



Kunstig intelligens i byggeriet

Workshop : Impact

22.04.2024



Workshops om AI i byggeriet

Workshop 1

Vision og inspiration

Hvilke cases er der?
Hvordan arbejder vi med
AI i fremtiden?

Mandag d. 18.03
kl. 09:00-12:30
Lokation: BLOXHUB

Workshop 2

Impact

Risici og trusler vs
muligheder og
potentialer.
Hvad betyder det
branchen?

Mandag d. 22.04
kl. 12:30-15:30
Lokation: DI

Workshop 3

*Strategi og
implementering*

Hvordan ser en strategi
ud ift. Ukendt fremtid?
Hvordan sikrer vi
implementering?

Mandag d. 13.05
kl. 12:30-15:30
Lokation: BLOXHUB

Workshop 4

*Forretningsmodeller og
fælles indstas*

Hvordan ændrer
samarbejder sig og hvad
tjener vi pengene på?
Hvordan sikrer vi
udbredelse?

Mandag d. 3.06
kl. 12:30-15:30
Lokation: DI

AGENDA

12:30 **Velkomst**, Søren Cajus, DI

12:40 **Intro** til AI og pointer fra sidste workshop - Niels Falk, HD Lab og Ole Berard, ConTech Lab

13:00 **Oplæg**, Muligheder og Impact af AI - Tiago Peirera, Nordfy

13.30 **Workshop del 1**; Hvad frygter I?

13:50 **Oplæg**: EU AI ACT, Nicolaus Falk Scheibel, Kammeradvokaten

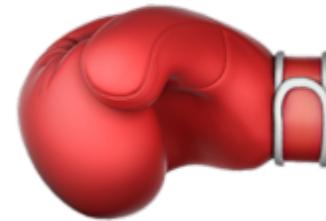
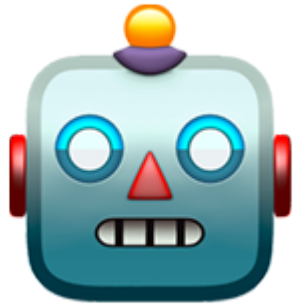
14:15 **Spørgsmål** til oplægsholdere

14:25 **Kort pause**

15:00 **Workshop del 2**; Impact af AI i byggebranchen

15:20 **Afrunding** og tak for i dag

DAGENS TEMA

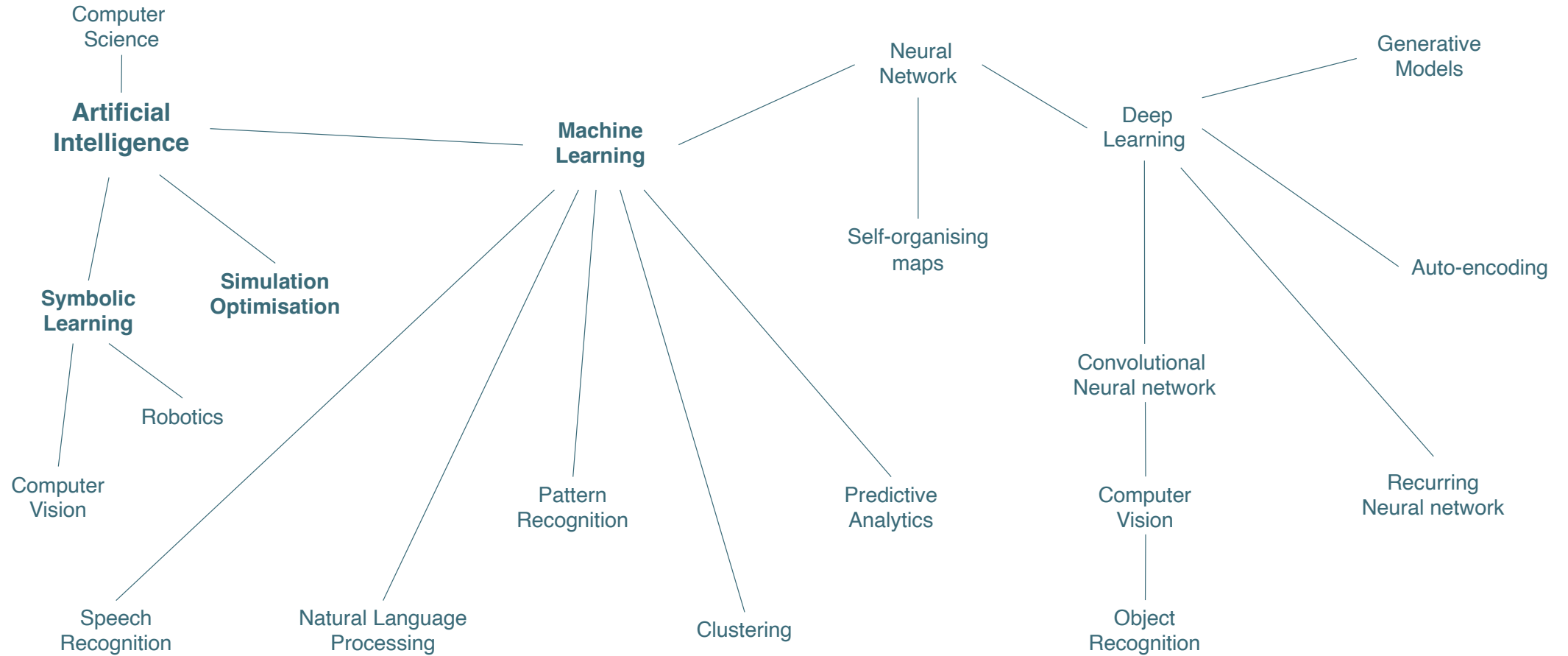


Artificial intelligence (AI) is the intelligence of machines and the branch of computer science that aims to create it. AI textbooks define the field as "the study and design of intelligent agents" where an intelligent agent is a system that perceives its environment and takes actions that maximize its chances of success.

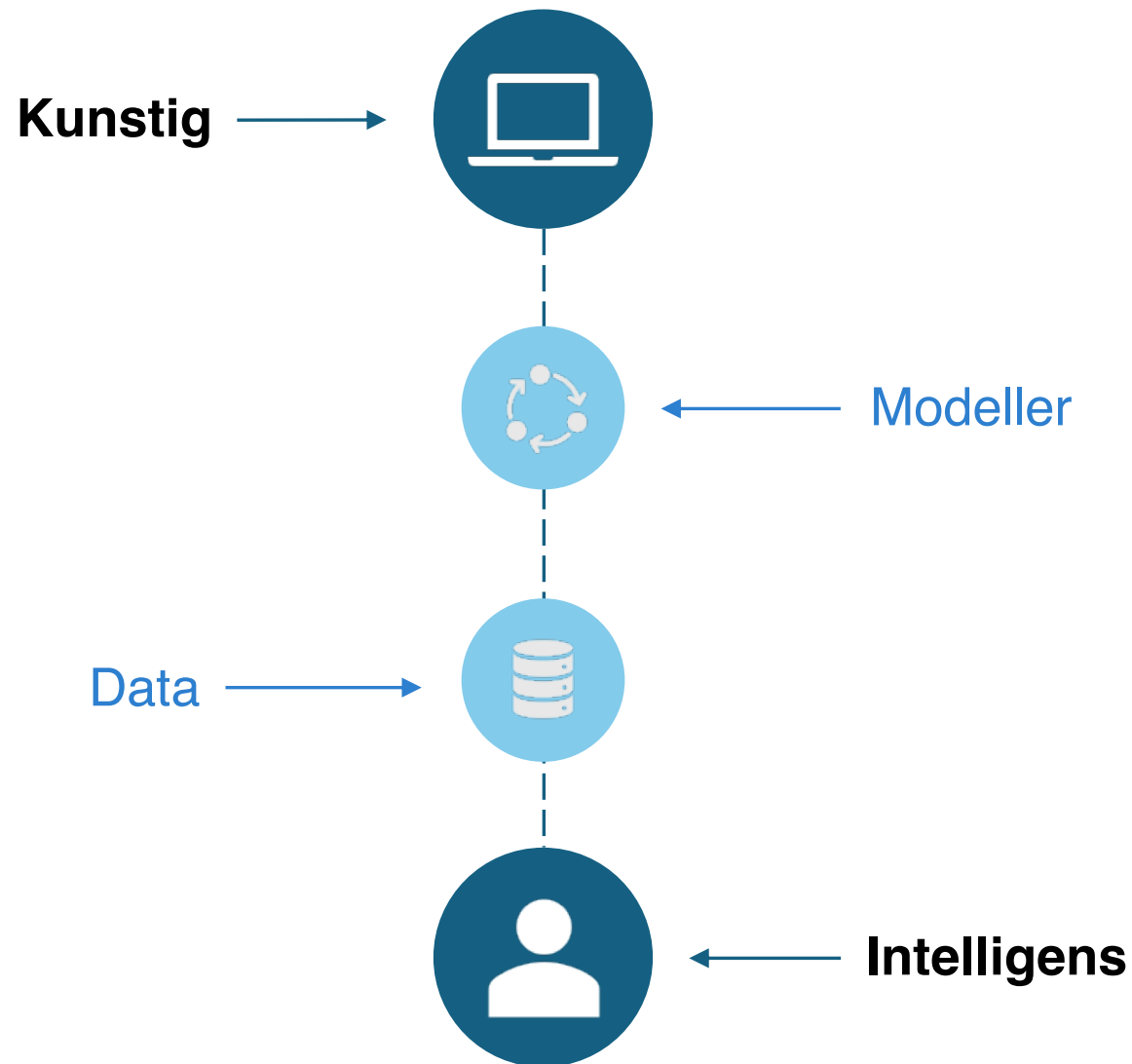
(http://en.wikipedia.org/wiki/Artificial_intelligence)

· **Kunstig intelligens** er når en computer eller software agerer, arbejder eller reagerer som et menneske...

AI dækker over mange teknologier, som får maskiner til at agere intelligent...



AI arbejder med
menneskelig indsigt
og står på vores
viden og læring



TRÆNING AF Aler

CON
TECH
LAB_

DnW

Label

Train

Use

All Images 116

Door 39

Wall 36

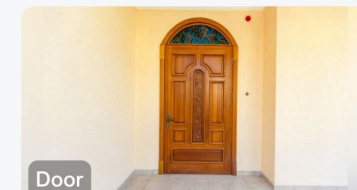
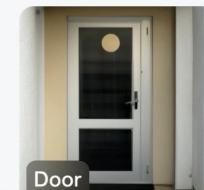
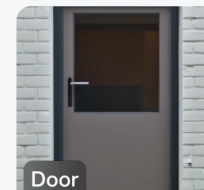
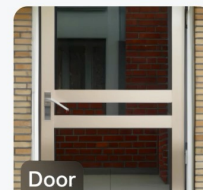
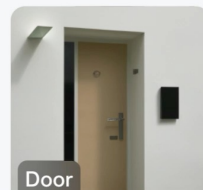
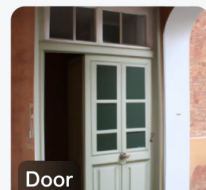
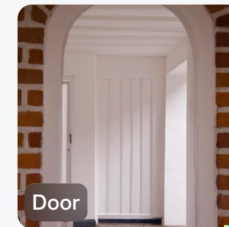
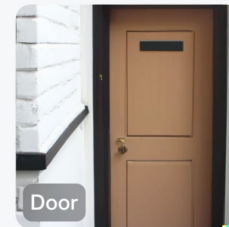
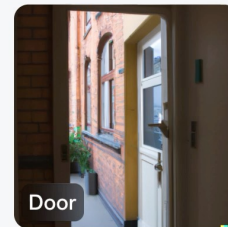
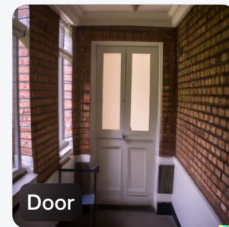
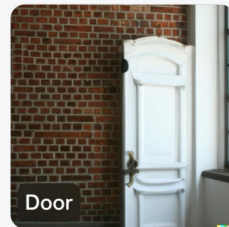
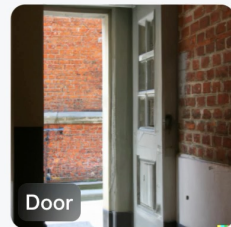
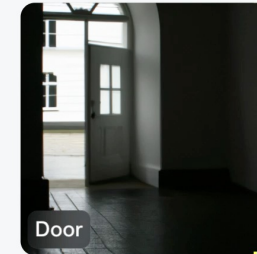
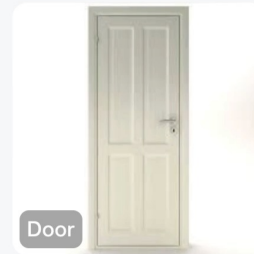
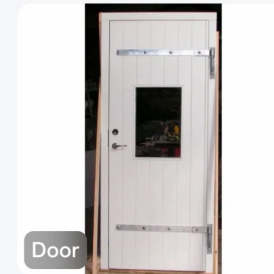
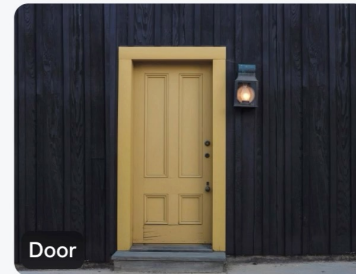
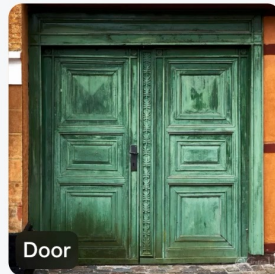
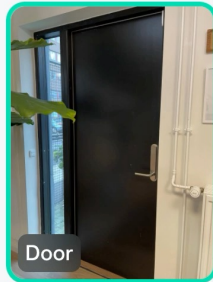
Window 41

All Images

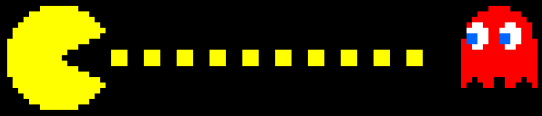
View

Import

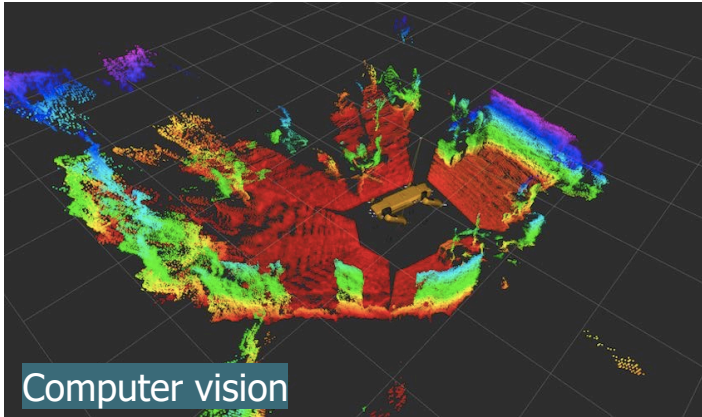
Door 39



80% of your images are predicted correctly, 20% incorrectly.



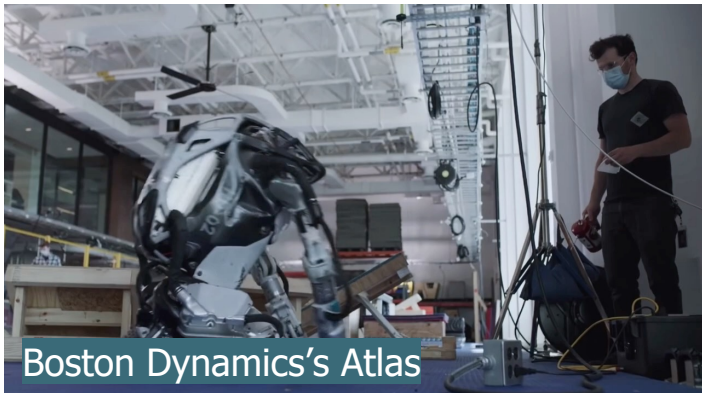
Regelbaseret intelligens



Computer vision

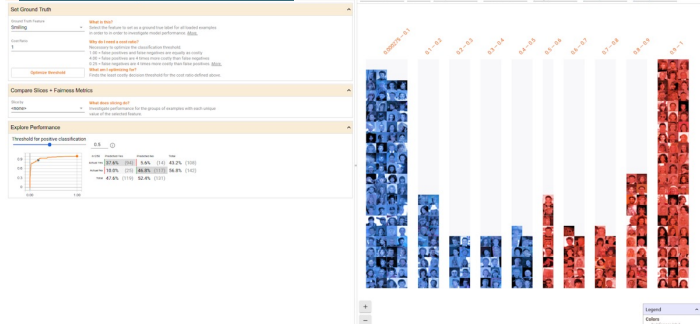


Malerobot

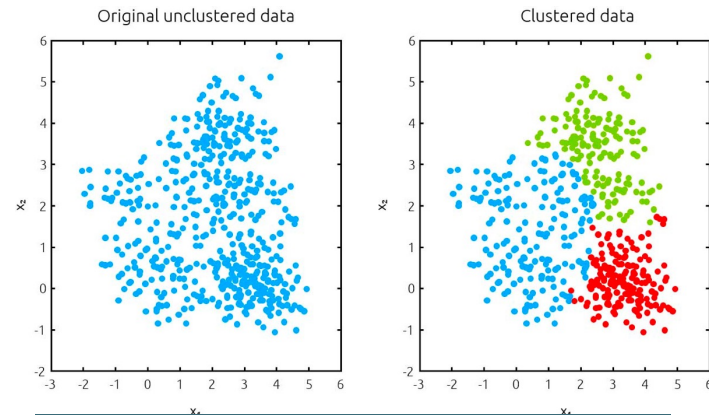


Boston Dynamics's Atlas

Neurale netværk



Genkendelse af mønstre, klassifikation



Kundesegmentering, målrettede reklamer



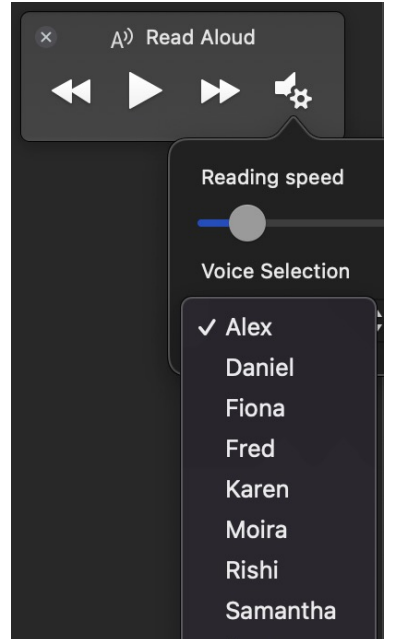
Deep fake



Tekst til tale



Tale til tekst



Sprogforståelse og interaktion



Google Assistance



Alexa



SIRI

Dashboard



PDP VARIABLE
PAY_0

CLUSTER
cluster2

ROW BY
Row

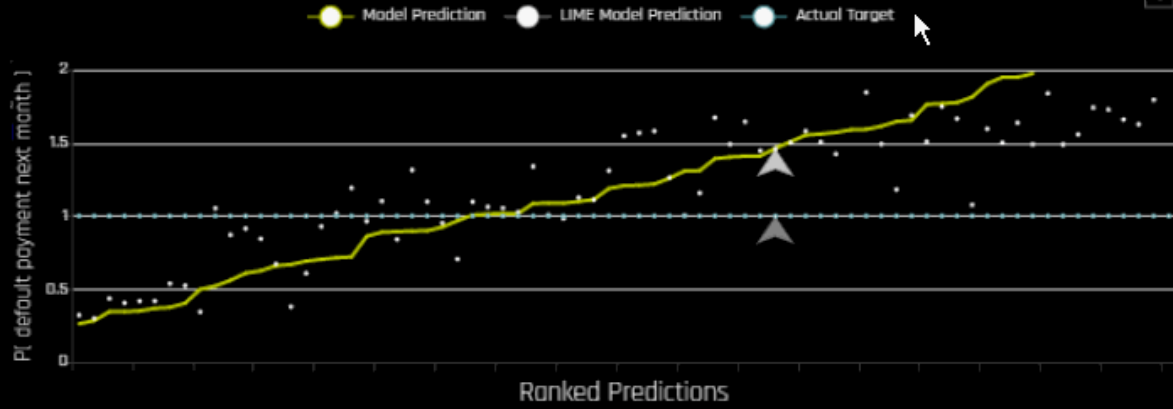
ROW NUMBER OR FEATURE VALUE
1643

SEARCH

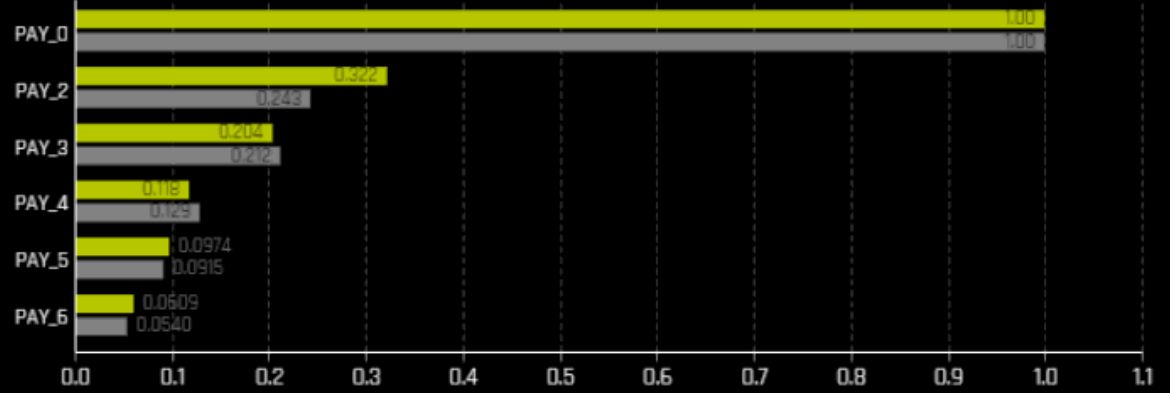
CLEAR

EXPLANATIONS

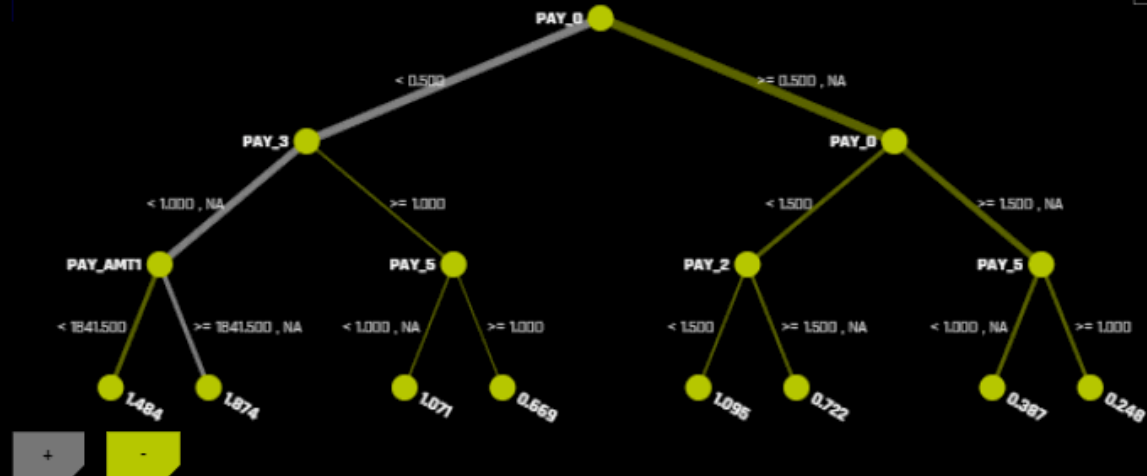
Cluster 2 LIME Plot R2: 0.86 RMSE: 0.2276



R2: 0.96 RMSE: 0.1164

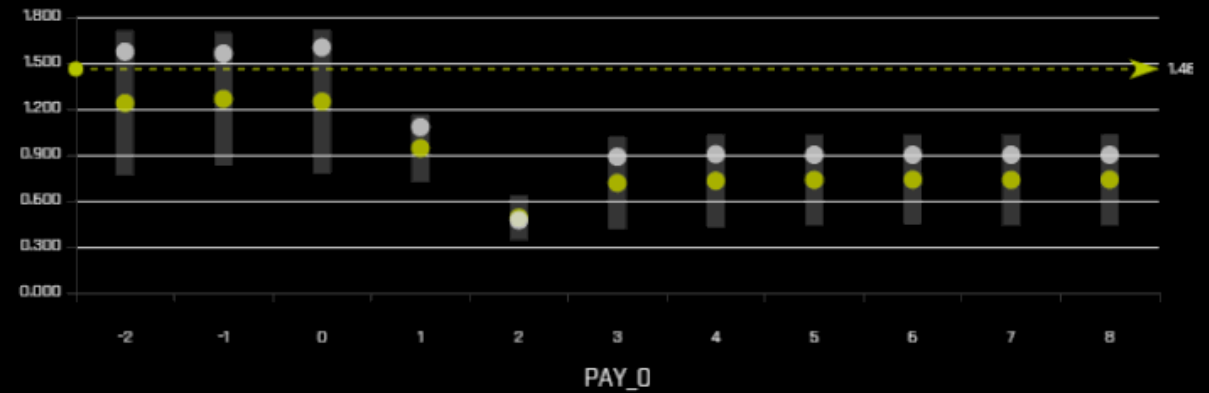


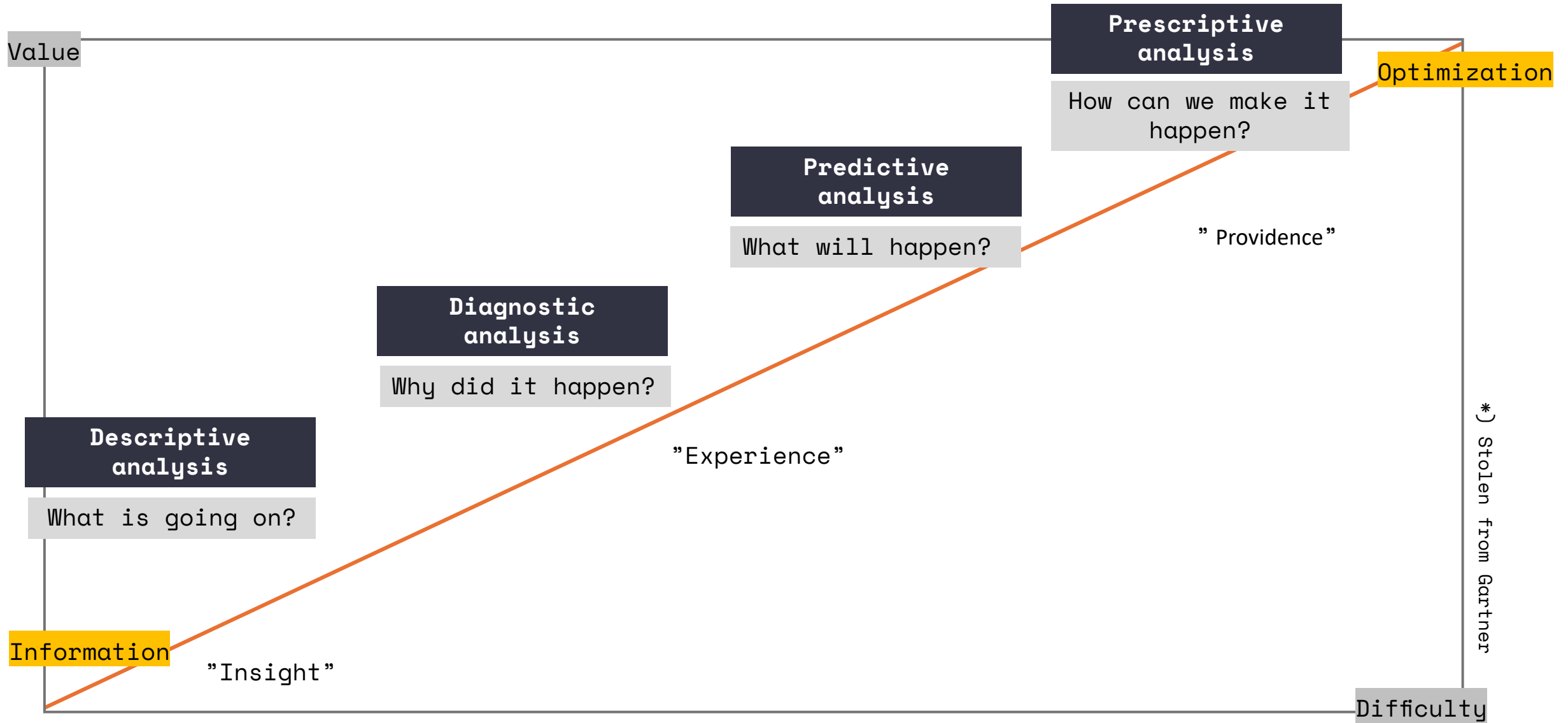
Training RMSE = 0.2845 Mean 3 Fold RMSE = 0.2892 R2 = 0.82



Mean Response with ± 1 Standard Deviation R2: 0.96 RMSE: 0.1164

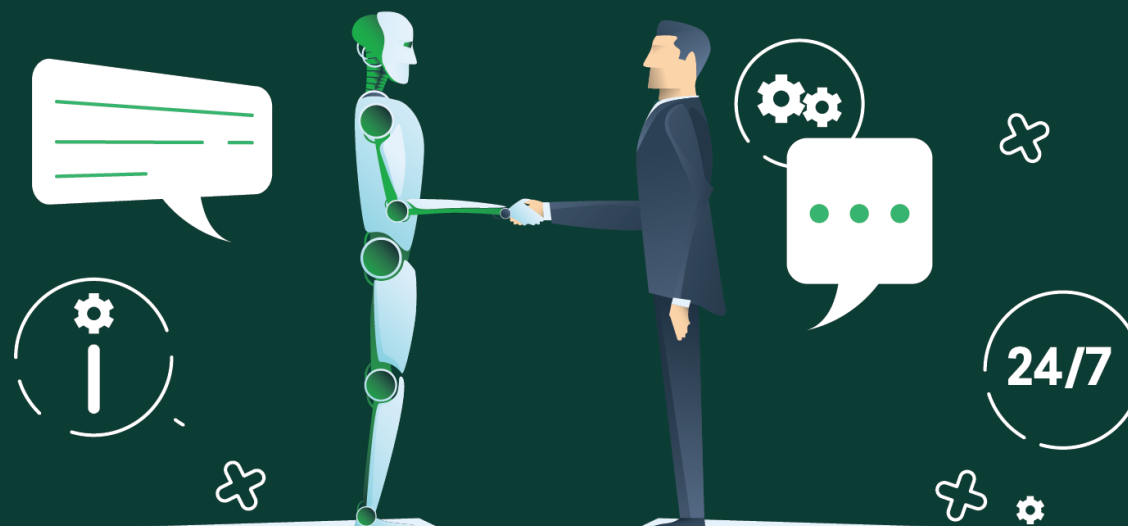
(Shaded for numeric data and bars for categorical data)





GOD AI ER ET SAMARBEJDE MELLEM MENNESKER OG MASKINER

CON
TECH
LAB_



Hvad gør virksomhederne?



Styrke den enkelte medarbejder



Skabe sandkasser



Bygge specifikke værktøjer og rulle dem ud?



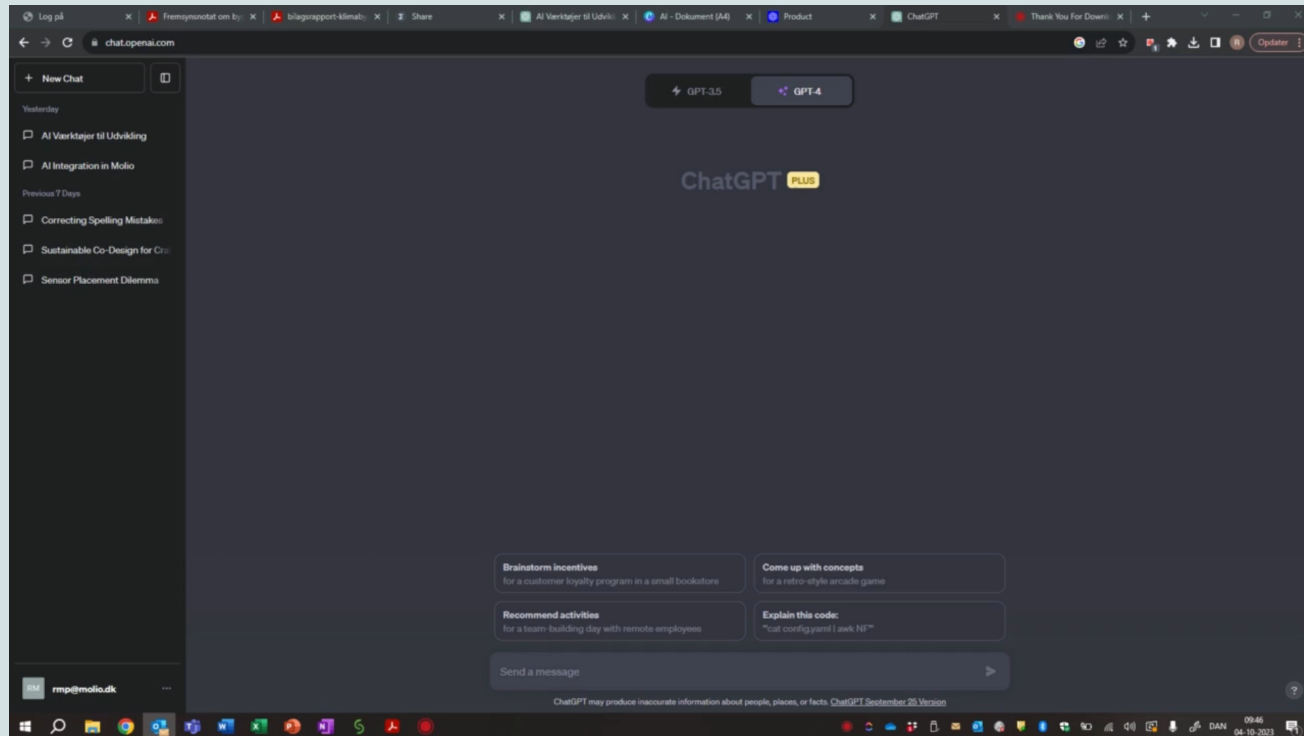
Planer og strategier



Venter og ser hvad der sker

TEKST - CHAT GPT SANDBOX

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If it take 3 hours to dry 3 towels - how long will it take to dry 10?



If it takes 3 hours to dry 3 towels, we can use the concept of proportionality to find out how long it will take to dry 10 towels.

Let's set up a proportion:

$$\frac{\text{Time to dry 3 towels}}{\text{Number of towels}} = \frac{\text{Time to dry 10 towels}}{10}$$

Plugging in the given values:

$$\frac{3}{3} = \frac{x}{10}$$

Solving for x , we get:

$$x = 10 \text{ hours.}$$

So, it will take 10 hours to dry 10 towels.

BILLEDER

Custom AI Models For Unique Images

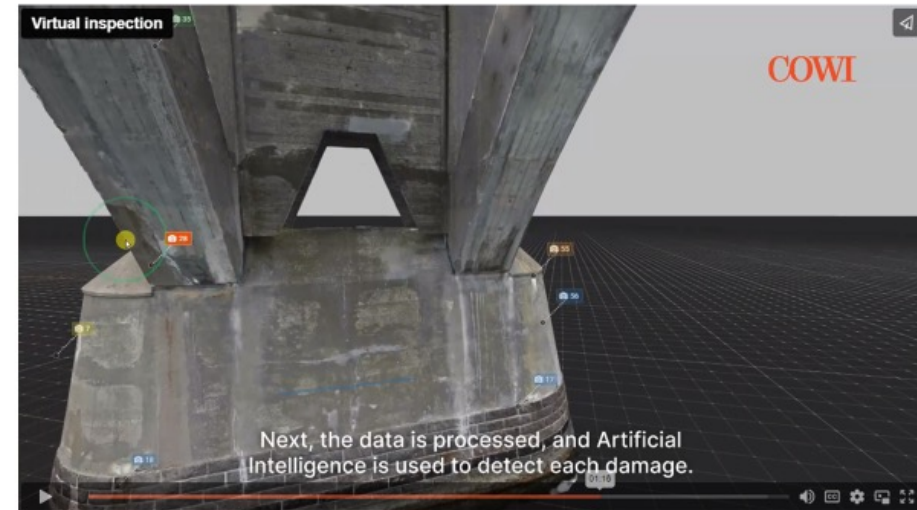


Stable Diffusion 4K Images of unique proposals generated using a 'LoRA' AI Model trained with a custom 'Danish Design' image & caption dataset.

CON
TECH
LAB_

```
stablediffusion / scripts / txt2img.py
aalbersk adjust licenses and naming
388 lines (349 loc) · 13.5 KB
1 import argparse, os
2 import cv2
...
We can train an AI model (Checkpoint or LoRA)
in Stable Diffusion based on a chosen style or a
companies' portfolio of work so that AI images
can be generated for future projects.
...
import rearrange
vision.utils import make_grid
ch_lightning import seed_everything
import autocast
xrtlib import nullcontext
ermark import WatermarkEncoder
...
til import instantiate_from_config
odels.diffusion.ddim import DDIMSampler
odels.diffusion.plms import PLMSampler
odels.diffusion.dpm_solver import DPMSolverSampler
grad_enabled(False)
it, size):
ter(it)
return iter(lambda: tuple(islice(it, size)), ())
...
odel_from_config(config, ckpt, device=torch.device("cuda"), verbose=False):
f>Loading model from {ckpt}")
= torch.load(ckpt, map_location="cpu")
lobal_step" in pl_sd:
int(f"Global Step: {pl_sd['global_step']}")
l_sd["state_dict"]
= instantiate_from_config(config.model)
model.load_state_dict(sd, strict=False)
(m) > 0 and verbose:
int("missing keys:")
int(m)
(u) > 0 and verbose:
int("unexpected keys:")
int(u)
...
ice == torch.device("cuda"):
del.cuda()
evice == torch.device("cpu"):
del.cpu()
del.cond_stage_model.device = "cpu"
...
49 raise ValueError(f"Incorrect device name. Received: {device}")
50 model.eval()
51 return model
```


COWI Virtual-inspection - billedgenkendelse



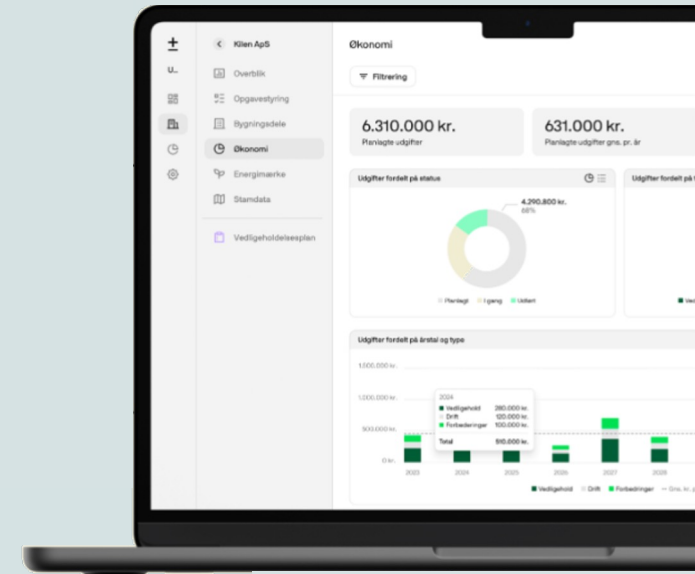
NYE PRODUKTER

Search properties

Vester Voldgade 108

Bryghuspladsen 8

Bryghuspladsen 8



Upsite



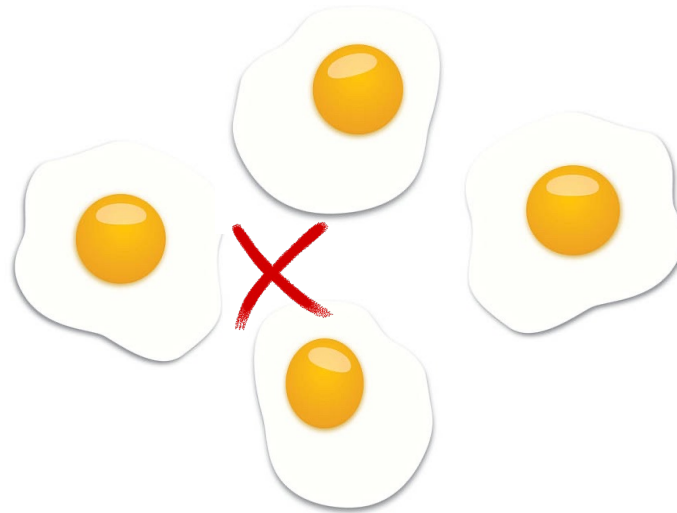
THE DATA PROBLEM IN CONSTRUCTION



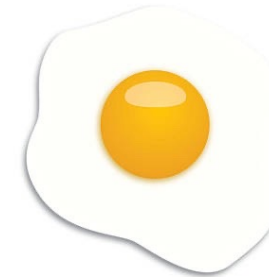
AI is best where ...



... there is loads of data.



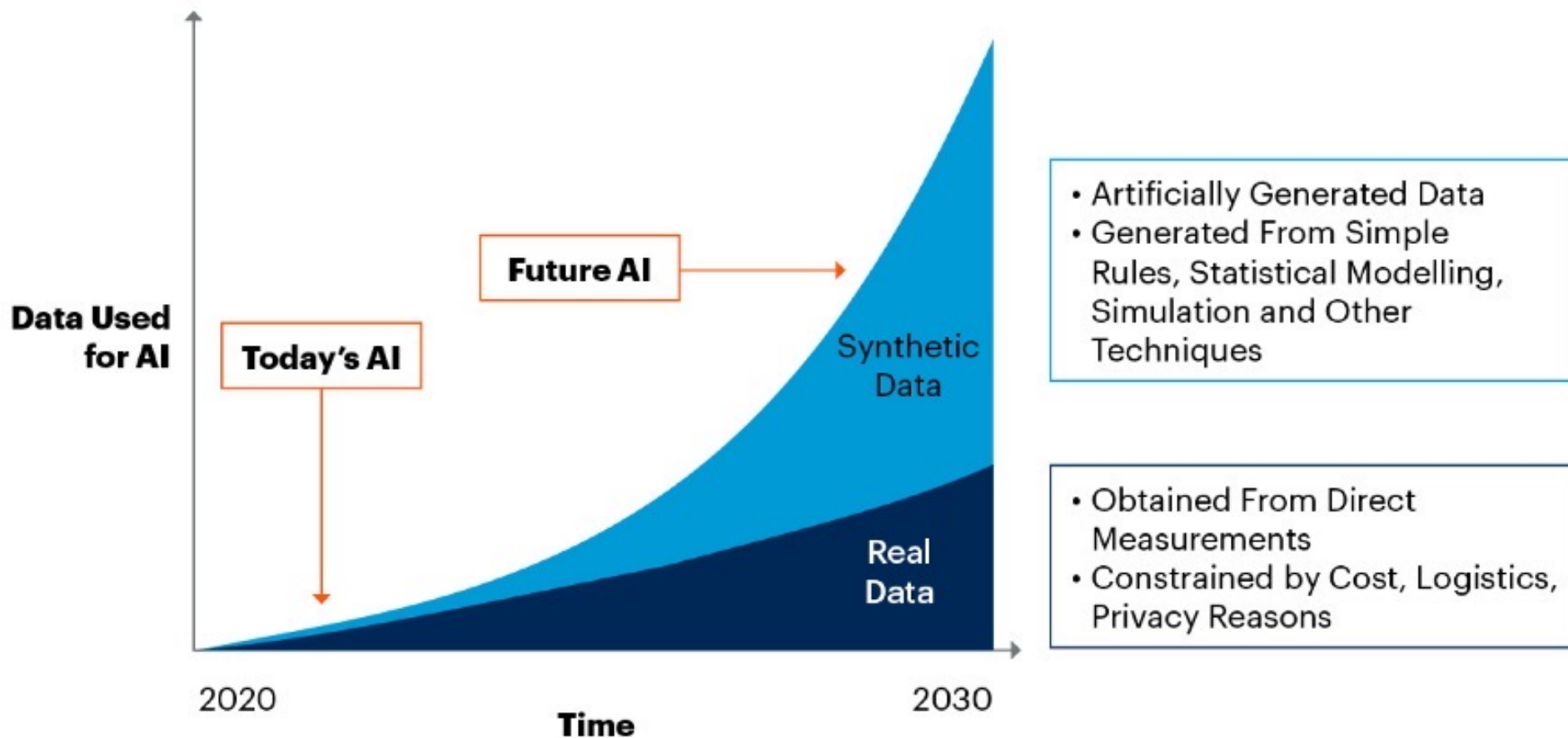
... it can fill in the holes.



AI hallucinates if we ask question far away from the data is.



By 2030, Synthetic Data Will Completely Overshadow Real Data in AI Models



Source: Gartner
750175_C

DER ER FORSKEL PÅ...

CON
TECH
LAB_

MINDER



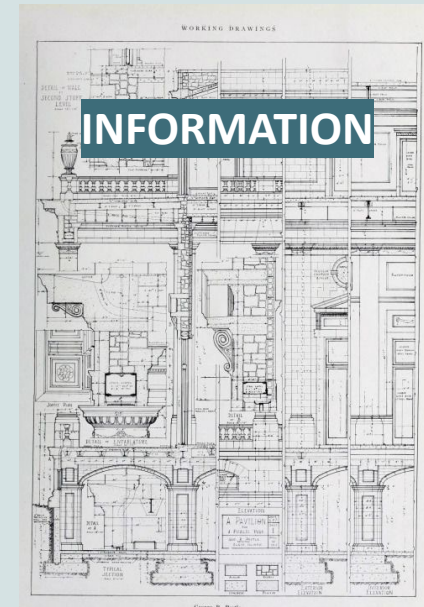
ERFARING



VIDEN



INFORMATION



DATA



SIDSTE WORKSHOP

Ide & Business Case

Design & Projektering

Produktionsforberedelse

Udførelse

Drift

Bæredygtighed & Dokumentation

3D-modeller

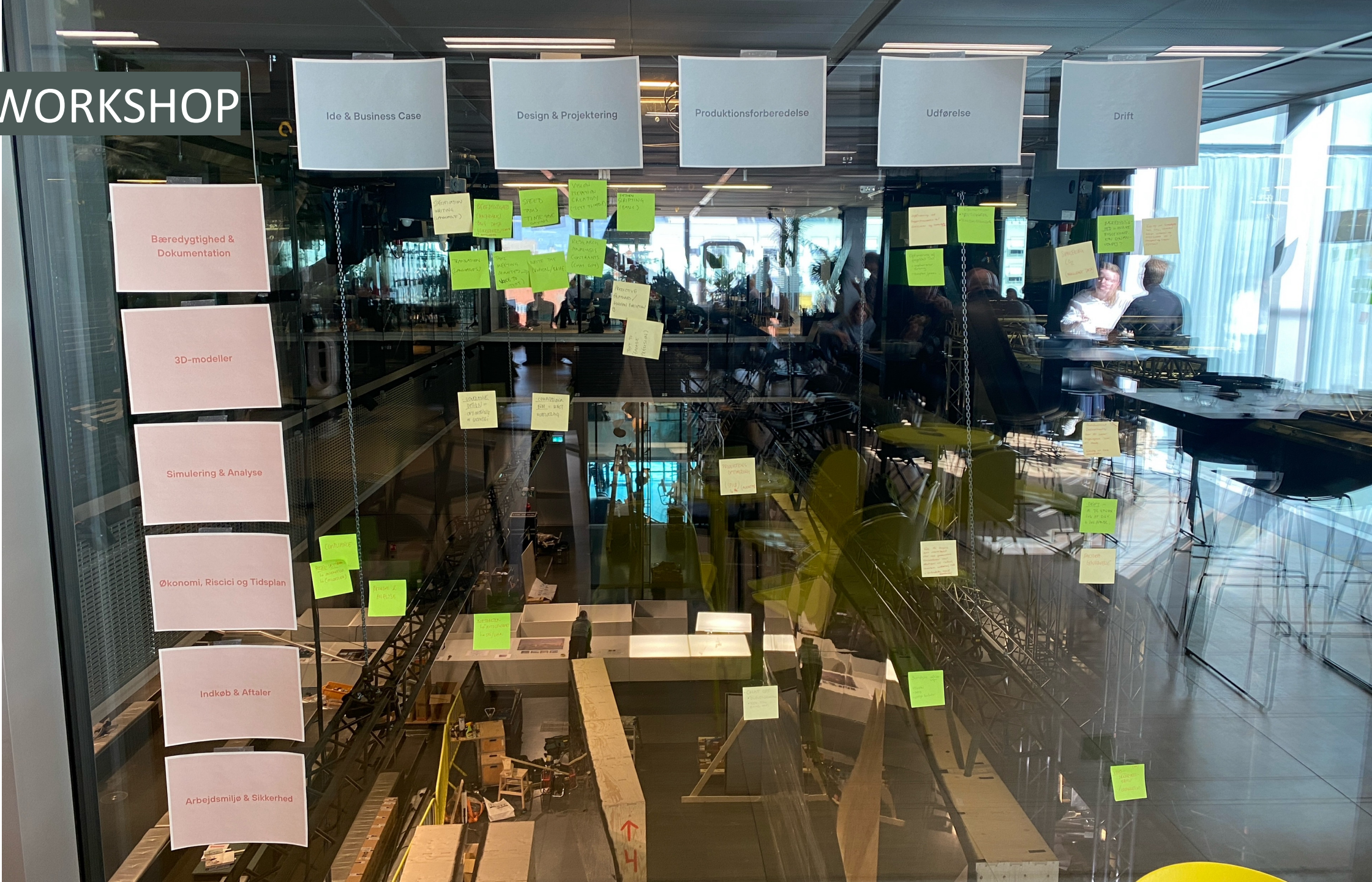
Simulering & Analyse

Økonomi, Riscio og Tidsplan

Indkøb & Aftaler

Arbejds miljø & Sikkerhed

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TECH
LAB
_



SIDSTE WORKSHOP

Ide & Business Case

Design & Projektering

Produktionsforberedelse

Øvelse

Drift

Bæredygtighed & Dokumentation

3D-modeller

Simulering & Analyse

Økonomi, Risiko og Tidsplan

Indkøb & Aftaler

Arbejdsmiljø & Sikkerhed

**Projektering
visualisering
& tilbuds-
tekst**

**Optimering af
projekt og
proces samt
referat-
skrivning**

**Kontrakter,
afgørelser
og
økonomi-
analyser**

**Overvågning og
godkendelser**

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TECH
LAB _