Using Data Analytics and Artificial Intelligence to Combat Fraud

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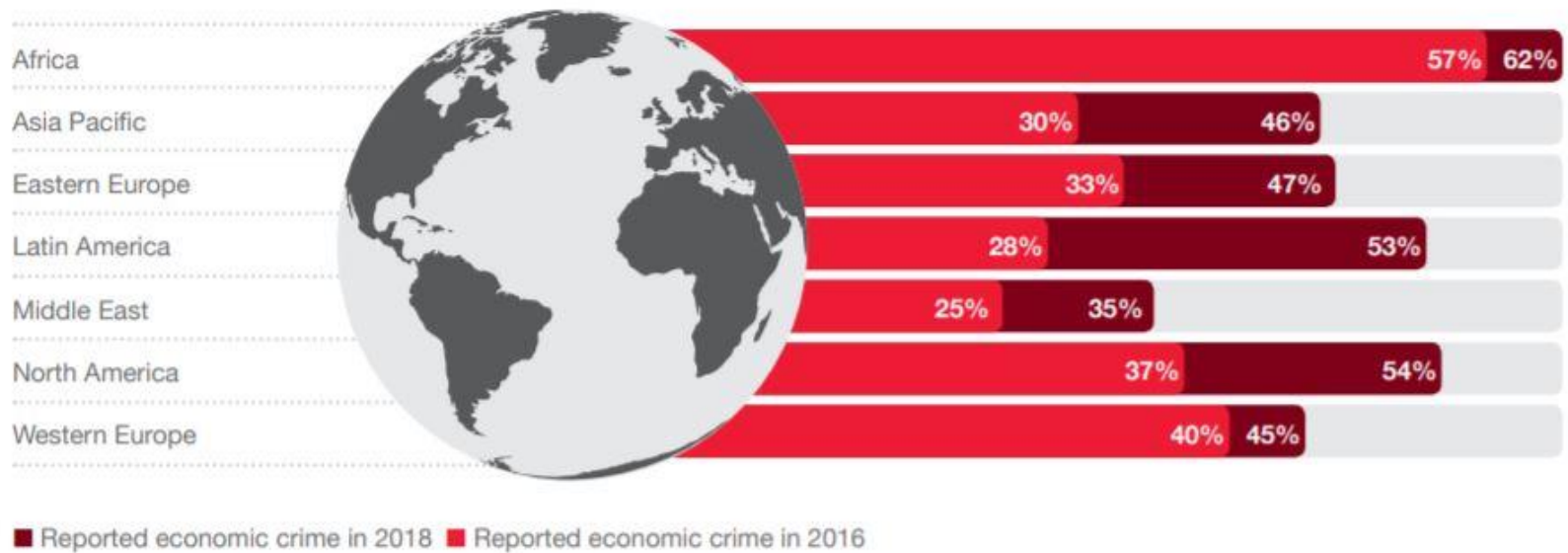
Using Data Analytics and Artificial Intelligence to Combat Fraud

Crime and state-sponsored fraudsters are increasing the sophistication, scale, and speed of their fraud attacks.

Africa — 57% 62%
Asia Pacific — 30% 46%
Eastern Europe — 33% 47%
Latin America — 28% 53%
Middle East — 25% 35%
North America — 37% 54%
Western Europe — 40% 45%

■ Reported economic crime in 2018 ■ Reported economic crime in 2016

Forbes   Billionaires Innovation Leadership Money Business Small Business Lifestyle BrandVoice Lists Advisor
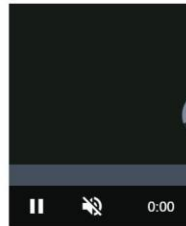
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Millions Are Being Lost To Apple Pay Fraud—Will Apple Card Come To The Rescue?

Thomas Brewster Forbes Staff
Cybersecurity
Associate editor at Forbes, covering cybercrime, privacy, security and surveillance.

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Airbnb Users Targeted in Latest Scam

News

TECH • AMAZON

Amazon Is Cracking Down on More Fake Reviews

By Michal Addady October 27, 2016

Who is committing the fraud?

Internal, external, or 'in between'? Know your 'frenemies'

If you don't know it's there, you don't look for it. If you don't look for it, you don't find it. If you don't find it, you can't make the business case to look for it

4 Ways Fraud Can **Hurt Your Business**

Causes Losses in Business Revenues

It makes retailers lose merchandise to fraudsters, get chargeback fees caused by illicit payments, and waste additional money in shipping and handling fraudulent orders.

Harmful to Reputation

Existing customers that had a ba experience will label your business as untrustworthy, and potential customers that hear about the risk will avoid your business at all costs.

Increases Operating Expenses

It requires acquiring fraud detection systems or hiring teams necessary to manage fraud, any of which demanding additional expenses.

Potential Merchant Account Loss

You can be put on the TMF or MATCH list for high-risk merchants, which could result in massive processing fees or loss your business.

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Invest in People not JUST machines

- **Magnitudes of attacks** are exponentially higher Fraudsters are employing distributed networks, internal knowledge, big data, and even machine learning to easily detect vulnerability and maximize the size of the attacks.

- **Weakest links** create the most exposure to Financial systems

- **Unexpected attacks** can be unsettling, and disruptive Organizations can go from not having a fraud problem to being devastated in just a few days (e.g., Target)

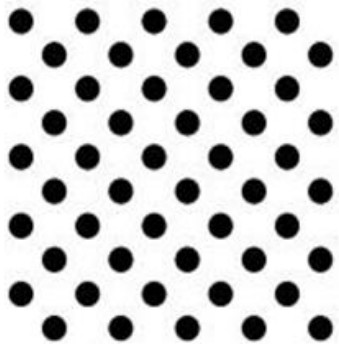The world's most valuable resource is no longer oil,

but *data*.

Big Data

"**Big Data**" is data whose scale, diversity, and complexity require new architecture, techniques, algorithms, and analytics to manage it and extract value and hidden knowledge from it…

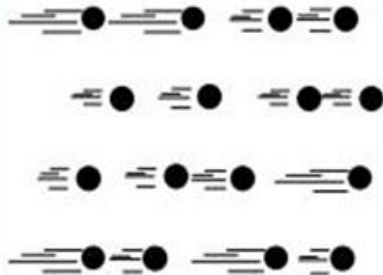# Characteristics of Big Data

Some Make it 4V's

Volume	Velocity	Variety	Veracity*
Data at Rest	**Data in Motion**	**Data in Many Forms**	**Data in Doubt**
Terabytes to exabytes of existing data to process	Streaming data, milliseconds to seconds to respond	Structured, unstructured, text, multimedia	Uncertainty due to data inconsistency & incompleteness, ambiguities, latency, deception, model approximations
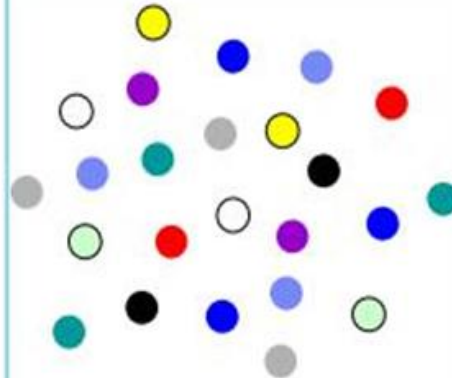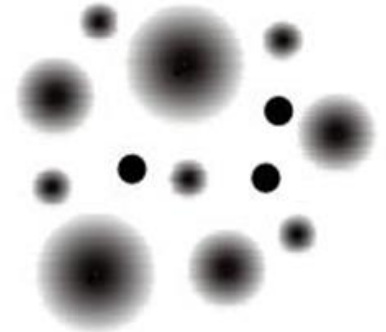
Machine Learning

"***Machine learning"*** is the science of designing and applying algorithms that are able to learn things from past cases.
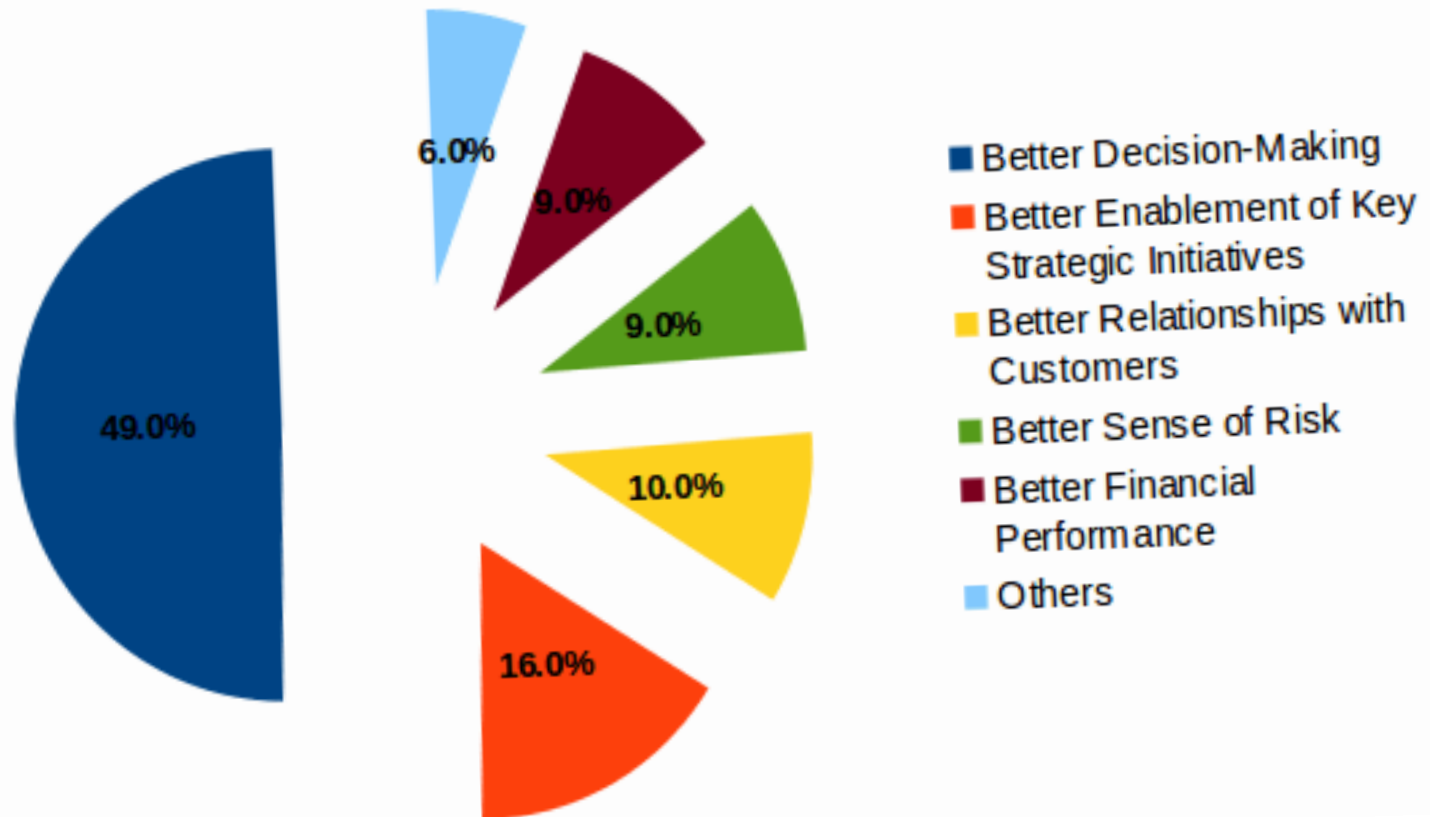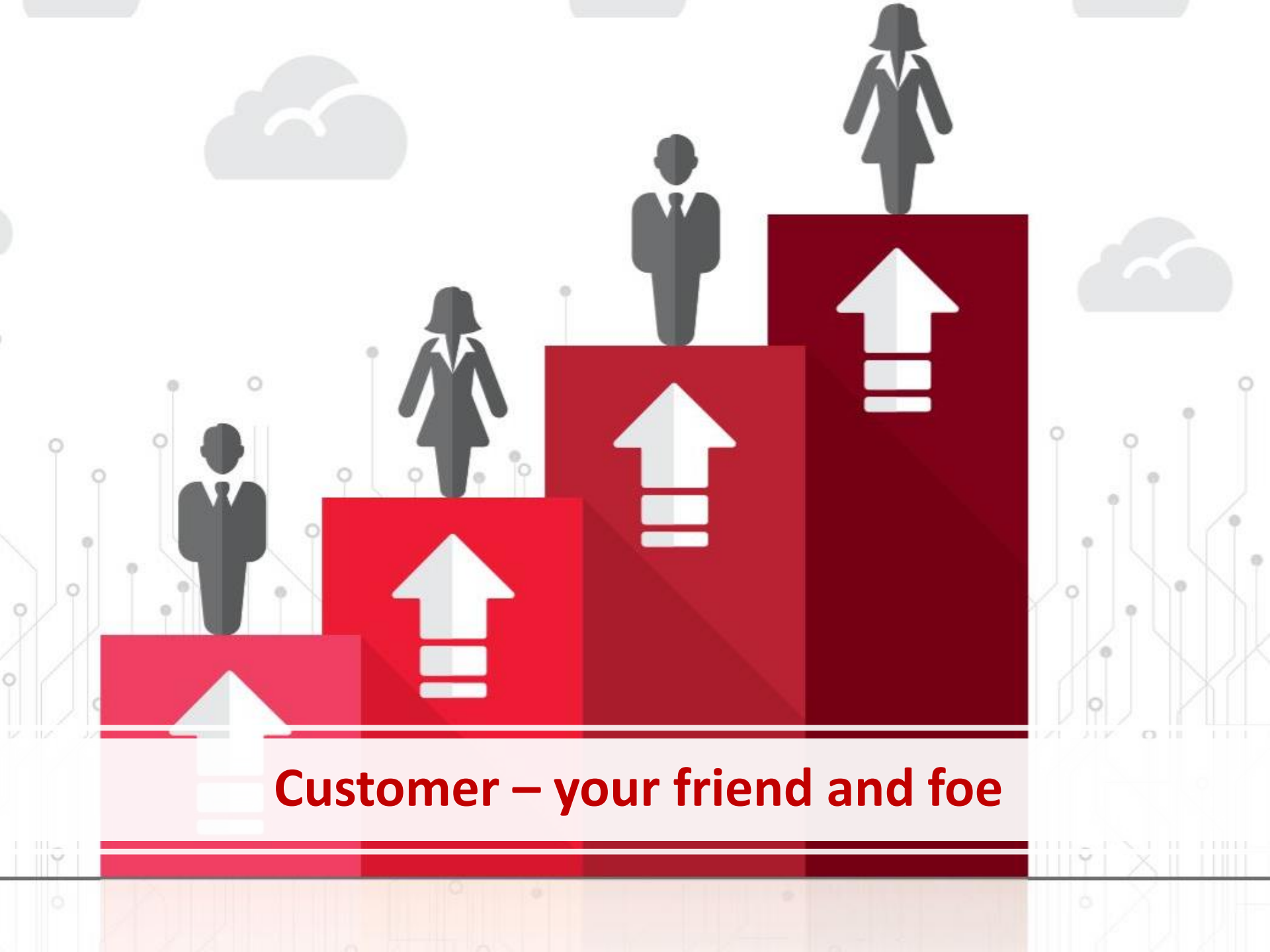
AI

Machine learning uses **artificially intelligent** computer systems to autonomously learn, predict, act and explain without being explicitly programmed.

Analytics – Key Benefits

Customer – your friend and foe

Fraud Detection Techniques

- Reputation List

- Rules Engines

- Supervised Machine Learning
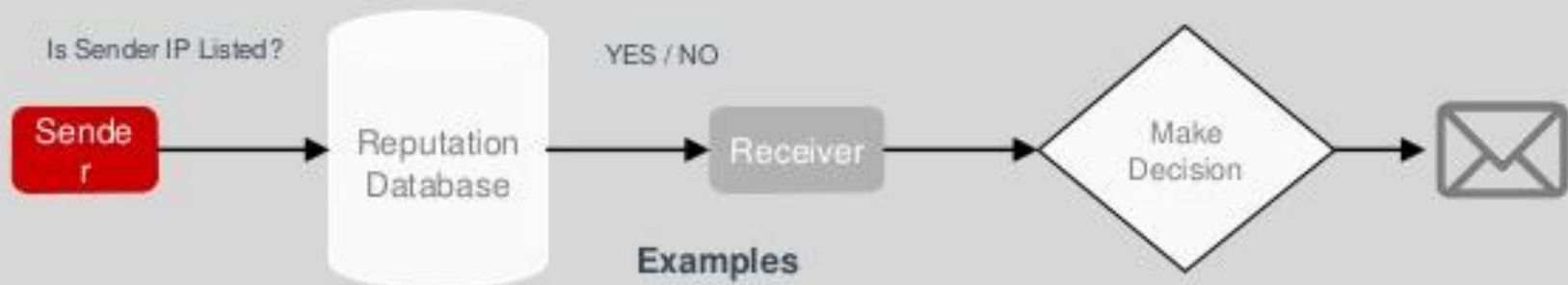
- Unsupervised Machine Learning

Reputation List

Reputation List

How it works

- Search reputation database
- Matches against lists
- Make decision

Is Sender IP Listed?

YES / NO

Sender → Reputation Database → Receiver → Make Decision → ✉

Examples
- Email
- IP Address
- Devices
- Credit Card #'s
- Phone #'s

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Rules Engine

Rules Engine

How it works

- Check against rule lists
- Criteria with weights
- Combination rules with logic

IF (user email = free email service) AND
(comment character count ≥ 150 per sec) {
    flag user account as spammer
      mute commenting
}

| RULE	WEIGHT
IP Address is anonymous proxy	+800
Account age > 180 days	-500
Email is private corporate domain name	-350
Mismatch billing country and IP country	+450
Phone number found on > 3 accounts	+250

Supervised Machine Learning

Supervised Machine Learning

What is it?

An algorithm that learns to perform a task from known examples ("training data").

An important requirement of using supervised learning is having the data to train the model.
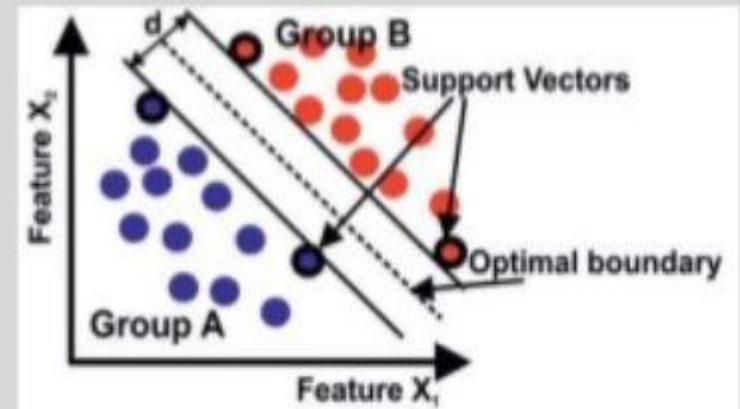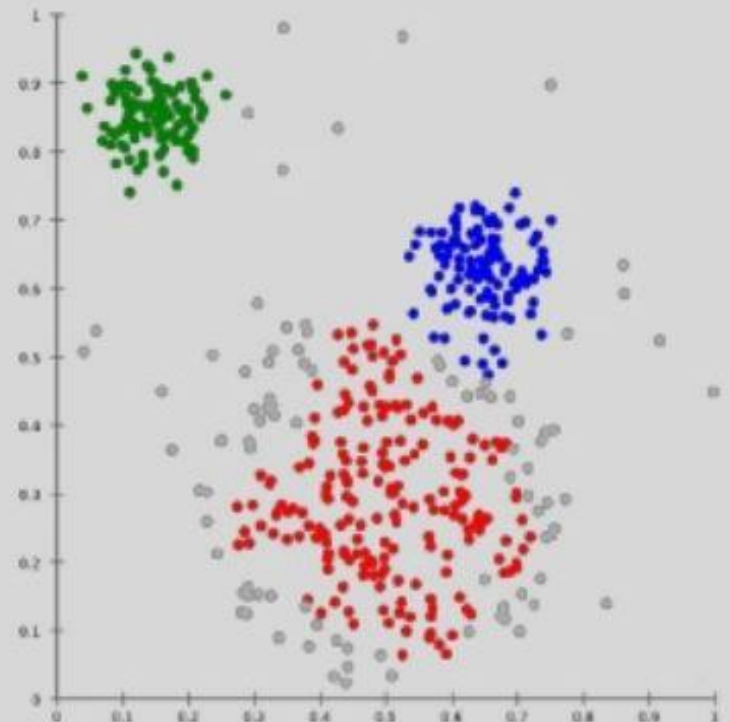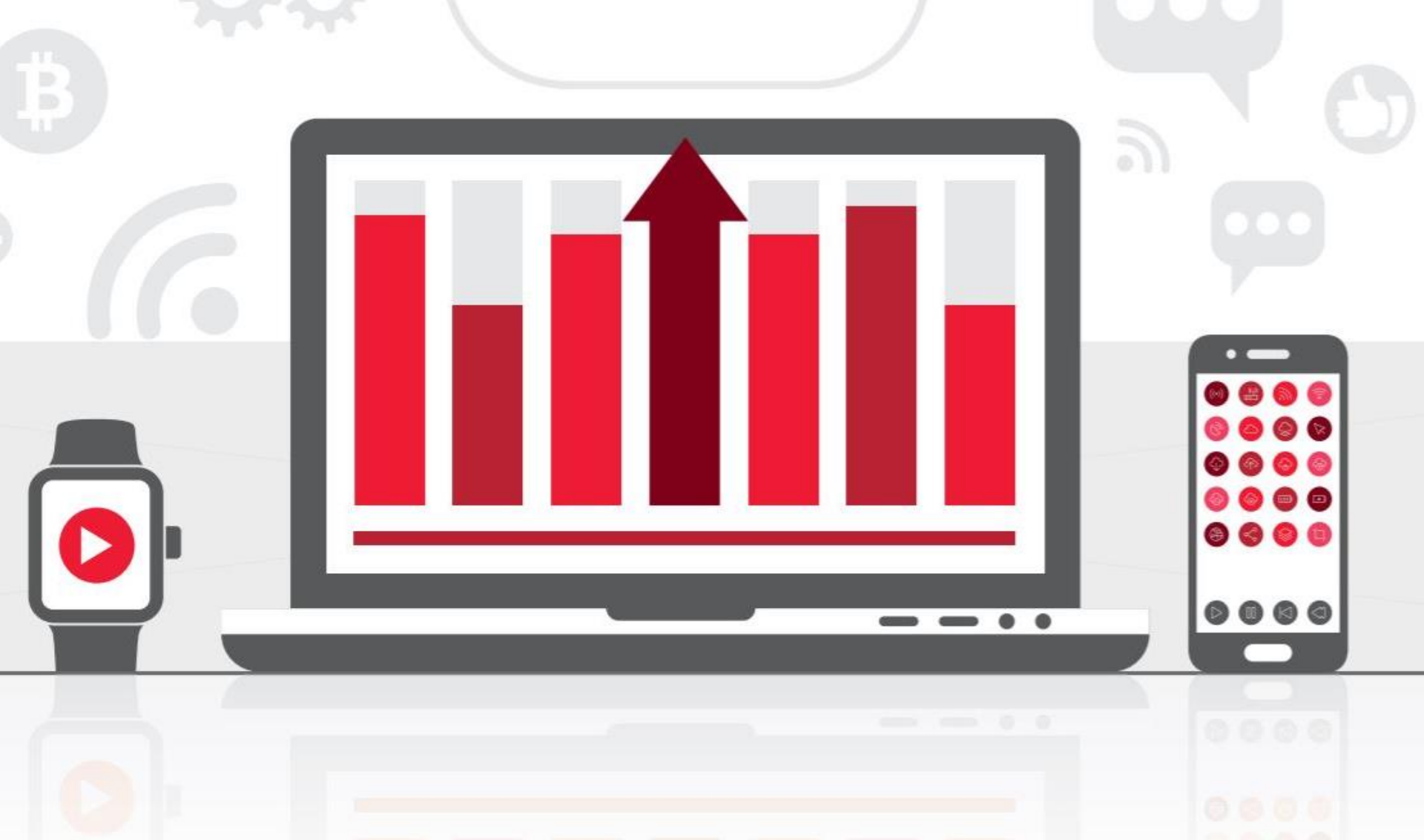
Unsupervised Machine Learning

Unsupervised Machine Learning

What is it?

An algorithm that learns to identify linkages and patterns in the data without prior knowledge of what to look for.

Unsupervised machine learning does not require labeled training data.

Data Enrichment

Data Enrichment

Supervised machine learning excels at examining events, factors, and trends from the past.

Historical data trains supervised machine learning models to find patterns not discernable with rules or predictive analytics

Unsupervised machine learning is adept at finding anomalies, interrelationships, and valid links between emerging factors and variables.

Combining both unsupervised and supervised machine learning defines the future of AI-based fraud prevention

Data Enrichment

Data enrichment is a process of enhancing, refining or otherwise improving raw data..

Mastercard

- Mastercard is fighting back against fraud every second of every day

- Mastercard has 2 billion cards in use in more than 210 countries and territories.

- It processes 165 million transactions per hour, using machine-learning algorithms and applying 1.9 million rules to examine each transaction.

- It all happens in a matter of milliseconds.

Data Enrichment

With every transaction, the machine-learning algorithms examine things like
- ❑ a cardholder's buying habits,
- ❑ geographic location
- ❑ travel patterns

Along with real-time data on card usage —
- ❑ such as what they are trying to buy,
- ❑ where they are trying to buy it
- ❑ what else they bought in the same day.

Each transaction is analyzed in terms of the rules that relate to what a valid transaction looks like and what a fraudulent transaction looks like.
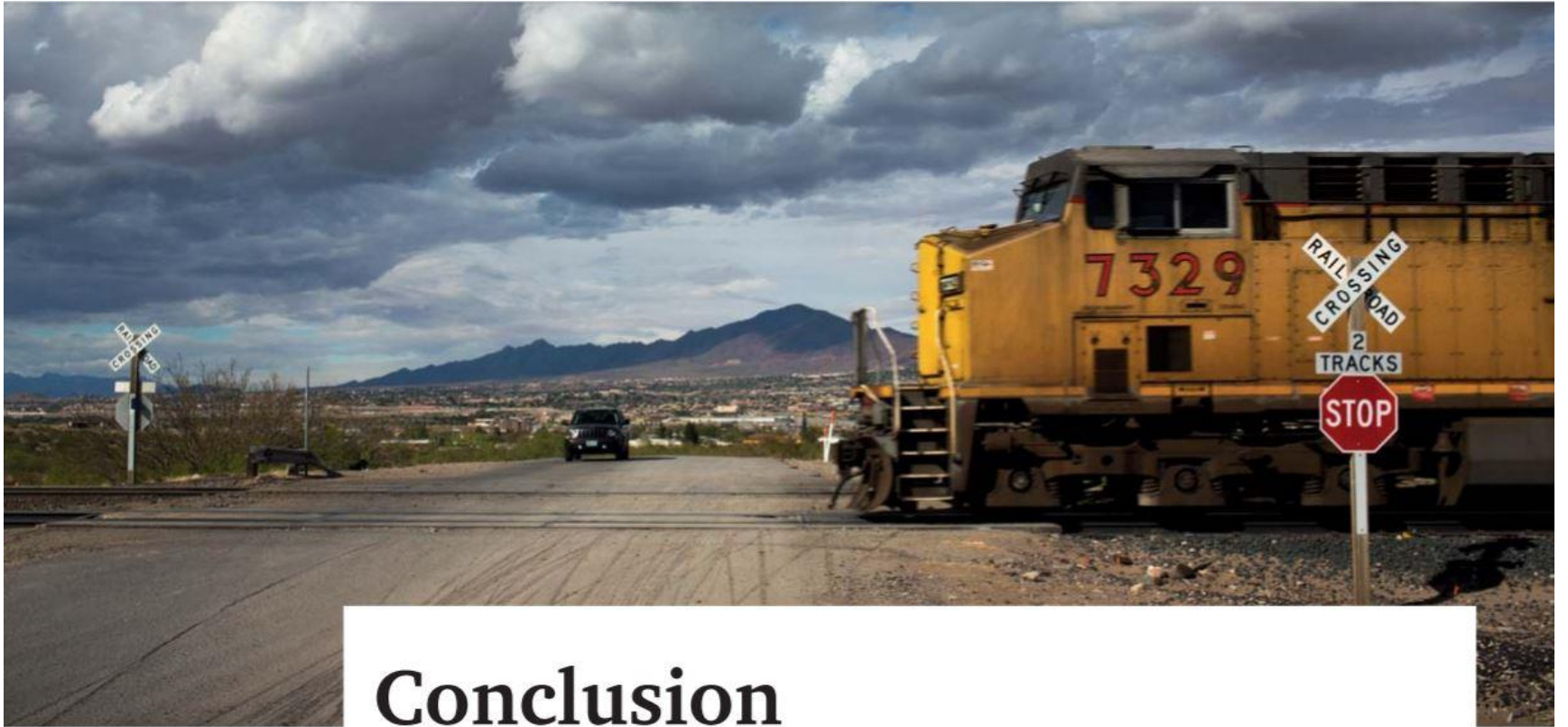
Conclusion

Many organizations are still under-prepared to face fraud, both from internal and external actors.

Many approach risk management, fraud investigations and reporting as distinctly different functions of the organization.

Data & AI

Data Analytics & AI Is a Perfect Match For the Challenges Of Battling Fraud

Data & AI

- Using AI one can examine years and, in some cases, decades of transaction data in a 250-millisecond response rate to calculate risk scores

- Taking this more integrative, real-time approach to AI across a digital business yields over 200% more predictive results

- Increased risk score or transaction safety rating

Data & AI – Fraud Prevention

- Taking into account emerging activities, behaviors, and trends in transaction anomalies

- Detect fraud attacks in real-time

- It's now possible to thwart more sophisticated, nuanced abuse attacks

- Provides fraud analysts with real-time risk scores and greater insight into where best to set threshold scores to maximize sales and minimize fraud losses

Data & AI – Fraud Prevention

- The ability to instantly customize and change business outcomes specific to the entire business, separate products lines, departments, and selling seasons.

- Enables digital businesses selling virtual goods to provide a more consistent, high-quality user experience on a 24/7 basis

- Staying in compliance with internal business policies, those from regulatory agencies and agreements with distribution partners is where AI-based fraud prevention is contributing today

Thankyou

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