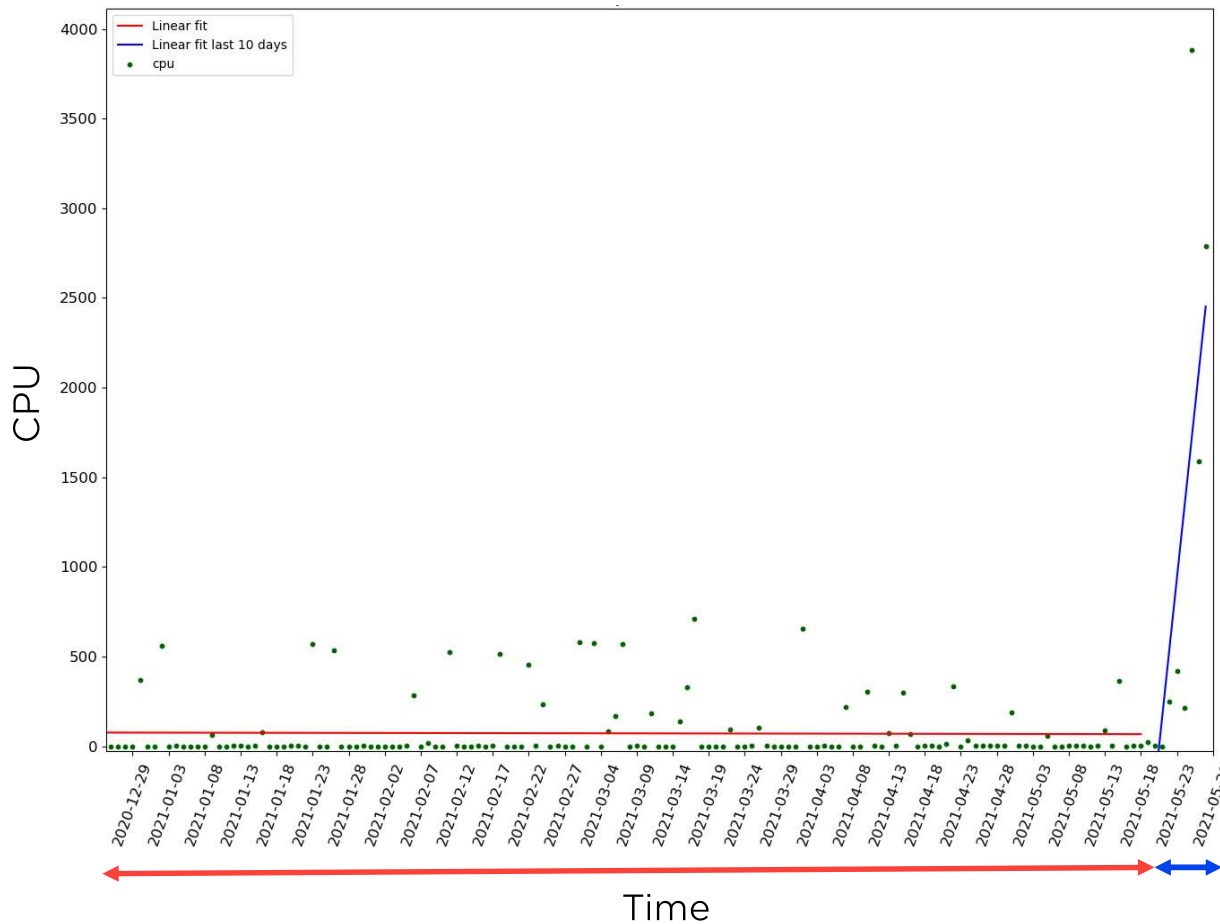
/ To detect point and contextual anomalies





Linear Regression

CPU in time



GOAL

Detect collective anomalies and upwards trends

ALGORITHM

Linear regression

DATA

Two intervals

- historical data
- present days

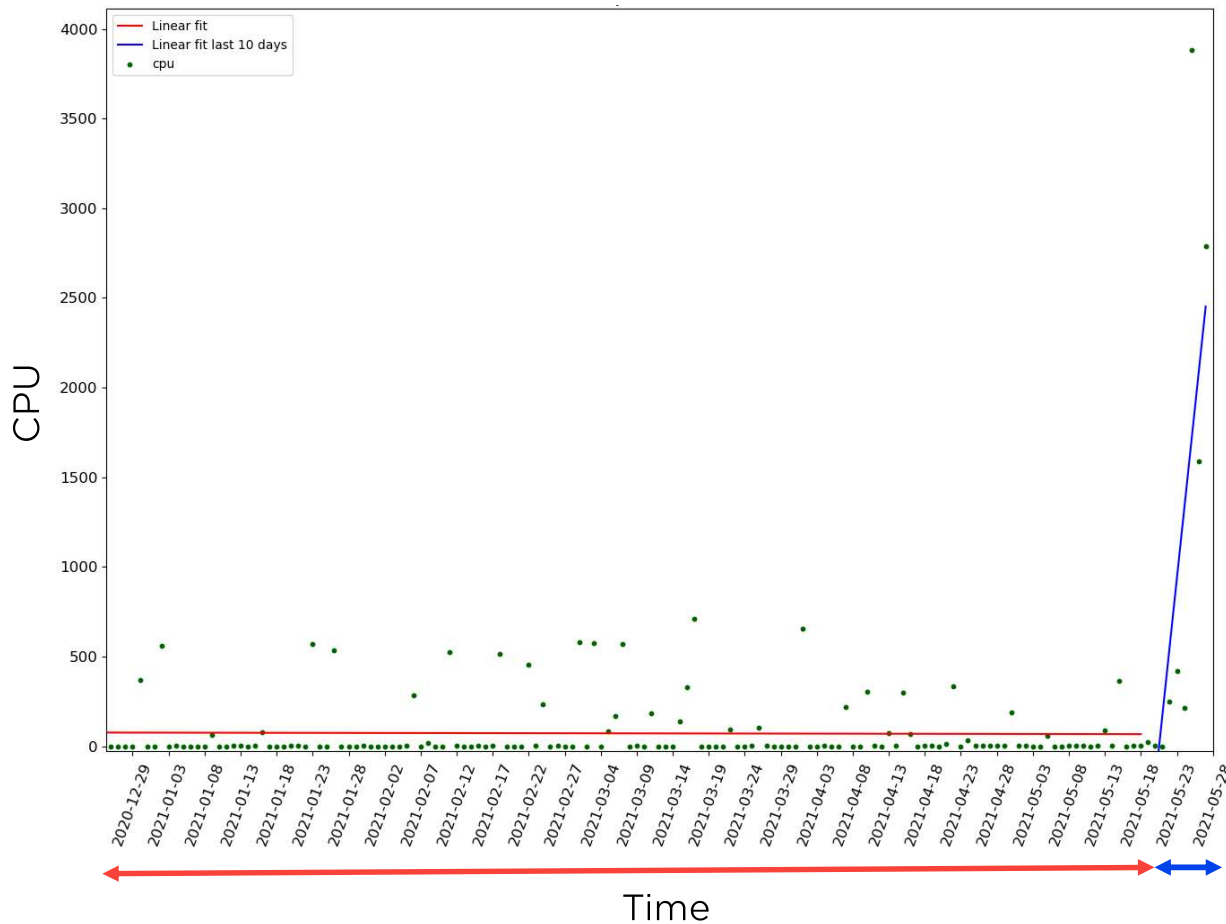
Present interval

History



Linear Regression

CPU in time



1. Obtain the slope from the linear regression
2. Calculate the difference between the slopes
3. Anomaly: a slope difference is above a threshold
4. Interval size chosen according to the data-points' number



The **alert status** is given considering the data of the previous N days:

RED if 80% of the days are flagged as anomalous

YELLOW if between 35% and 80% of the days are anomalous

GREEN everything else, below 35%

Transaction ID	Count	Alert
LOCA_IUYFC3V	1	G
LOCZ_3CRC4C	2	G
LOCD_BC74CB	8	R
LOCA_VC34CV	1	G
LOCE_C34C34G	1	G
LOCN_JFC4CSD	4	Y

N = 10 days



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Alert Classification

GOAL

- / classify the different types of alerts
- / suggest the app owners how to fix their apps

ALGORITHM

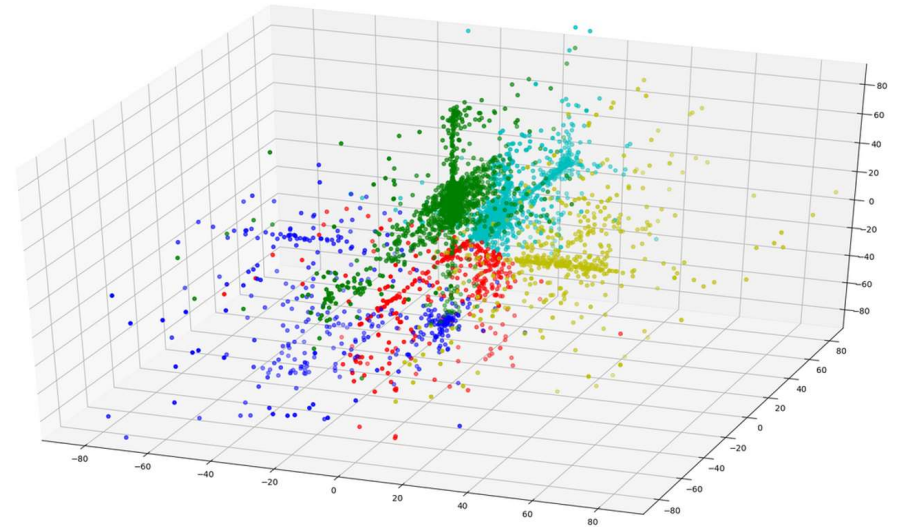
K-means

DATA

- / only transaction with a **red** alert
- / several metrics taken simultaneously into account

RESULTS

- / 5 classes
- / >80% accuracy



./A

Tableau Live Demo



Take Away Points



- / **Cloud-agnostic:** Solution easily modifiable to the desired environment
- / Helps the client to have an **overview** of their apps
 - / Behaviour
 - / Resource usage
 - / Costs
- / Provide the app owners a **prompt alert** in case of errors and issues
 - / Can be fixed as soon as it happens
 - / Classified alerts: provide suggestion on how to fix the anomalies
 - / **save money!**



Thank you!

Find us at booth K25

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