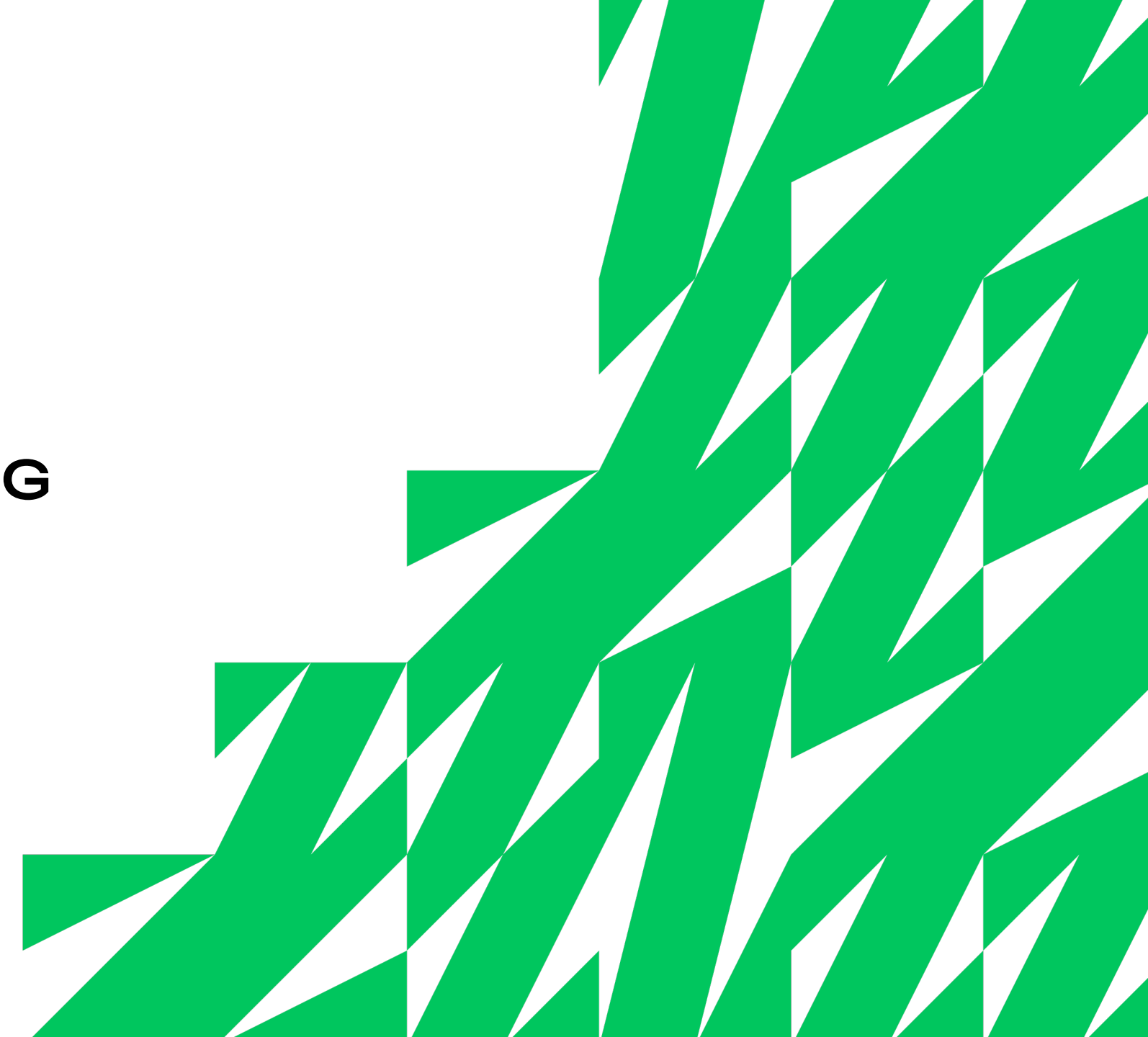
ZETALY

MACHINE LEARNING

Does it really exist in z/OS?



AGENDA

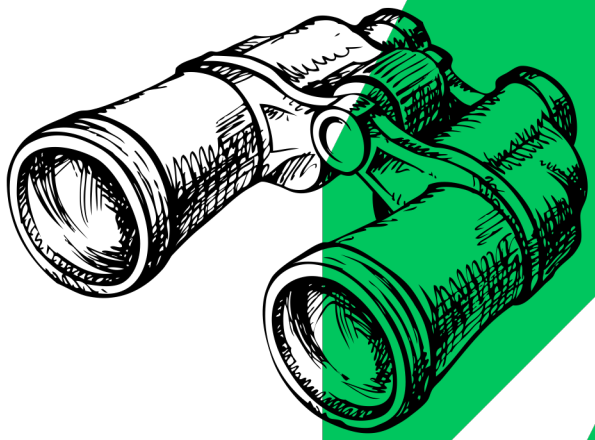
What is machine learning?

Is it in our everyday lives?

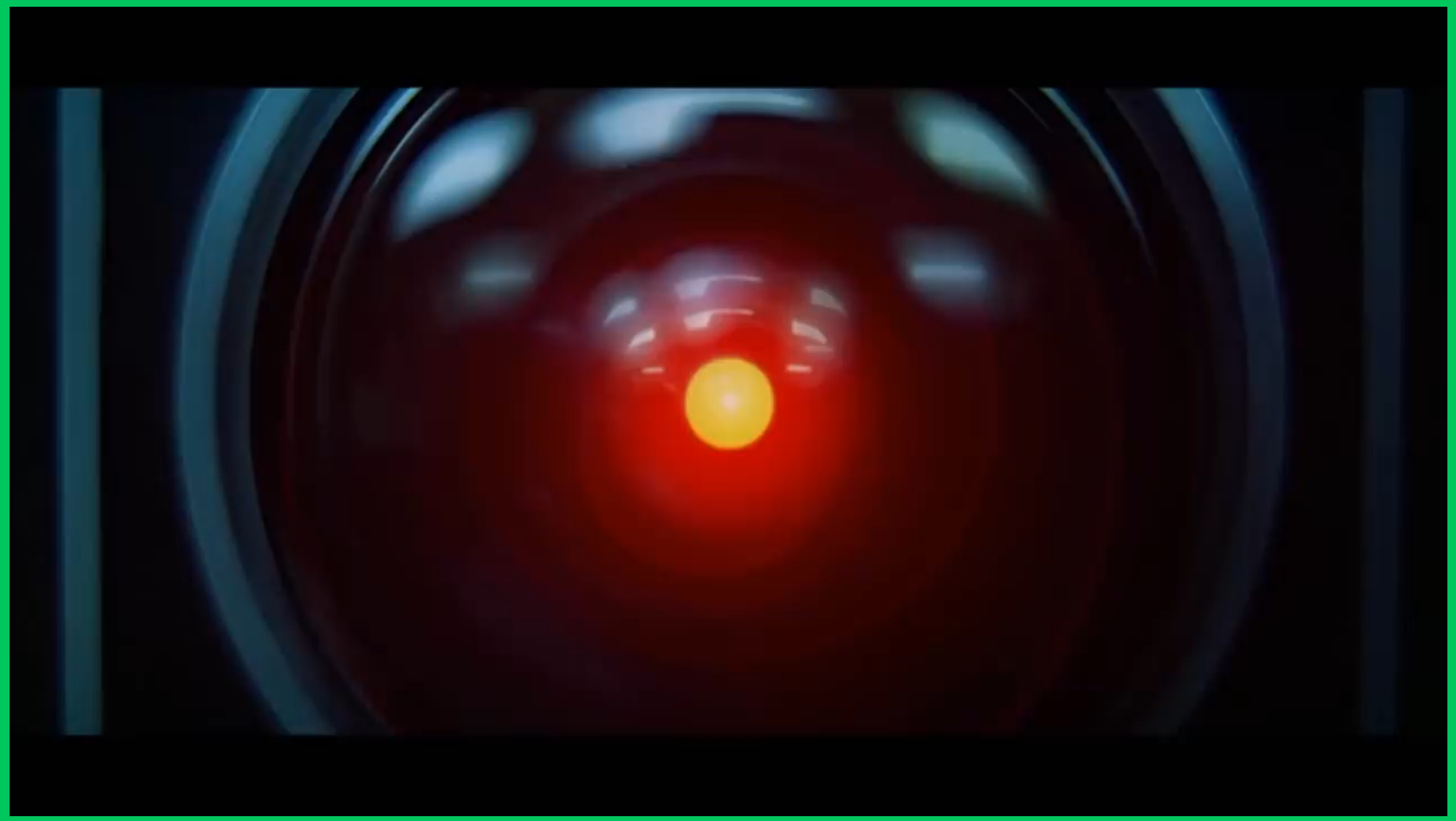
Machine learning in IT Ops Analytics – ITOA

ITOA ML in the z/OS world

Demo



Who remembers this?



WHAT IS MACHINE LEARNING?

ZETALY

What is Machine Learning?

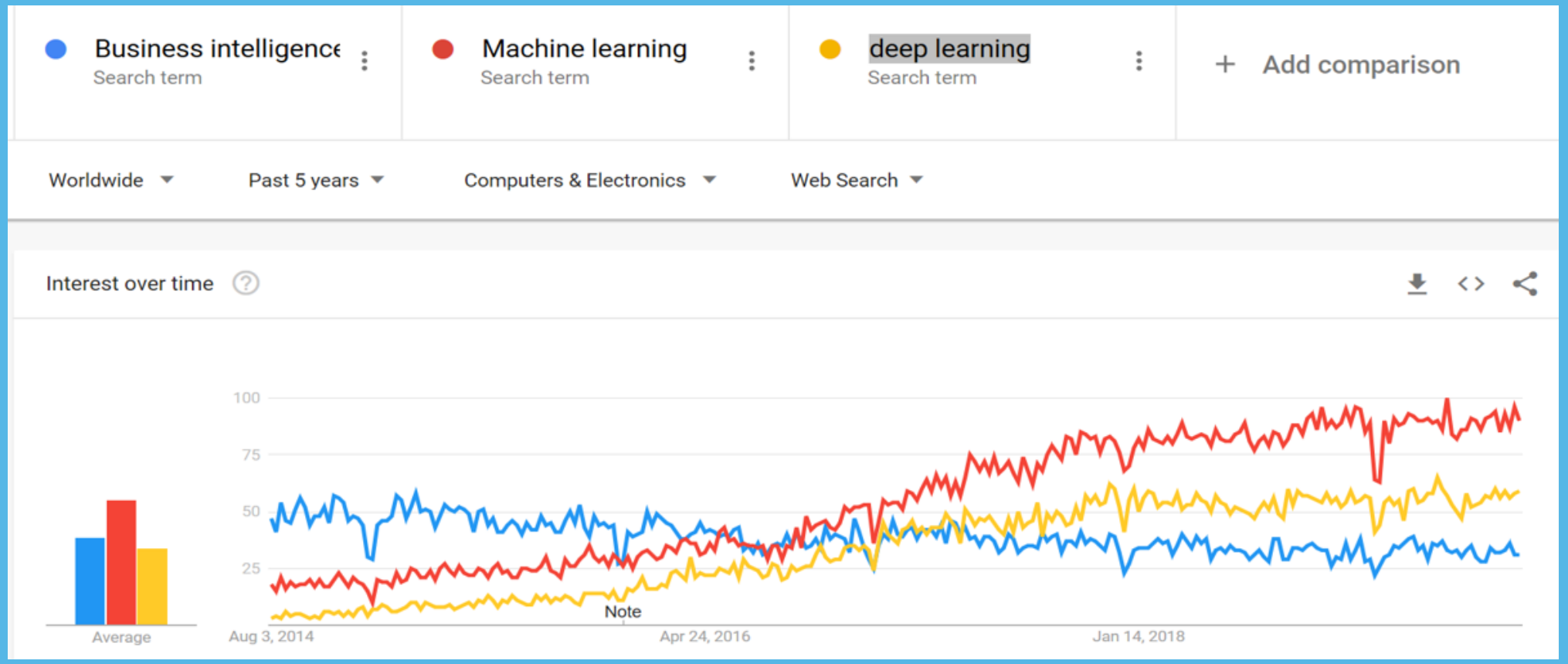
Alan Turing
“Can machines do what we, as thinking entities, can do?”

Term Coined 1959 by Arthur Samuel
AI pioneer – Samuel’s Checker one of the first “self-learning” programs

Machine learning – ML - is the scientific study of algorithms and statistical models that computer systems use in order to perform a specific task effectively without using explicit instructions, relying on patterns and inference instead.
Wikipedia

Data, data, data is Key!

Doesn't appear to be just hype.



Data from Google Trends.

Machine learning and Data Mining

Machine Learning is focused on Prediction

“Algorithms that parse data, learn from that data, and then apply what they’ve learned to make informed decisions

- *Pandora, Spotify, NetFlix, Maps, etc*

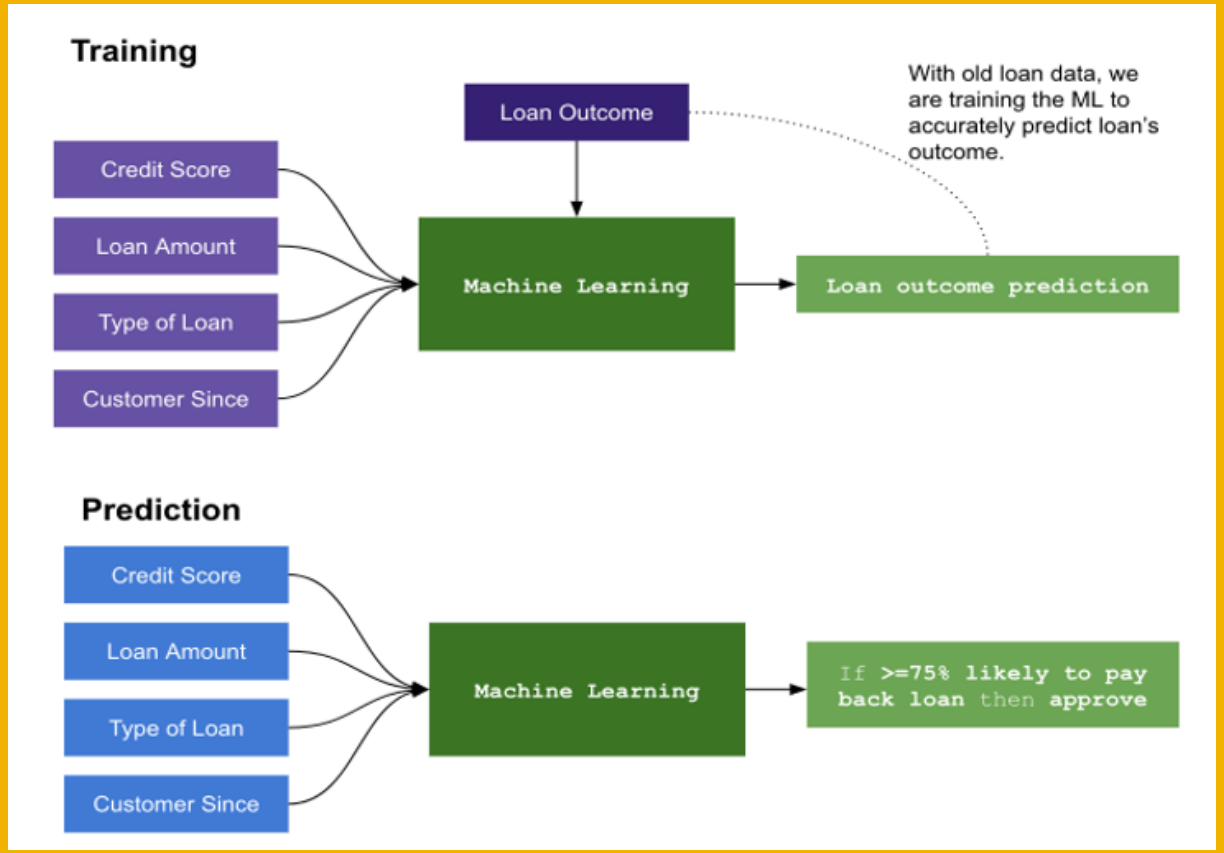
Data Mining is focused on Discovery

“Anomaly detection or Outlier detection is the identification of rare events or unexpected bursts in activity

IS IT IN OUR EVERYDAY LIVES?

ZETALY

Machine learning in everyday life

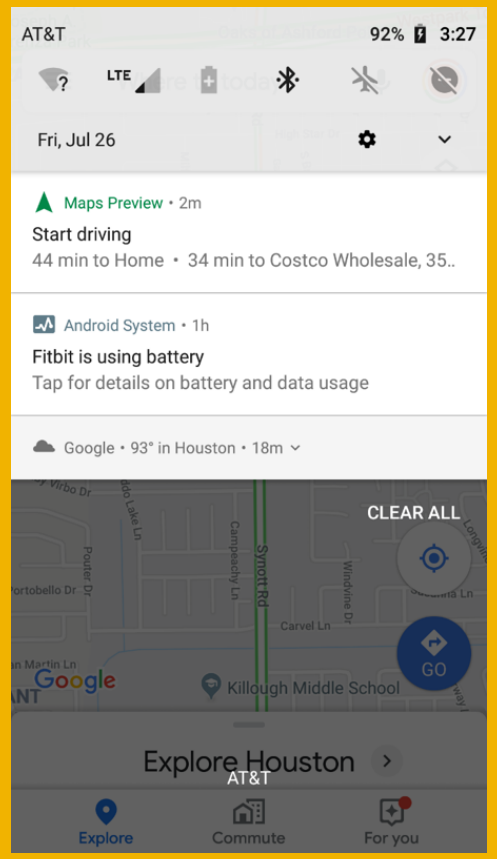


Loan Approval Process Example

Machine learning in everyday life

Google Maps learned my behavior

Some machine learning used



Location, Location, Location

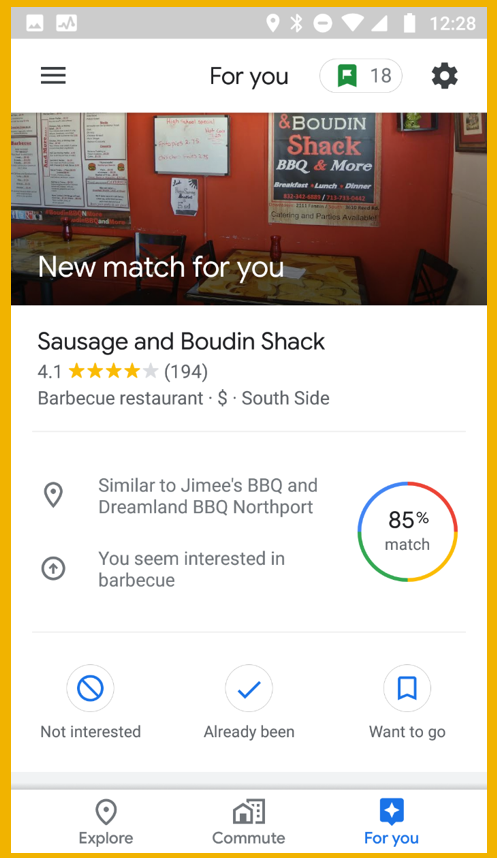
Machine learning in everyday life

He/She has learned and predicted what I might like based on learned behavior

More advanced. Starting to guess

I wasn't even hungry when this suggestion came up.

What's going on?

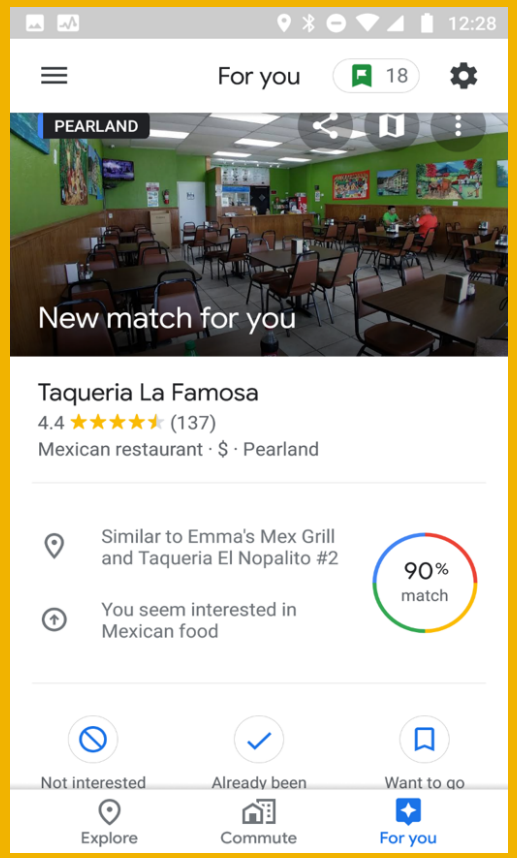


Maps For You

Machine learning in everyday life

Looks like I'm having Mexican whether I want or not. LOL

Data, data, data enhances predictions

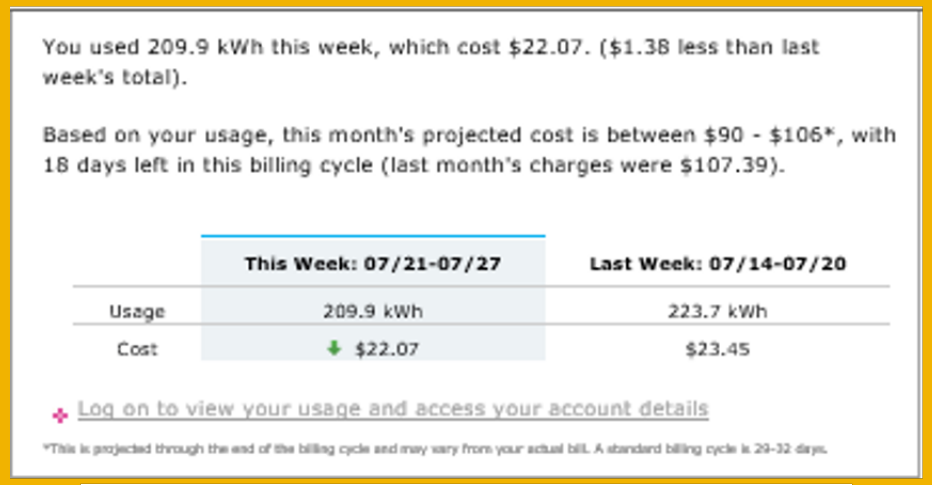


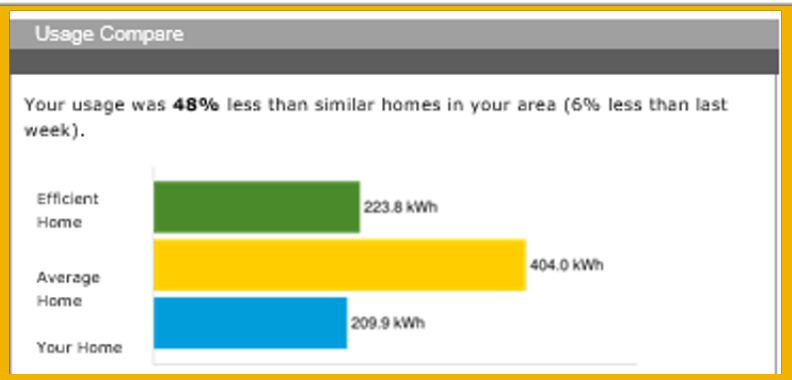
Maps For You

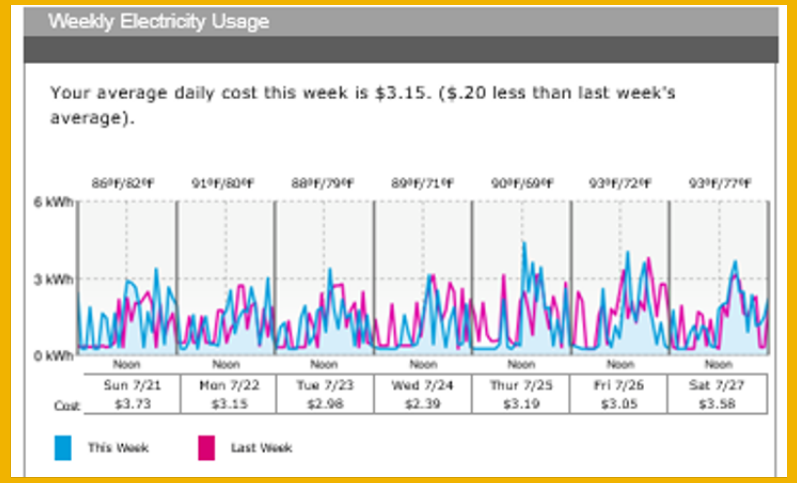
HAL, something other than Mexican please?

I'm sorry Carlos.
I'm afraid I can't do that . . .

Machine learning in everyday life







Wouldn't this be a nice email about my z/OS environment?

- Sent to management
- Automatically?

One more example

MACHINE LEARNING

IN IT OPS ANALYTICS – ITOA

ZETALY

Machine Learning in ITOA

Remember Inference and Patterns?

- Loan Approval?
- Maps?
- Electric Bill

There are billions of rows of data in z/OS SMF's and Log files

- Is all of it useful? – Of course not.
- Are there hidden gems in there about my environment I might be missing? – YES!!

Analytics combined with Machine Learning helps

- Discover patterns which might not be obvious
- Bring attention to anomalies in the patterns or environment
- Take informed decisions
- Predict behaviors

ITOA MACHINE LEARNING IN THE z/OS WORLD

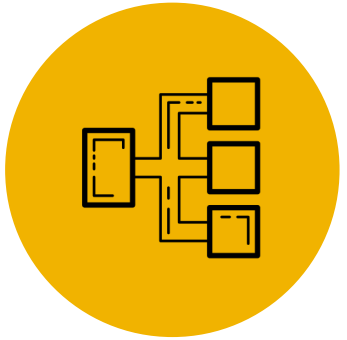
ZETALY

First, you need centralized data

The problem with that?

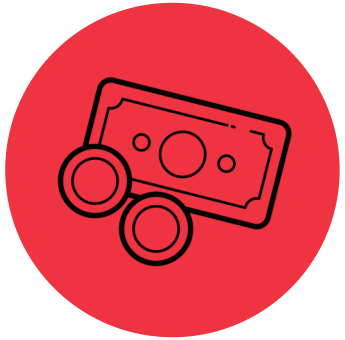
Volume

Logs represent huge amount of data



Uncorrelation

Logs come
in silos



Costs

Logs are expensive to collect &
manage

Now, what do I do with all these data?

How we solve these problems?

Data accessibility

- All the relevant operational data
- Streamlined in one place
- In near real time

Data correlation

- Data relationships
- For a bigger picture
- In interactive dashboards
- Designed by experts

Data interpretation

- A single version of the truth
- Different perspectives
- Translated into business insights

Data leverage

- Machine learning engines
- Optimization advices
- Automated actions

With a User Experience Focus

Architecture – How does it work?

Collect

LPAR1

LPAR2

LPARn

Extract
Data is collected on the Mainframe and sent to Open System

Smart ETL engine

Transform & Load
Data is reconciled and grouped on the fly, before it is loaded into ZETALY Database

Transform

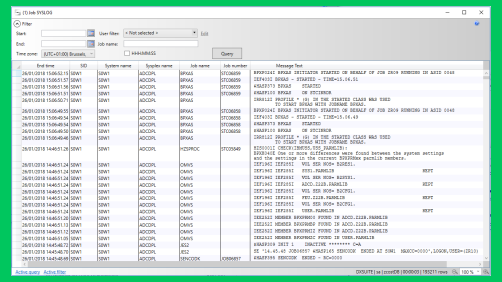
Business Intelligence models

SQL database

Analyze

Web BI dashboards

Desktop explorer



SQL queries

Microsoft Windows

One example of machine learning

Standard alert system

Threshold

« Notify me if
I reach 90% of
my machine capacity »

I know that after 90%, it will have an impact on the quality of service

But is 30% usage a good number as well?
Depends on situations (date, hour…)

Anomaly detection

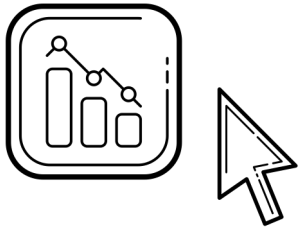
« Notify me if something abnormal happens »

Automatic

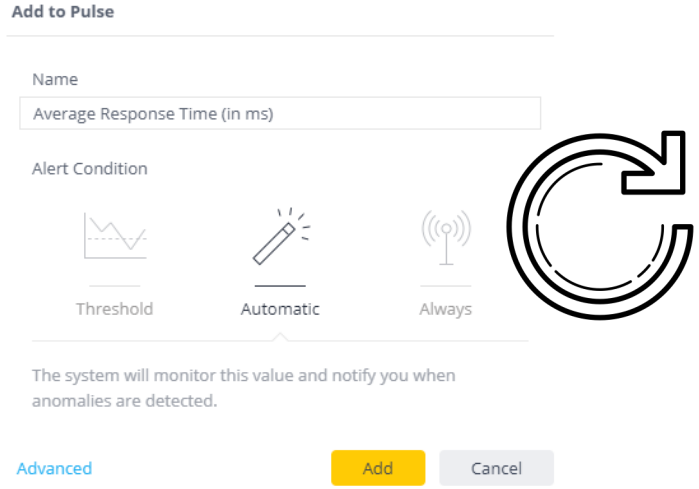
Machine learning triggers an alert:

On Black Friday, I shouldn't have a 30

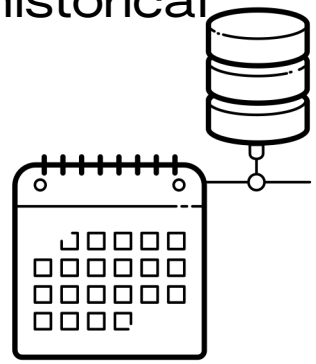
How anomaly detection works?



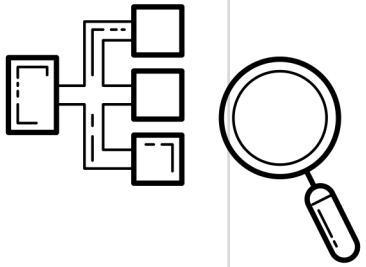
Select the KPI that need to be monitored



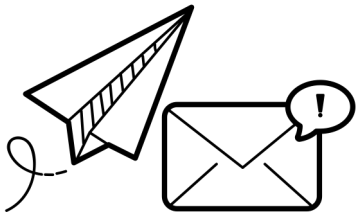
Algorithms will study historical values



Intelligent grouping to identify & flag data outliers



Notifications are pushed to the user



Supported SMF and Logs

SMF

14, 15	Non-VSAM
30	Job or step statistics
42.6	SMS Dataset
64	VSAM
61, 65, 66	Catalog Dataset
70	CPU Monitor
72.3	WLM Activity
73	Channel Path Activity
74.1	Device Activity
74.5	Cache Activity
74.9	PCI/e Activity
78.3	LCU Activity
80	Security Activity
101	DB2 Accounting
110	CICS Performance
113	Hardware Performance
225	AutoSoftCapping

Others

DCOLLECT "D"	Dataset DCOLLECT records
DCOLLECT "V"	Volume records
IMS Log	IMS Transaction-level statistics (type x'56FA')
SYSLOG	All Message to Syslog (CNZ_WTOMDBEXIT)

Let us know if you need any other information, we can add it to ZETALY

CAN YOU SHOW ME?

ZETALY

ZETALY

QUESTIONS?

For more information

zetaly.io

contact@zcostmanagement.com