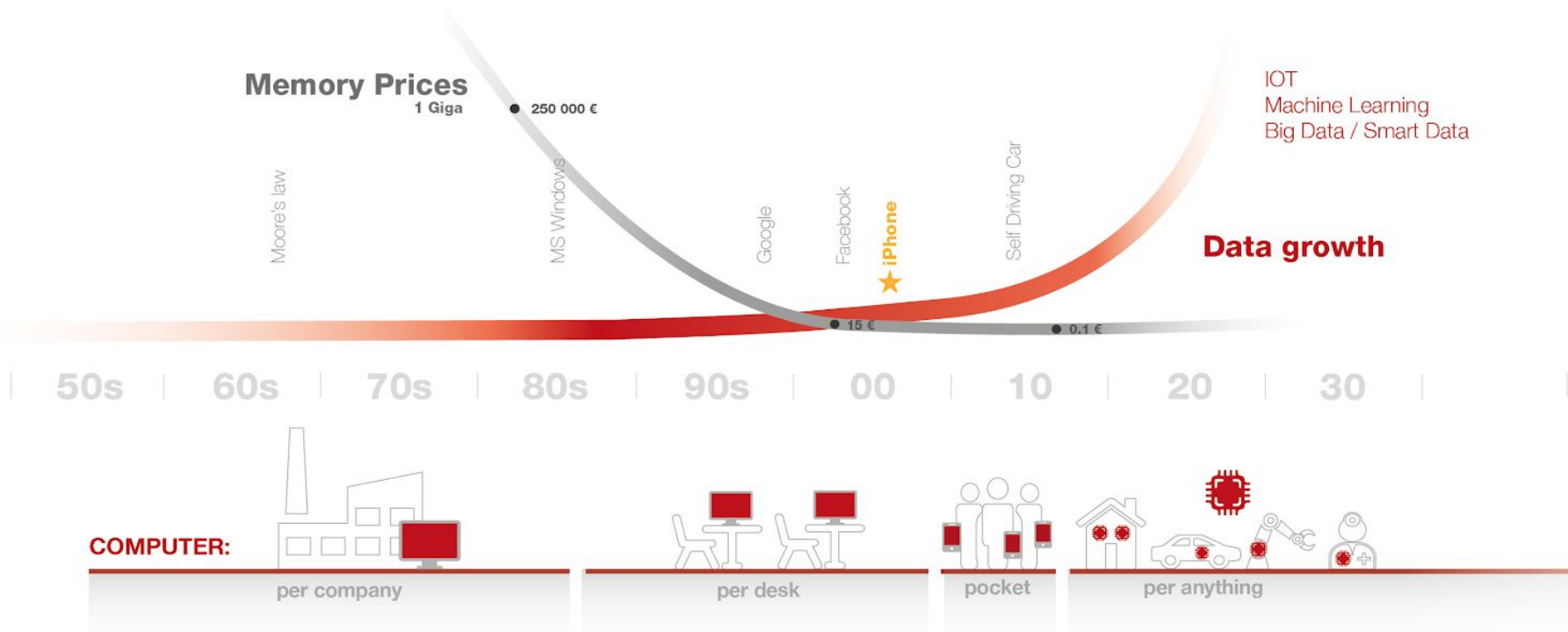


D | **ONE**
WE MAKE SENSE.

Claim Processing Automation for a Health Insurance

Data Drives Digitization



DATA DRIVEN VALUE CREATION

DATA SCIENCE & ANALYTICS | DATA MANAGEMENT | VISUALIZATION & DATA EXPERIENCE

What can you get out of this talk

- A better eye for identifying Machine Learning opportunities
- Machine Learning does not have to be a black box
- The importance of collecting data (record as much data as possible)

Don't fall for the Machine Learning Hype



Chess

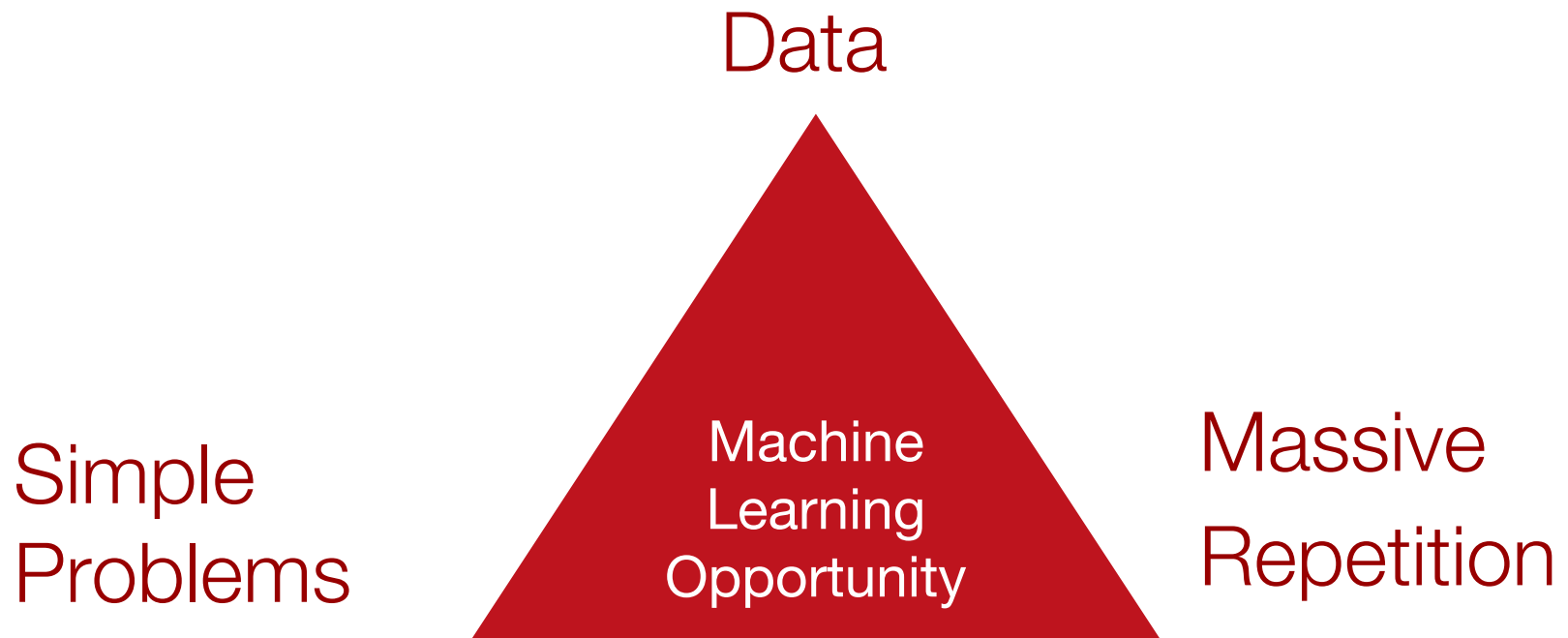


"Yes! That's right! The answer is 'Wisconsin'! Another 50 points for God, and . . . uh-oh, looks like Norman, our current champion, hasn't even scored yet."



Jeopardy

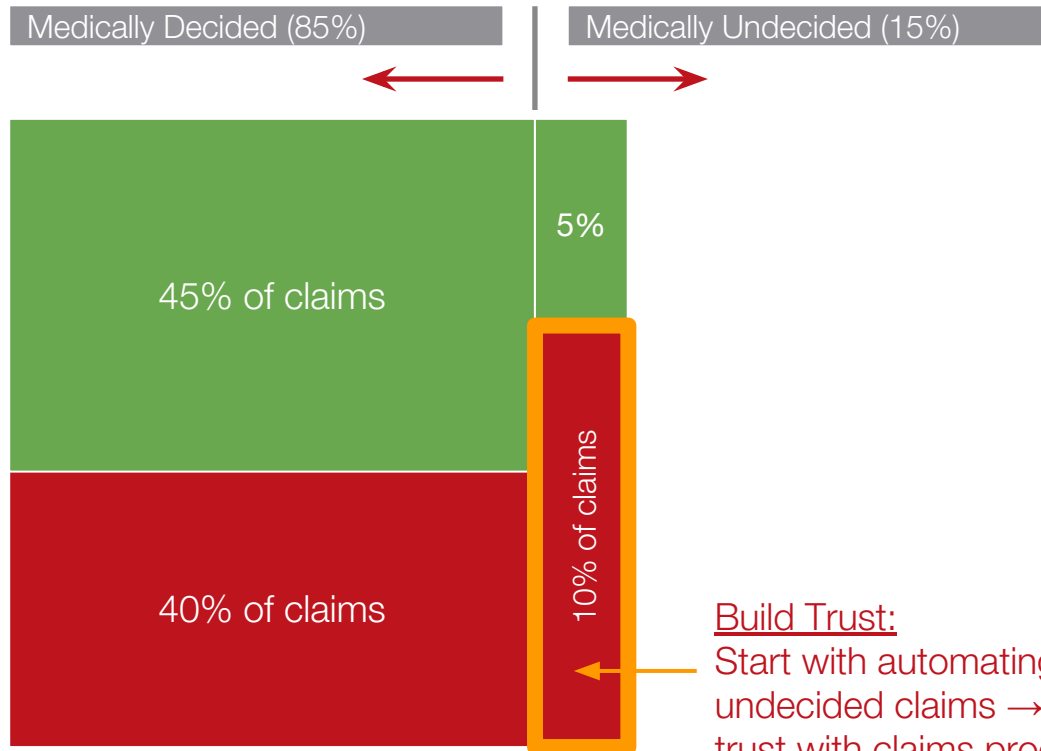
Identifying Machine Learning Opportunities



Case: Health Insurance in Abu Dhabi

- 3 mio clients
- 30 mio claims per year
- 400 claims processors
- Automated with rule engine

Automated (50%)
Manual (50%)



No magic: Two simple steps

Similar



1.

We have to identify past
“similar claims”

Homogenous



2.

If the past decisions for this
activity are *homogeneous*
enough we assign the
majority vote from history
as the decision.

Similarity features

for each claim

~ 6 out of



100.000

Diagnosis codes



100.000

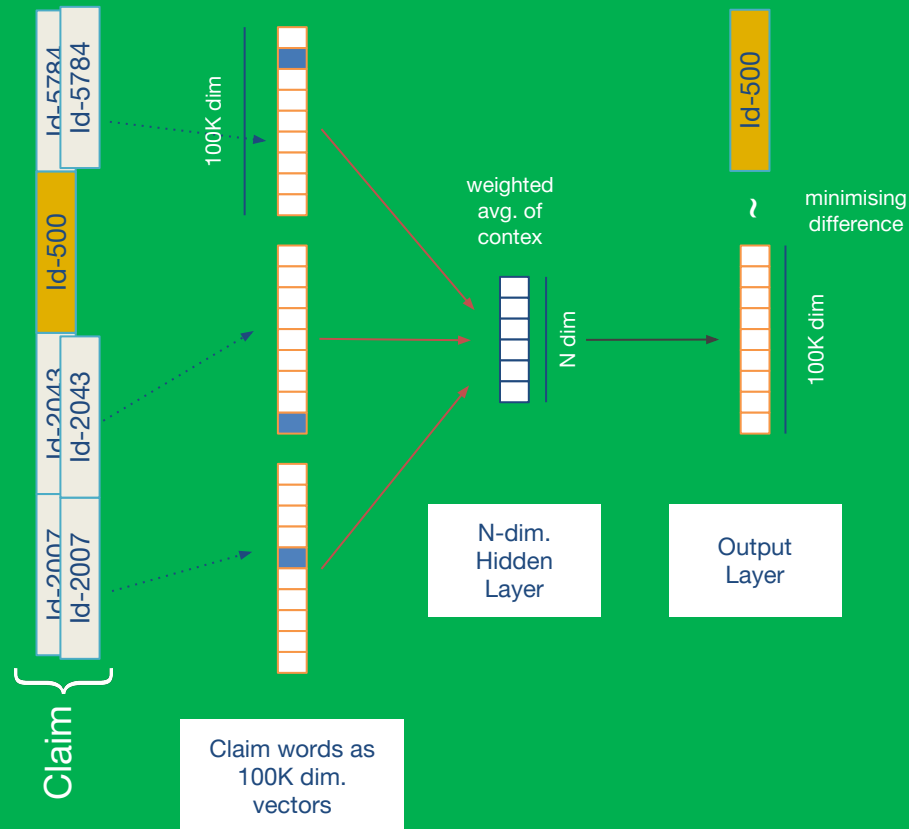
Drugs codes



50.000

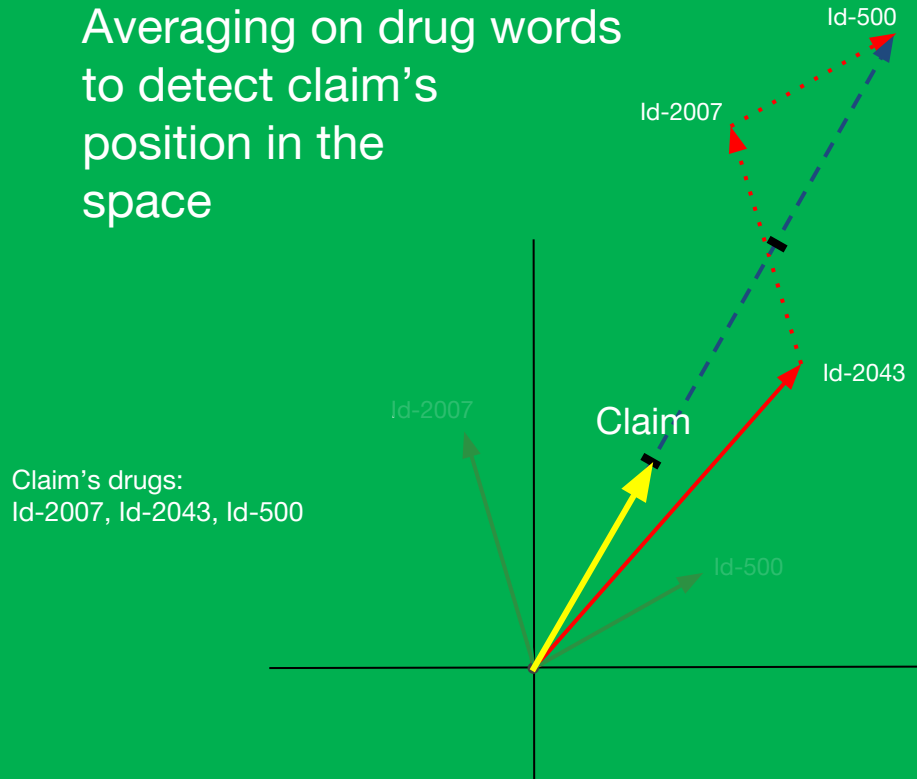
Procedures codes

Drug Code Embedding

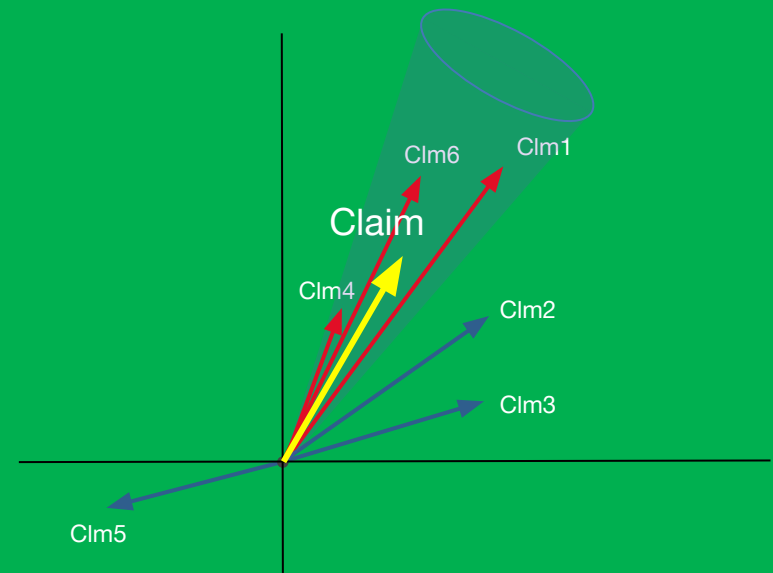


Capturing similar claims

Averaging on drug words to detect claim's position in the space



Cosine distance used to find nearby claims from history



Decision

We take the A/R decision on claim's activity based on past activity decisions from similar claims.

If the past activity decisions are homogenous enough we assign majority vote from the past as the decision.

A / R Decision

NEW CLAIM DRUG ID's

SIMILAR CLAIMS CONTAINING

ID3407

PREVIOUS DECISIONS

DECISION HOMOGENEITY

clm001	ID136	ID3407 ACCEPTED	ID5649
clm307	ID3407 REJECTED	ID3609	ID42173
clm987	ID783	ID1251	ID3407 REJECTED
clm2348	ID2136	ID2408	ID3407 ACCEPTED
clm45267	ID3407 ACCEPTED	ID67821	ID92235
clm620567	ID1345	ID2307	ID3407 REJECTED
		⋮	
clm N	ID1345	ID3407 ACCEPTED	ID12713

A

R

R

A

A

R

⋮

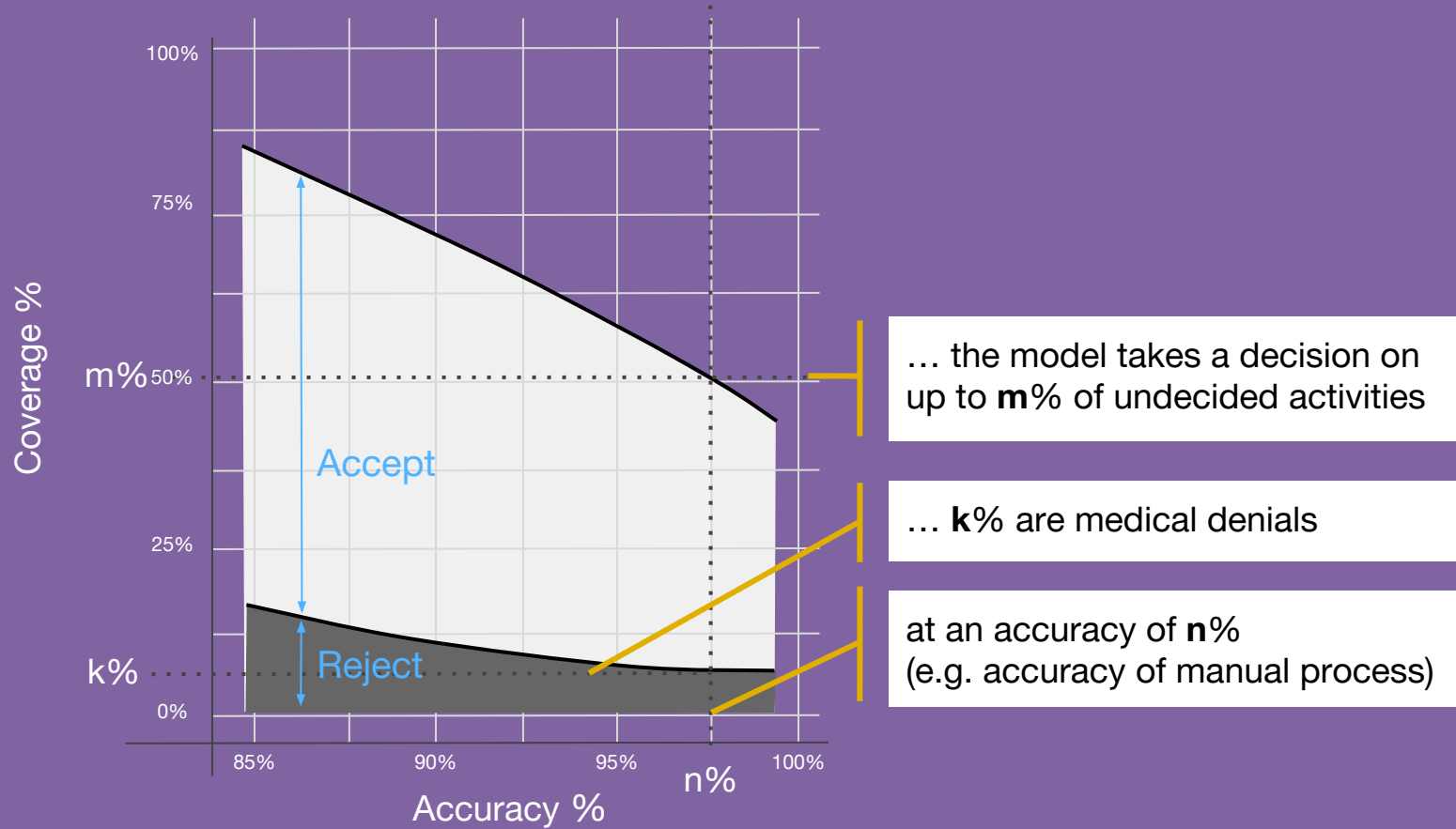
⋮

A

A > 95%

Accepted

Evaluation

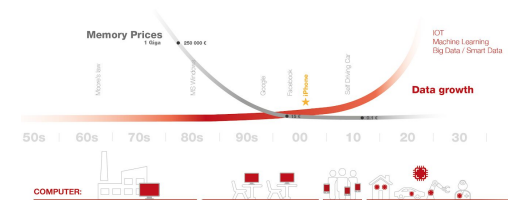
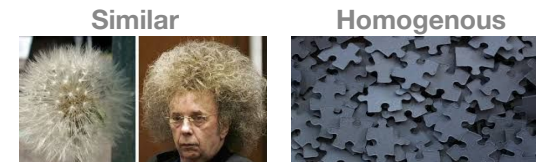
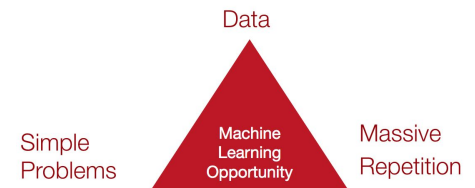


Algorithm Summary

1. New Claim as list of codes
2. Transform Claim into a vector
3. Claims with Similar vectors
4. Vote to Reject/Accept new Claim

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Questions ?

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