

Kunstig intelligens i byggeriet

Workshop : Vision og Inspiration

18.03.2024



Workshop 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

Afslutningskonference og Scrap book

Mandag d. 25 eller 26.06.2024

kl. 09:00-15:30

Lokation: DI/Molio

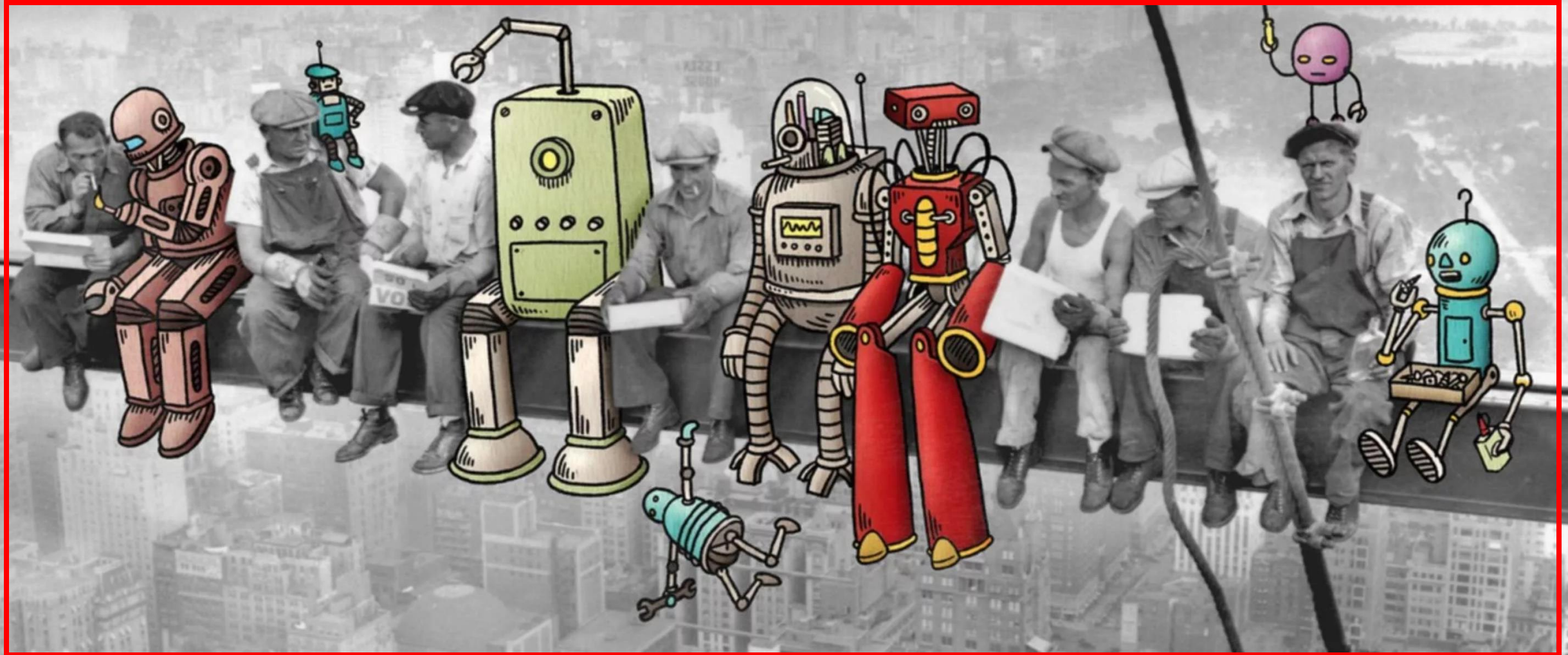
Agenda

9:00 Velkommen, Ole Berard, ConTech Lab
9:15 Hvad er AI, Niels Falk, HD Lab
10:00 AI i praktisk anvendelse, Ole Berard, ConTech Lab
10:20 Kort pause
10:30 Workshop
12:00 Sandwich

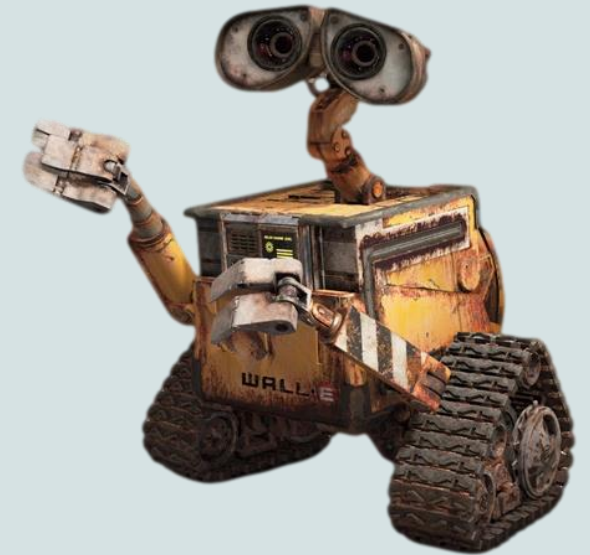
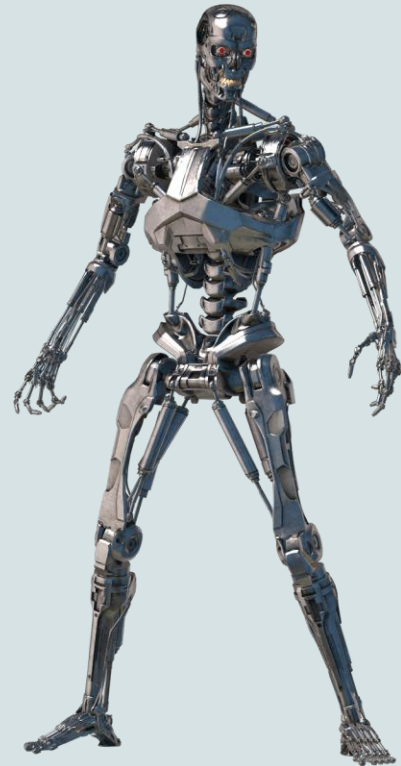
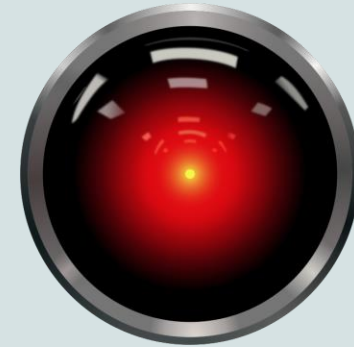
Formål

- At vise cases og inspiration
- At få et fælles billede og forståelse for hvad AI vil betyde for byggebranchen

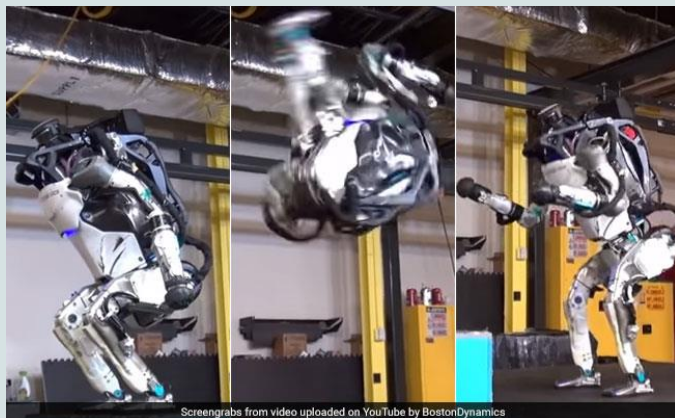
Hvad betyder AI byggebranchen?



Opfattelsen af AI er præget af hvad vi ser i film
*Det kalder vi broad AI eller
artificial general intelligence (AGI)*



Men alle AI vi har lige nu er god til én ting *Det kalder vi narrow AI*





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Artificial intelligence

From Wikipedia, the free encyclopedia

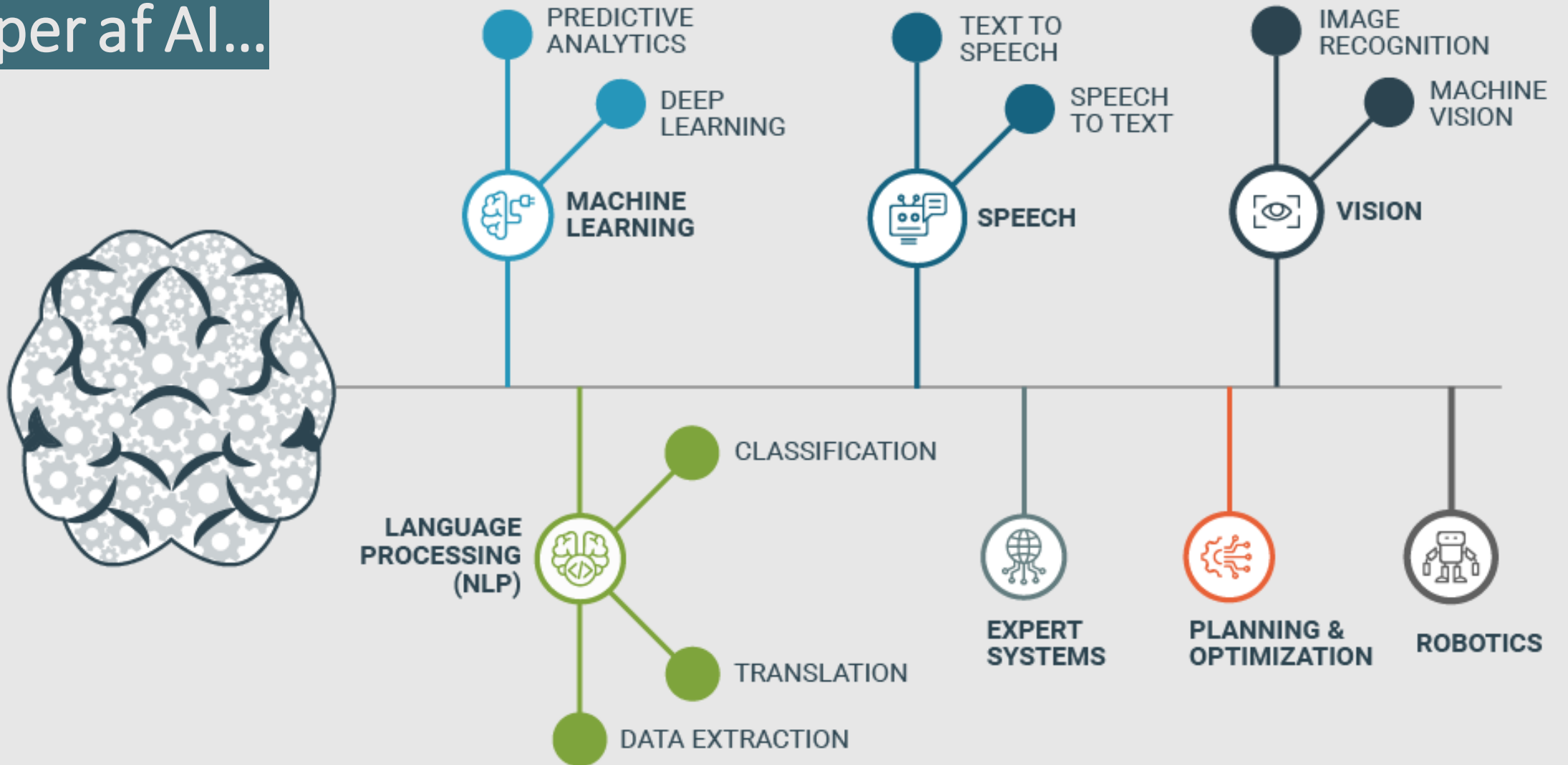
"AI" redirects here. For other uses, see [AI \(disambiguation\)](#) and [Artificial intelligence \(disambiguation\)](#).

Artificial intelligence (AI), sometimes called **machine intelligence**, is [intelligence](#) demonstrated by [machines](#), unlike the **natural intelligence** displayed by [humans](#) and [animals](#). Leading AI textbooks define the field as the study of "[intelligent agents](#)": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals.^[1] Colloquially, the term "artificial intelligence" is often used to describe machines (or computers) that mimic "cognitive" functions that humans associate with the [human mind](#), such as "learning" and "problem solving".^[2]

As machines become increasingly capable, tasks considered to require "intelligence" are often removed from the definition of AI, a phenomenon known as the [AI effect](#).^[3] A quip in Tesler's Theorem says "AI is whatever hasn't been done yet."^[4] For instance, [optical character recognition](#) is frequently excluded from things considered to be AI,^[5] having become a routine technology.^[6] Modern machine capabilities generally classified as AI include successfully [understanding human speech](#),^[7] competing at the highest level in [strategic game systems](#) (such as [chess](#) and [Go](#)),^[8] [autonomously operating cars](#), intelligent routing in [content delivery networks](#), and [military simulations](#).^[9]

Artificial intelligence was founded as an academic discipline in 1955, and in the years since has experienced several waves of optimism,^[1] loss of funding (known as an "[AI winter](#)"),^{[12][13]} followed by new approaches, success and renewed funding.^{[11][14]} For most of its history, that often fail to communicate with each other.^[15] These sub-fields are based on technical considerations, such as particular goals (e.g. "particular tools" ("[logic](#)" or [artificial neural networks](#)), or deep philosophical differences.^{[17][18][19]} Sub-fields have also been based on social particular researchers).^[15]

Types of AI...



Den næste generation af AI ankom i 2022



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

ChatGPT



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:

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

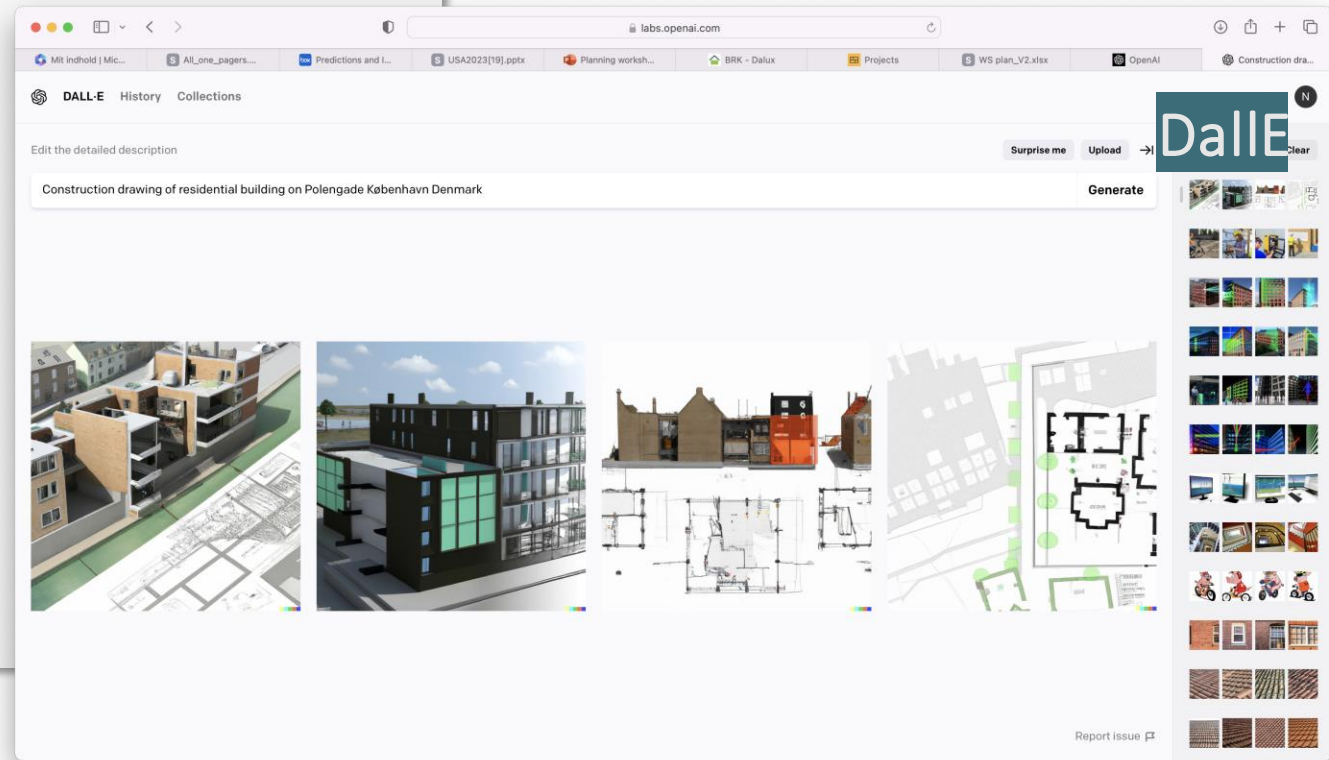
Plugging in the given values:

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

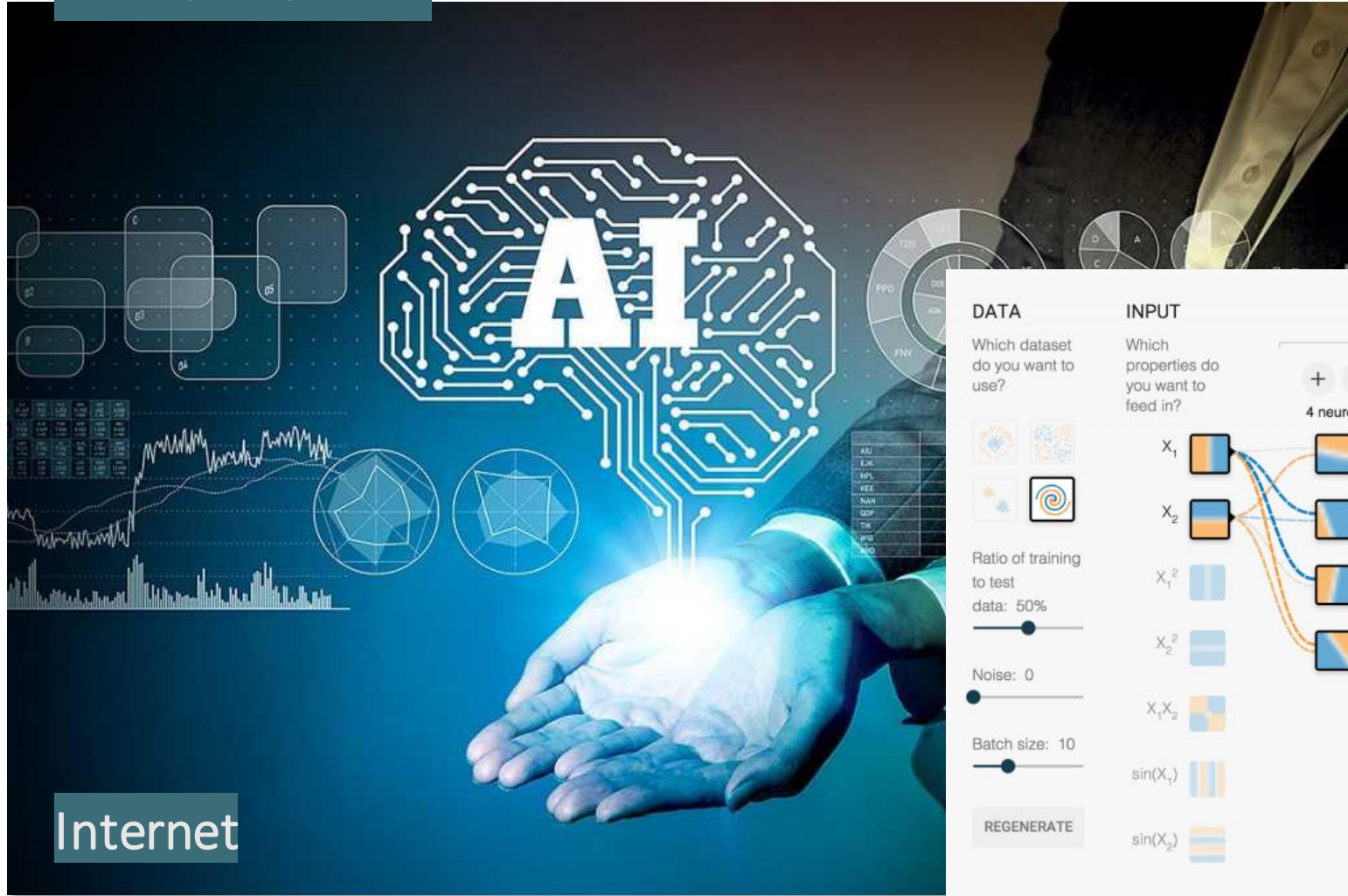
Solving for x , we get:

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

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

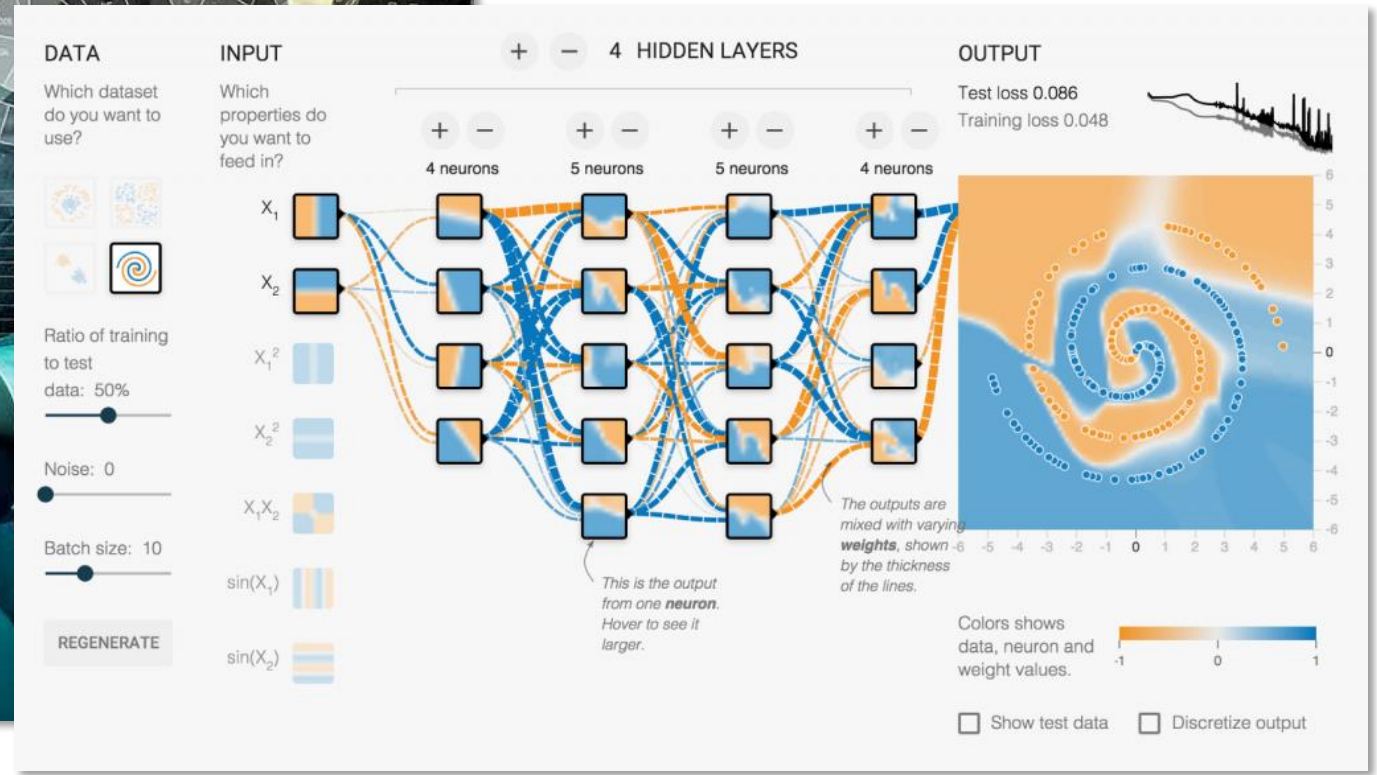


What is AI?



Internet

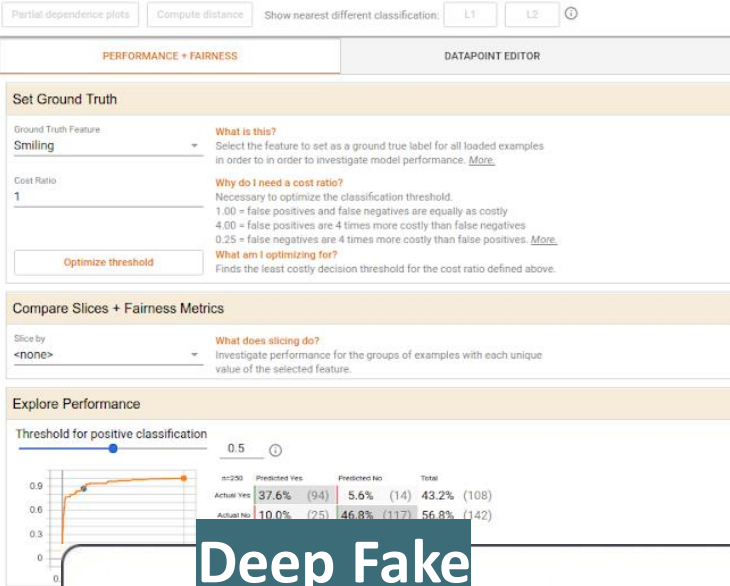
Reality



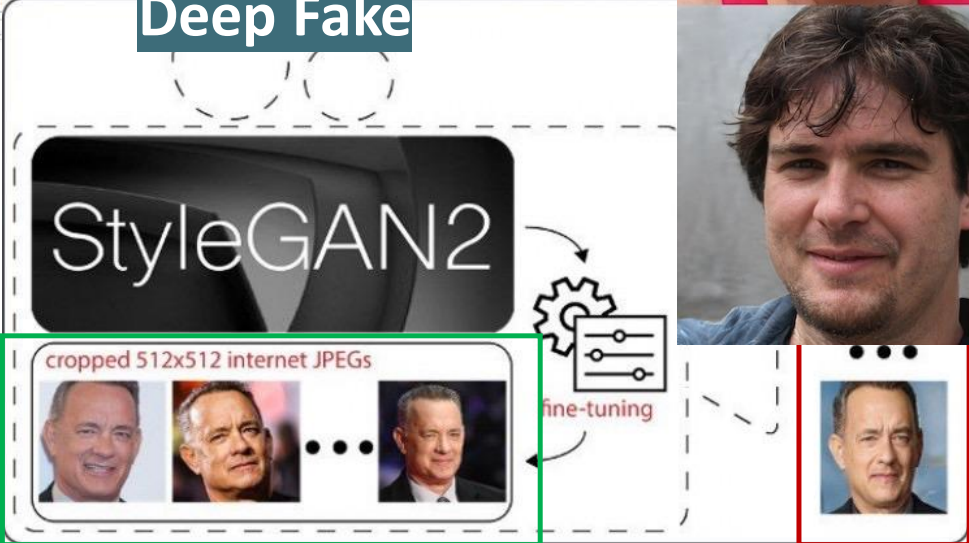
AI Training

Pretrained Generative AI

AI analysis



Deep Fake

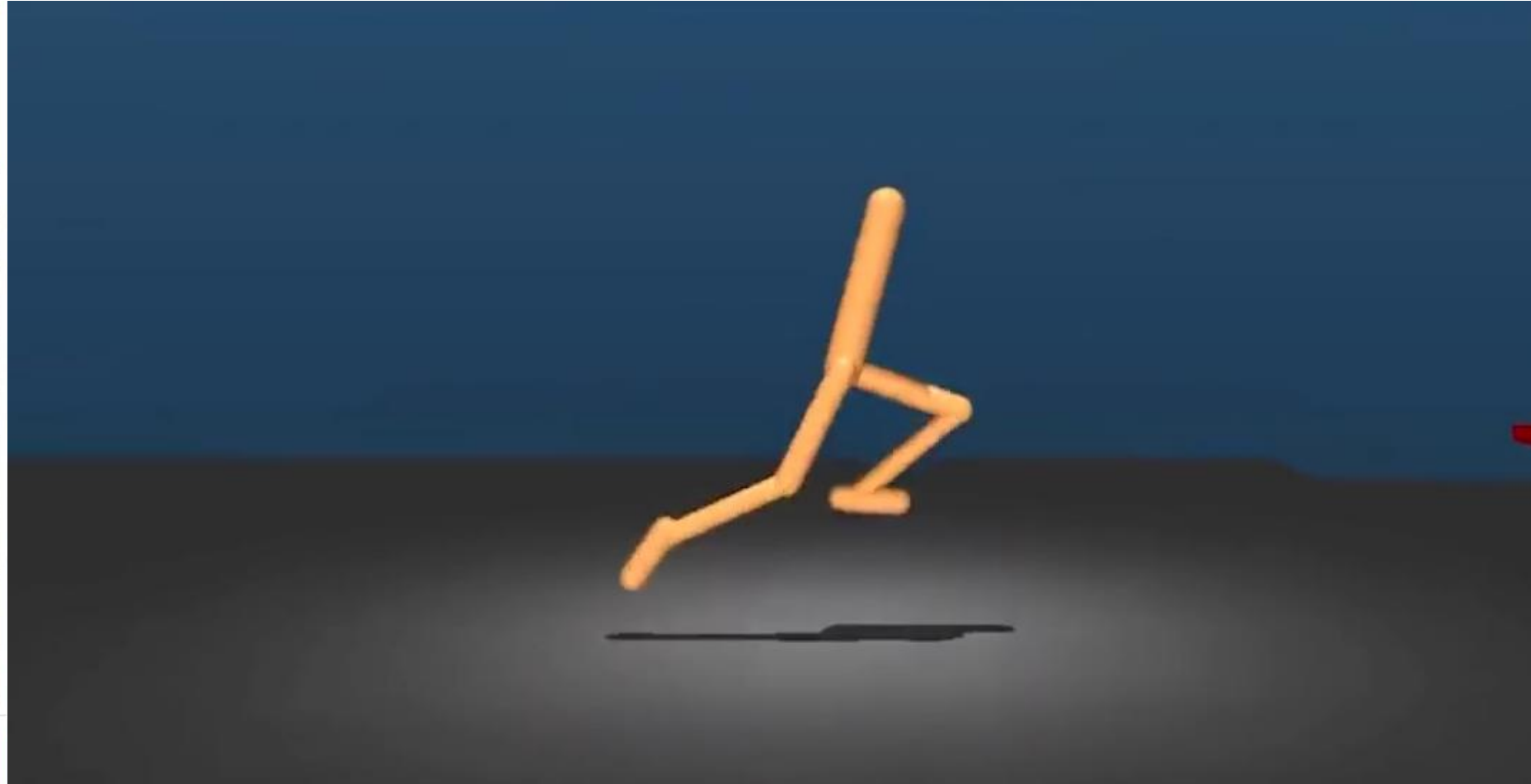


Supervised vs Unsupervised Training

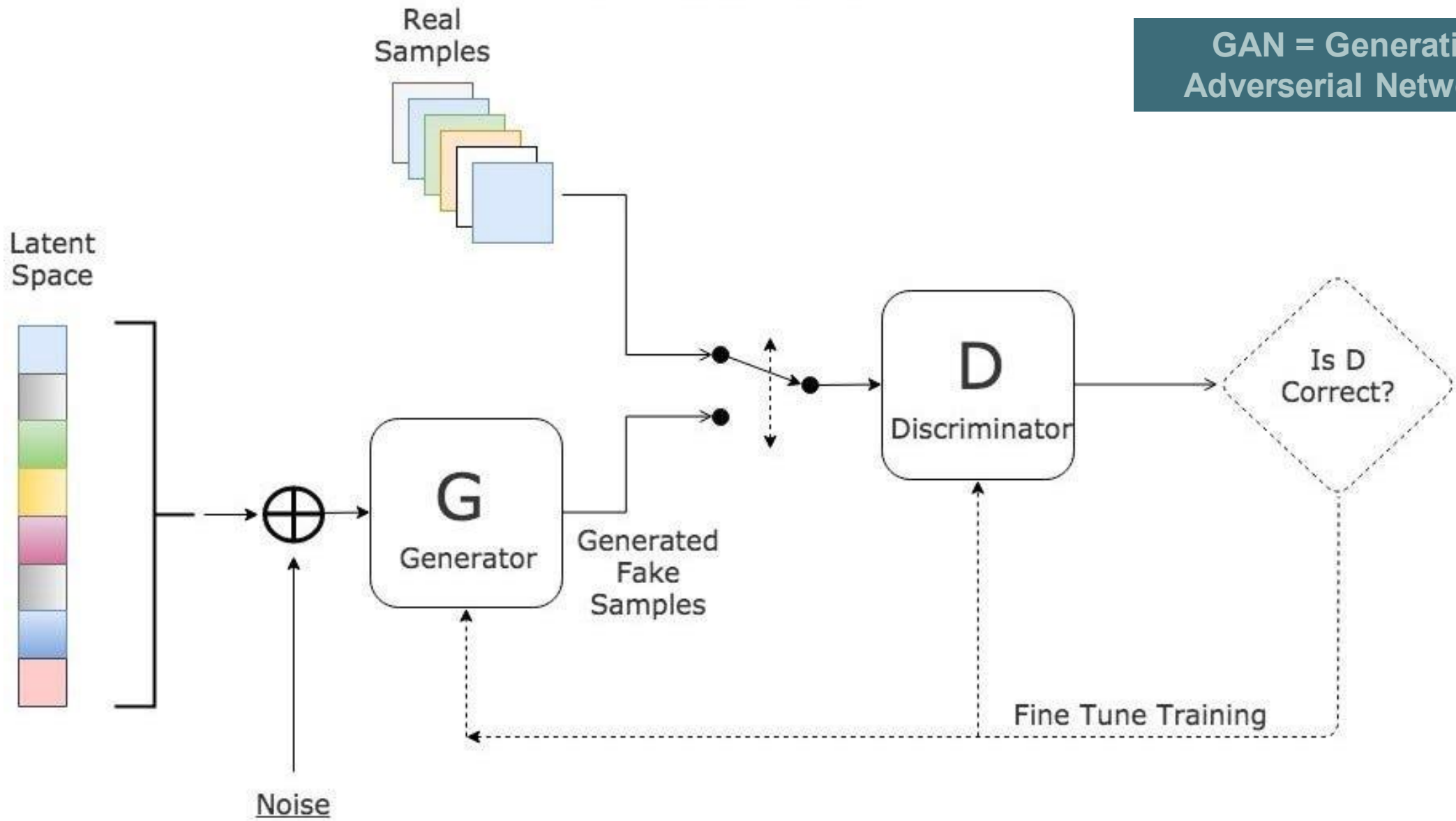
Select all squares with
street signs
If there are none, click skip



SKIP



GAN = Generative Adversarial Networks





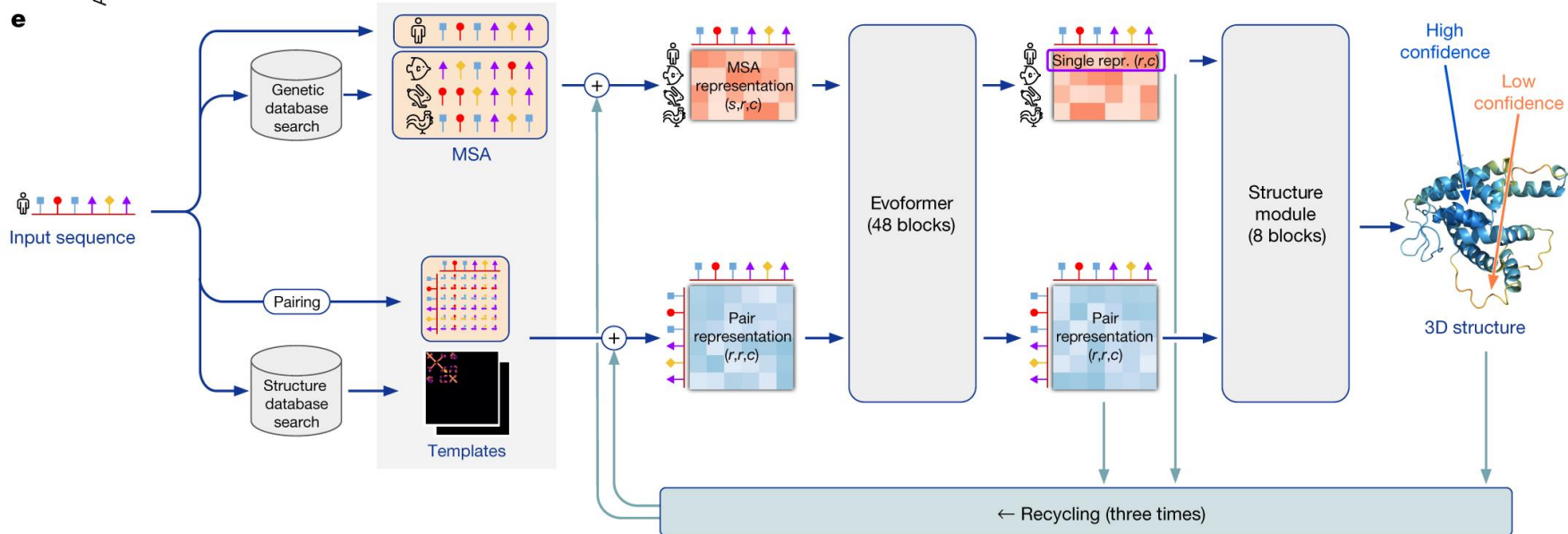
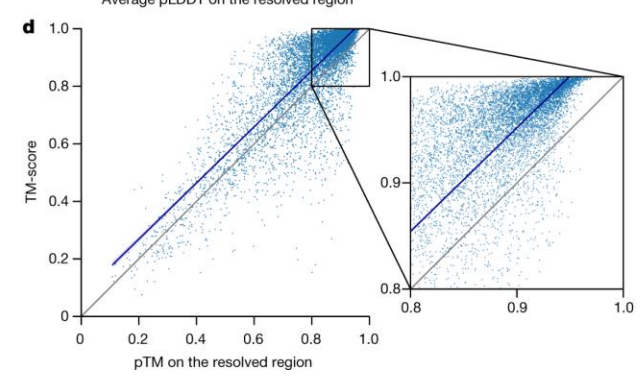
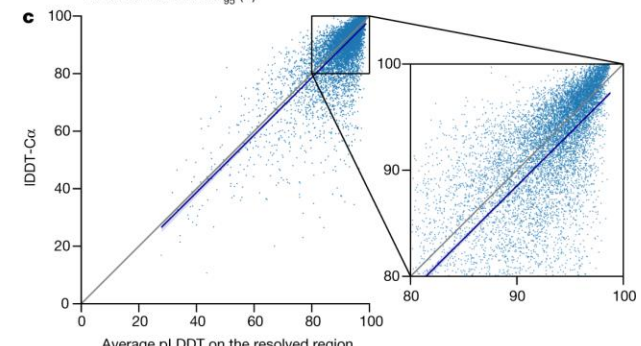
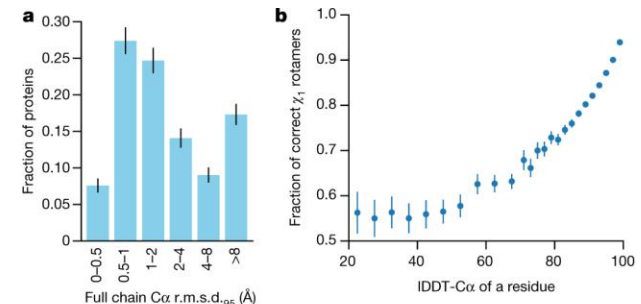
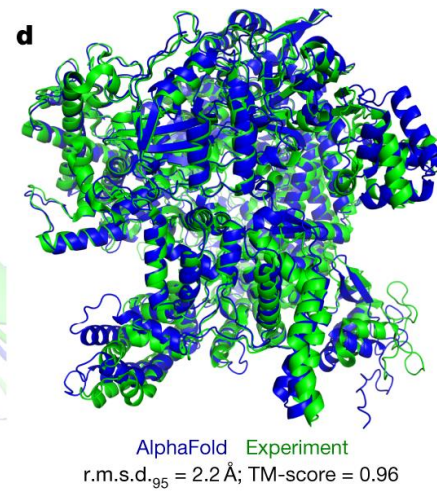
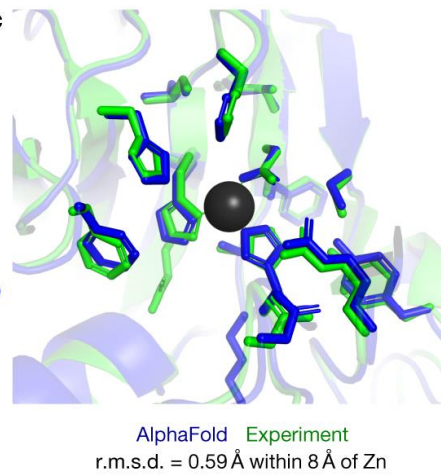
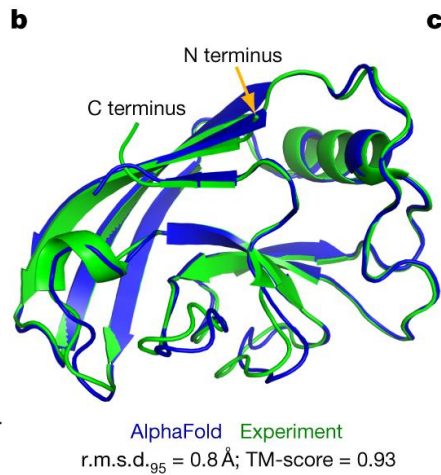
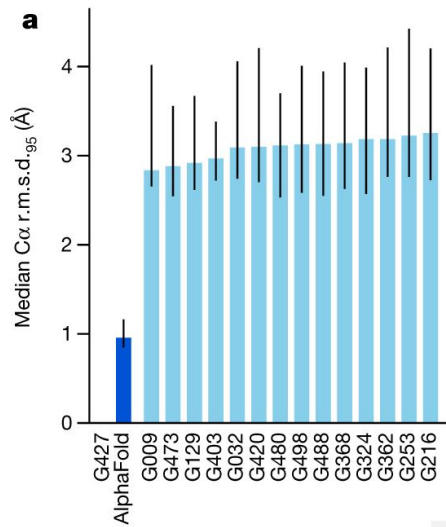
Ground truth



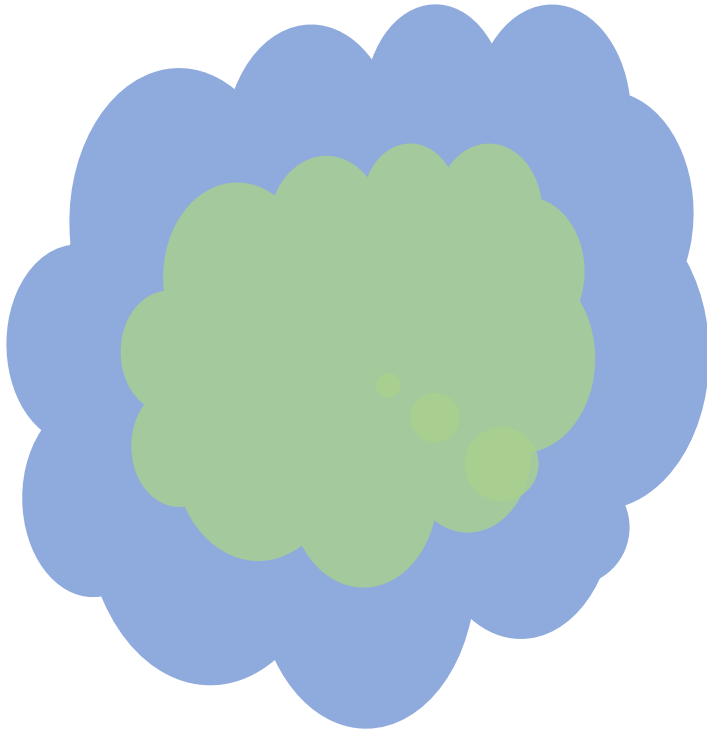
Noisy input



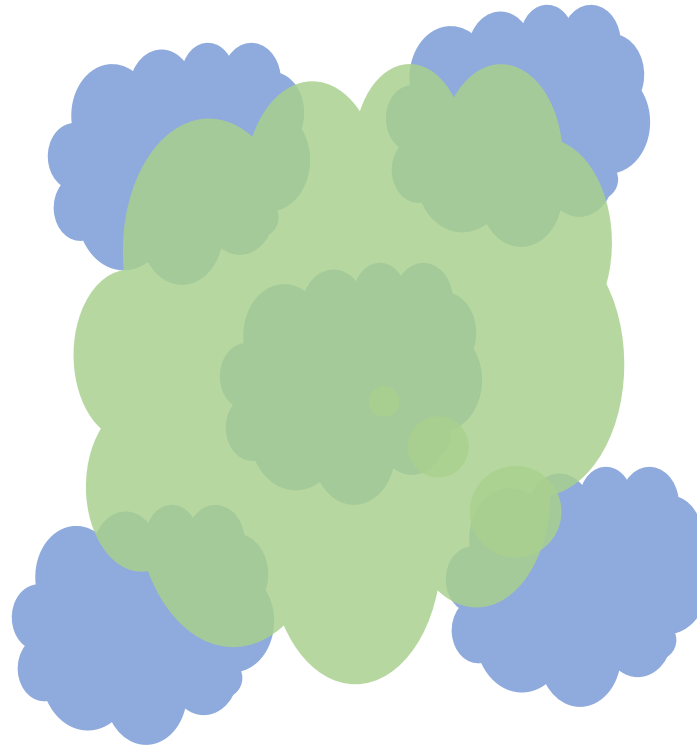
Our result



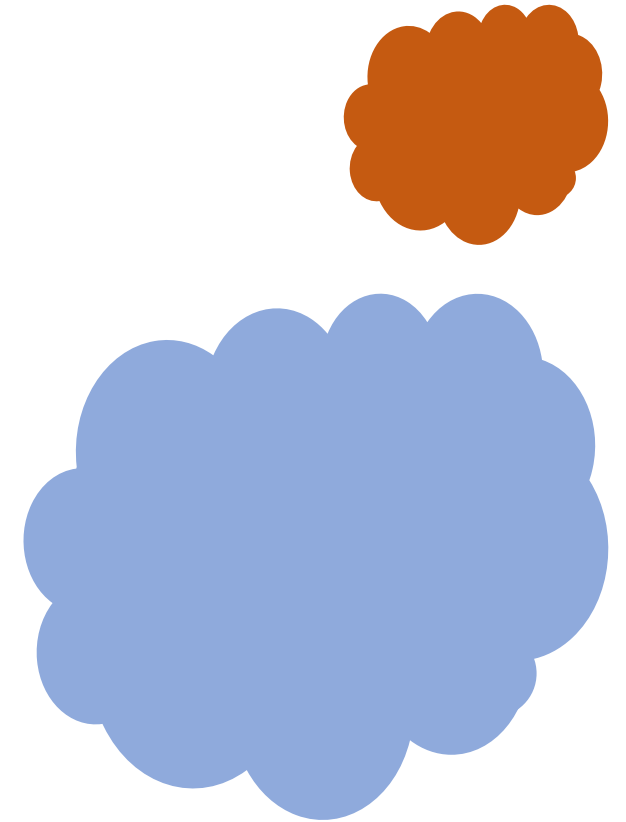
What can we predict with AI?



Training >> Prediction



Training >> Fill In



Training <> Prediction

And in construction we don't have that much data in construction

2.5

quintillion (10^{18}) bytes
generated every day in construction

329

quintillion (10^{18}) bytes
generated every day

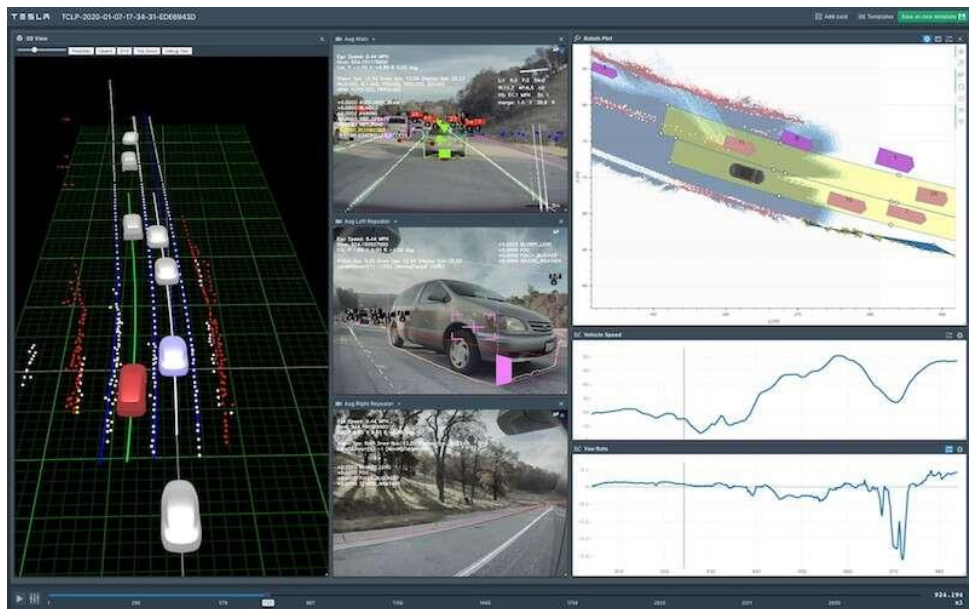
That is 0,76%; Gaming is 10% and online shopping 5%

And construction uses less then 4% of its data

CON
TECH
LAB
_



This why Gen AI works better with fluffy kittens...



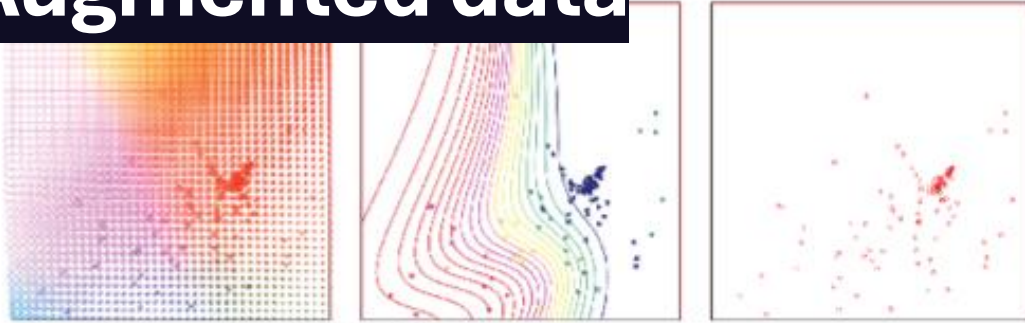
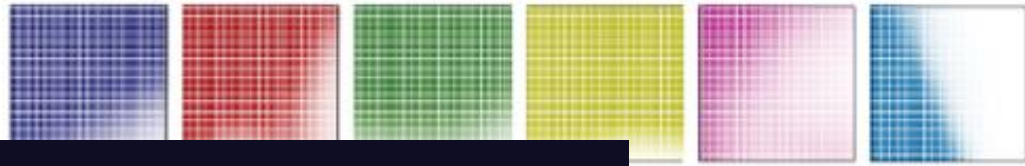


STOP

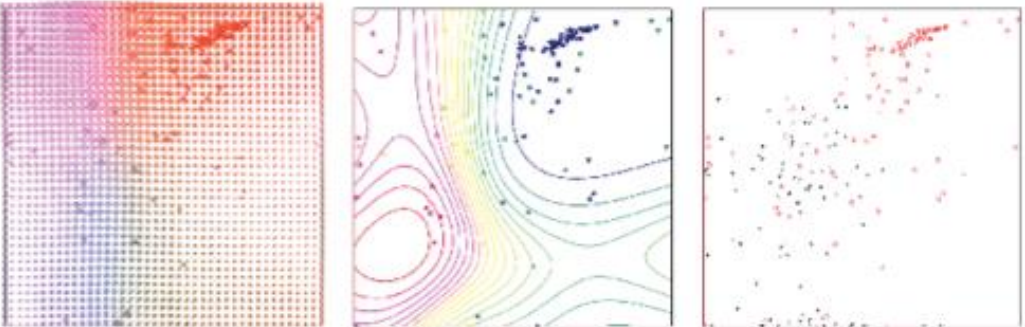
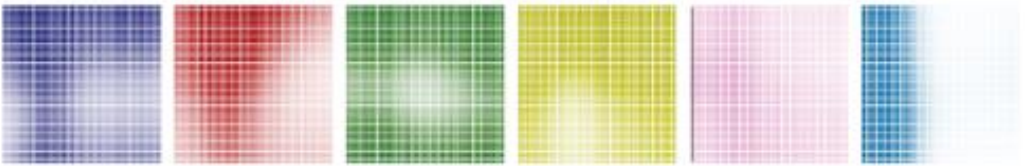
STOP

35

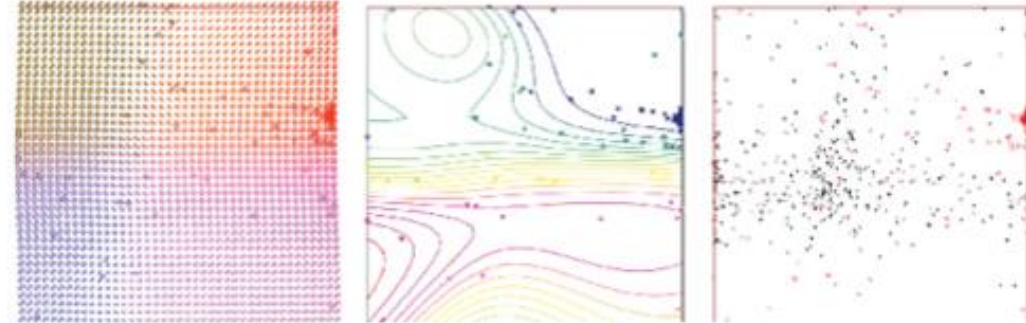
Augmented data



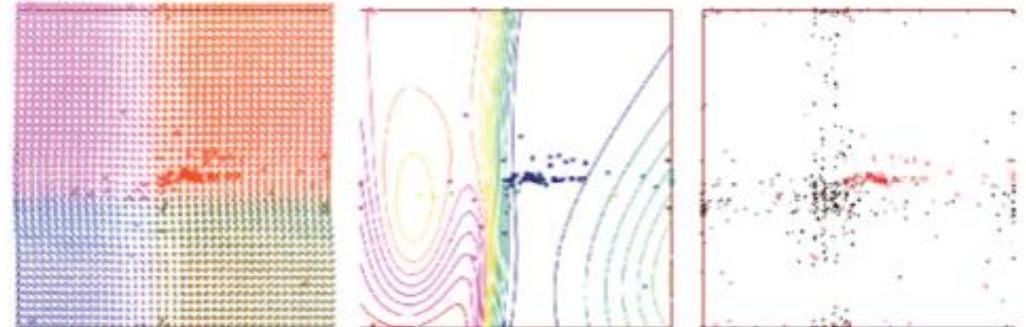
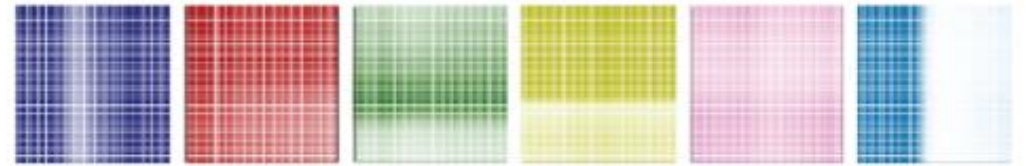
No added candidates (100 total)



100 added candidates (200 total)



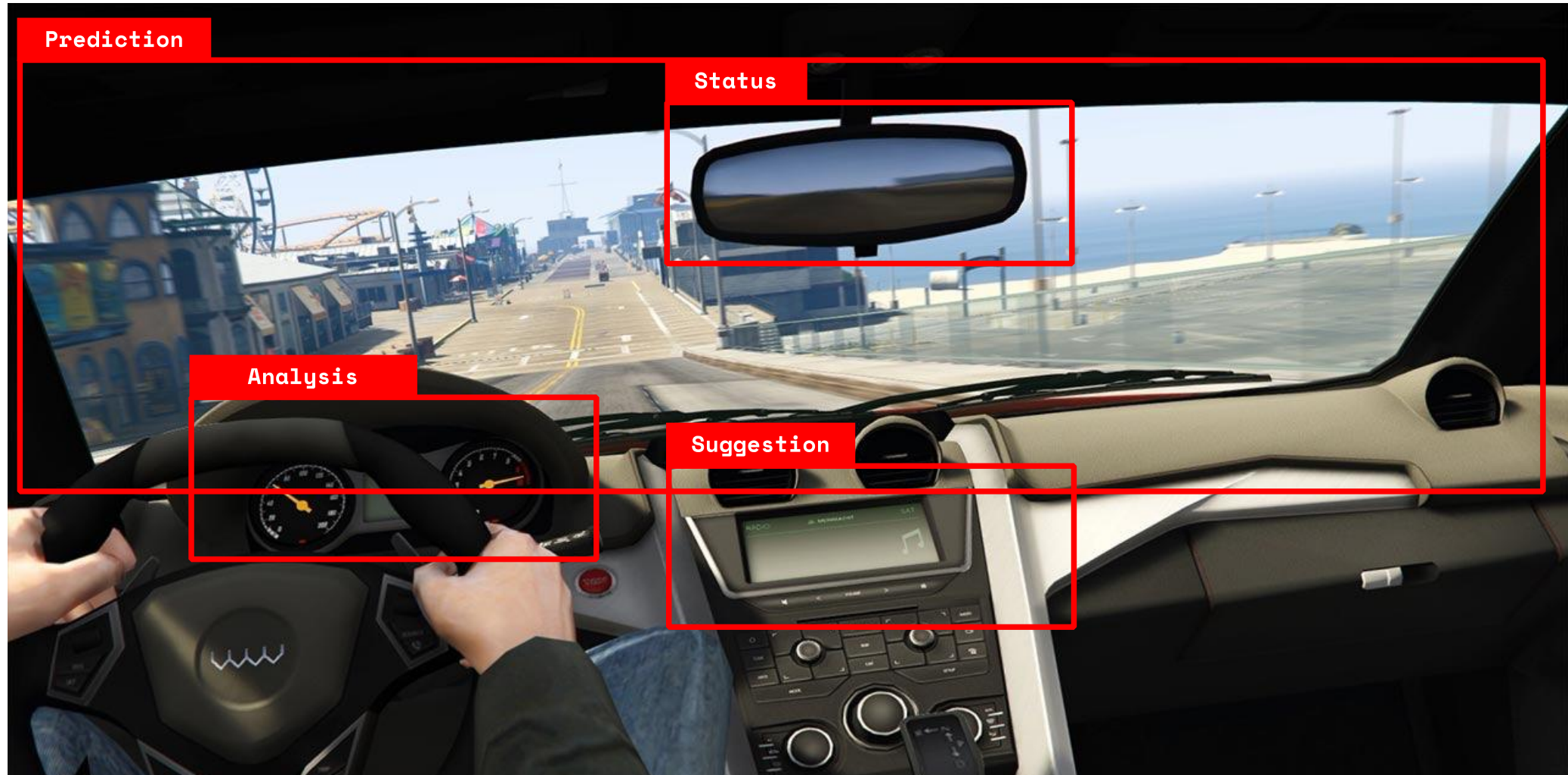
400 added candidates (500 total)



400 added hypercube candidates (500 total)

```
{  
  00.1:  
  'Smart Vedligehold'  
};
```

Hvad kan vi med AI?



Hvad kan vi med AI?

Håndtere kompleksitet

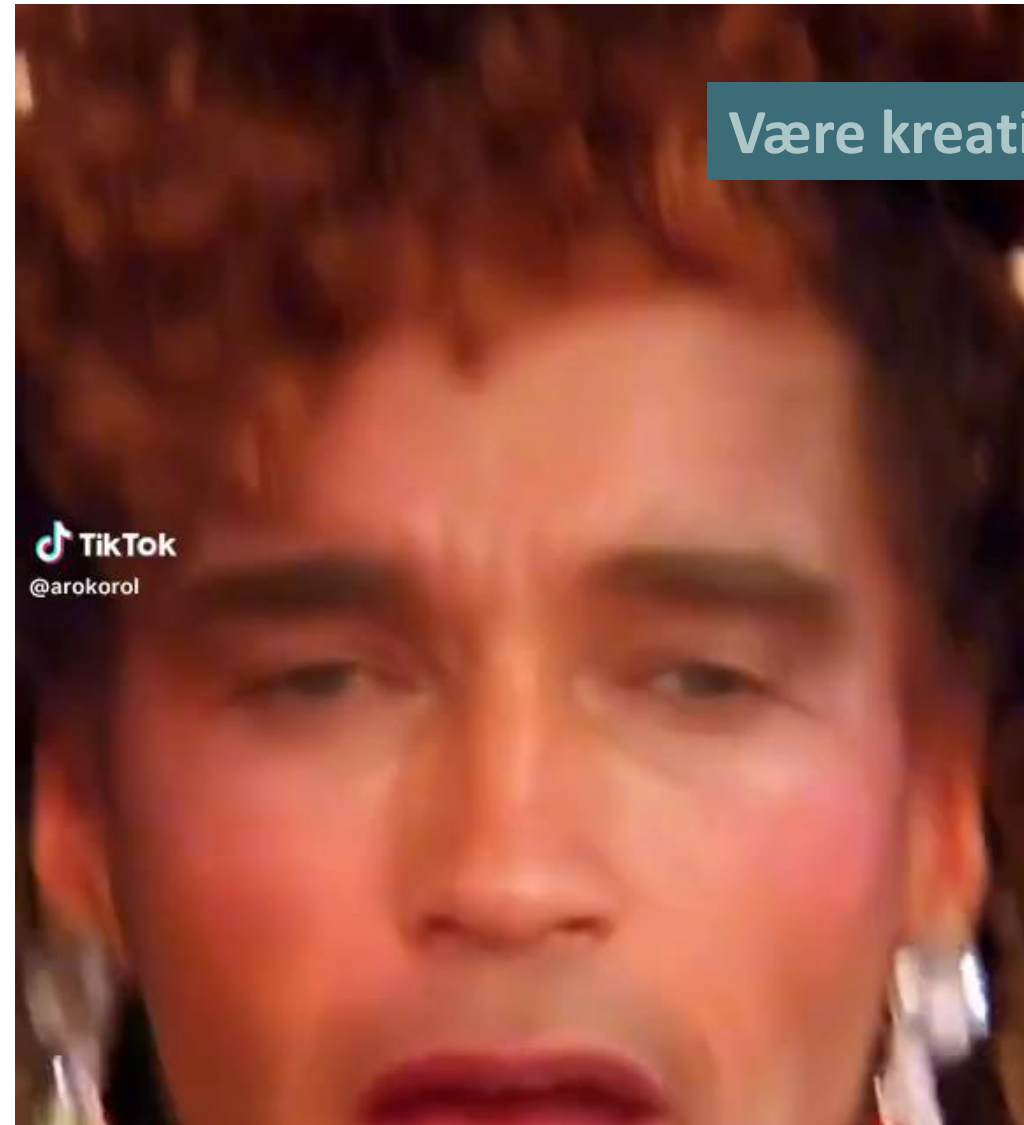


It's Wednesday at 4 pm. Can I park at this spot right now? Tell me in 1 line.



Yes, you can park for up to 1 hour starting at 4 pm.

Være kreative



Win Rate

SAM

Calculations for Tender based on Past Performance

Chance of success Initial revenue 2:2 Win/Loss	Revenue Initial revenue 900 K EUR	Revenue Actual Revenue 385 K EUR	Margin Initial Margin 0.54 %	Margin Actual Margin 0.7 % EUR	Risk profile For the tender B Category	Customer satisfaction For previous projects 87 % Projects
---	--	---	--	---	---	--

Current Resources

Availability of BAM Workforce By Discipline



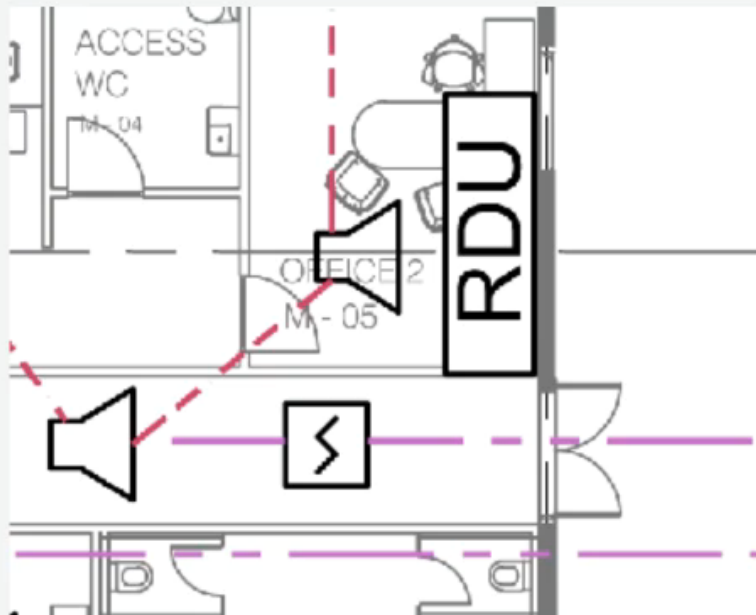
This data is calculated based all matched tenders. You can exclude tenders by using the checkboxes in the first column below to change the calculation.

Top 5 Matching Tenders

Select	Rank	Tender Filename	Description	Tender Risk Category	Contract type	Customer	Strategic Theme	Status	Contract Type	Date	Amount	Details
<input checked="" type="checkbox"/>	1	Inschrijvingsleidraad Offshor...	Railterminal C.RO Ports BV	Category C	UAV 2012	C.RO Ports Nederland bv	Yes	Won	UAV 2012	01-03-2019	2,700,000.00	Show details
<input checked="" type="checkbox"/>	2	N18 DBFM Inschrijvings- en ...	N18 Groenlo - Enschede EPC	Category A	Other	Rijkswaterstaat Grote Projecten en Onderhoud	Yes	Lost	Other	27-08-2018	317,000.00	Show details
<input checked="" type="checkbox"/>	3	Inschrijvings- en beoordelin...	A27/A1 Utrecht Noord - knooppunt Eemnes - aansluiting Bunschoten (EPC)	Category A	Other	Rijkswaterstaat Grote Projecten en Onderhoud	No	Lost	Other	05-11-2018	301,000.00	Show details
<input checked="" type="checkbox"/>	4	2010-44 Gunningsleidraad v...	Reconstructie N366	Category D	UAV-GC 2005	Provincie Groningen	No	Won	UAV-GC 2005	01-12-2017	14,000.00	Show details
<input checked="" type="checkbox"/>	5	Inschrijvings- en beoordeling...	Renovatie van de Waalbrug	Category B	UAV-GC 2005	Rijkswaterstaat Programma's, Projecten en Onderhoud	Yes	Active	UAV-GC 2005	10-12-2019	47,000.00	Show details

Drawing to data

Draw a box around each symbol with the appropriate label. If there is no label for that symbol then ignore it.



Labels



Filter labels

- New Horn Type Speaker 1
- New Smoke Detector 2
- Smoke Detector in Duct 3
- End of Line Device (ELD) 4
- Manual Call Points Outdoor 5
- Strobe Lights 6
- FIP or "FDCIE" Panel 7
- New Thermal Detector - Exp... 8
- New Recessed Speaker 9
- Smoke Detector with Sound... 0

Manual Call Points Outdoor

Symbol	Label
	New Horn Type Speaker
	New Smoke Detector
	Smoke Detector in Duct
	End of Line Device (ELD)
	Manual Call Points Outdoor
	FIP or "FDCIE" Panel
	New Thermal Detector - Exp...
	New Recessed Speaker
	Smoke Detector with Sound...

Planning and optimization

Small warehouse project
Full Plan A

Help Tony Stark

Day 5
15-May-2019 @ 02:32
12%
2 Tasks 2 Crews

Rebar Crew
Install Rebar
Floor [175317]
Actual Start Tuesday 5/14/19 @ 12pm
Actual Finish Friday 5/17/19 @ 12pm
24 working / 72 total hours

Rebar Crew
Install Rebar
Floor [166342]
Planned Start Monday 5/13/19 @ 12pm
Planned Finish Thursday 5/16/19 @ 12pm
24 working / 72 total hours

June 2019

The screenshot displays a software interface for a construction project. At the top, it identifies the project as 'Small warehouse project' with a 'Full Plan A' status. A user profile for 'Tony Stark' is visible. The main area features a 3D model of a rebar structure with two levels. A task list on the left shows two tasks for 'Rebar Crew' with their respective start and finish dates and durations. Below the model is a Gantt chart for June 2019, showing task bars in green, purple, and red.

Project 1040 McAllister
Full Contract Schedules
\$44,170,420 862 days
Base contract schedule and parameters

Help Demo

Create Your Plan
39 / 95 SUPPORT GROUP

Recipes Resources Schedules

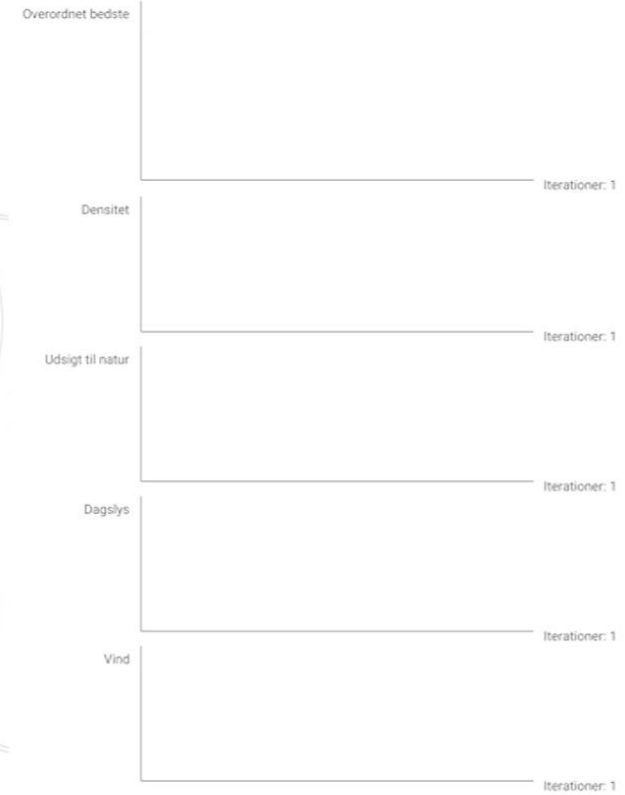
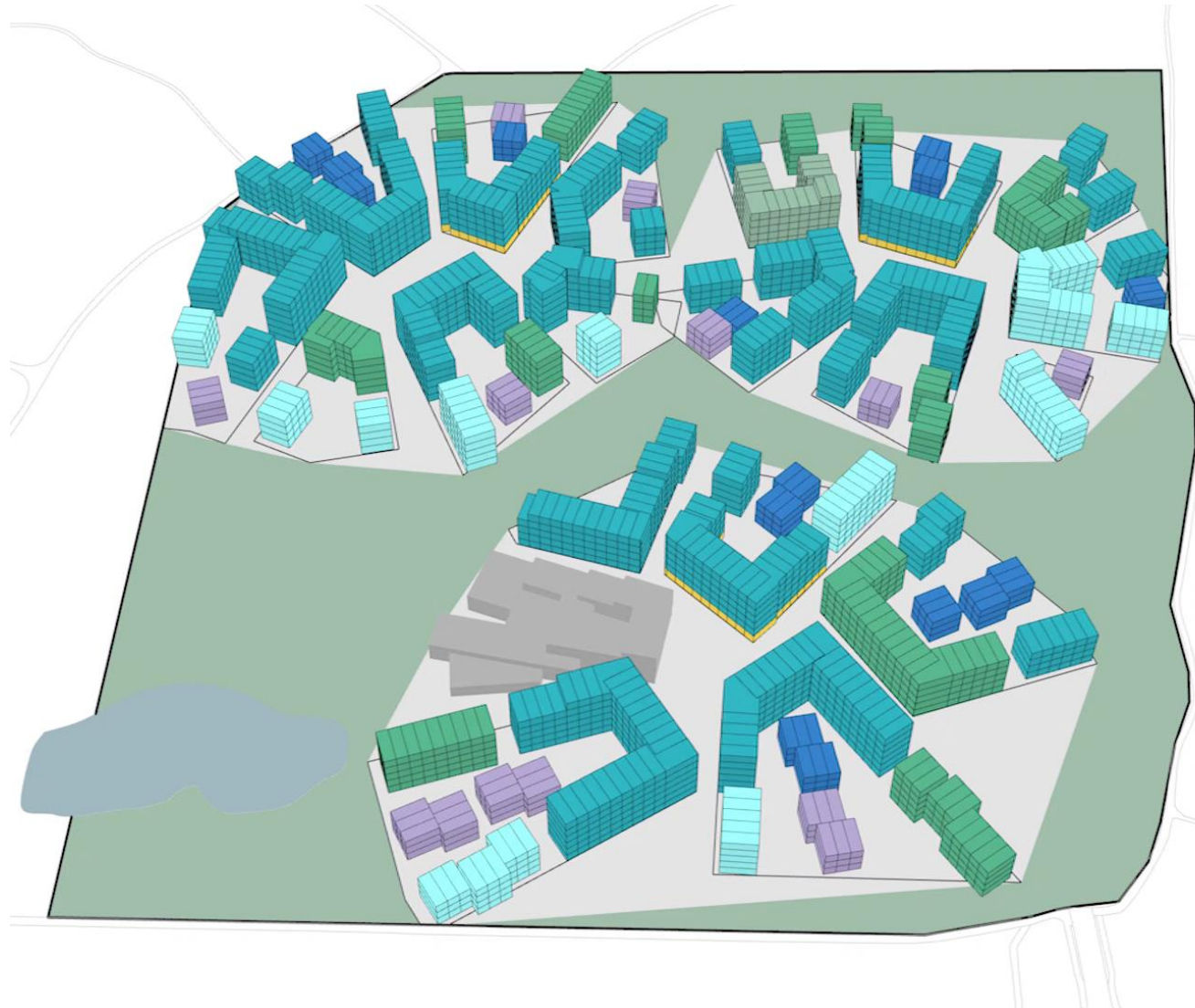
Family Level Recipe

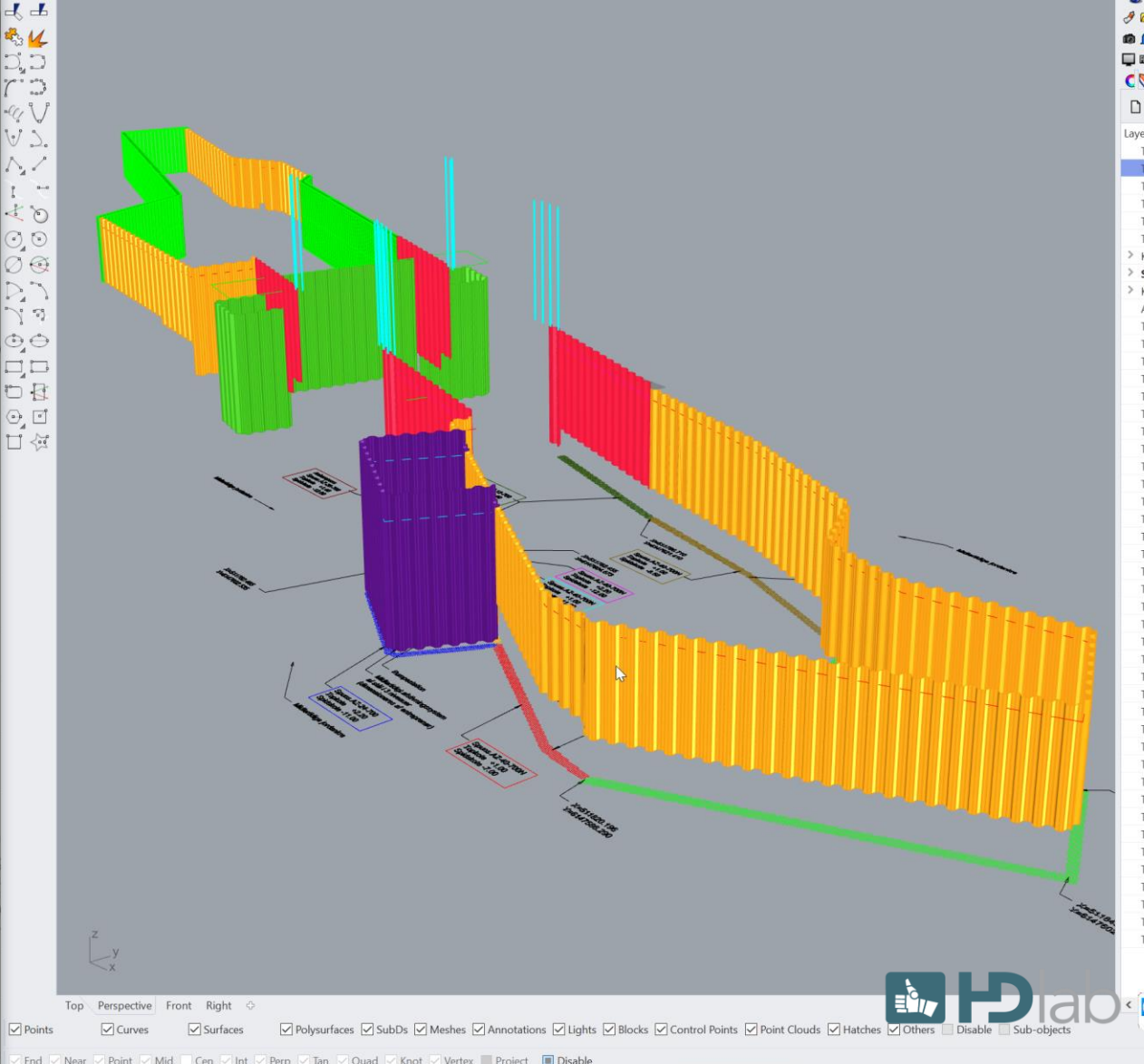
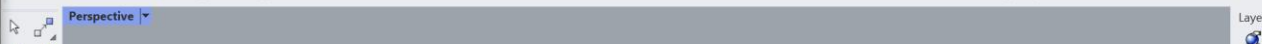
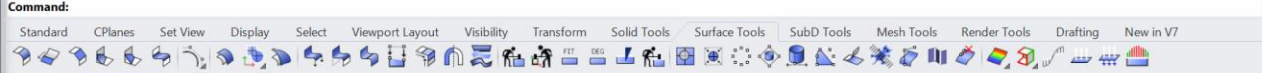
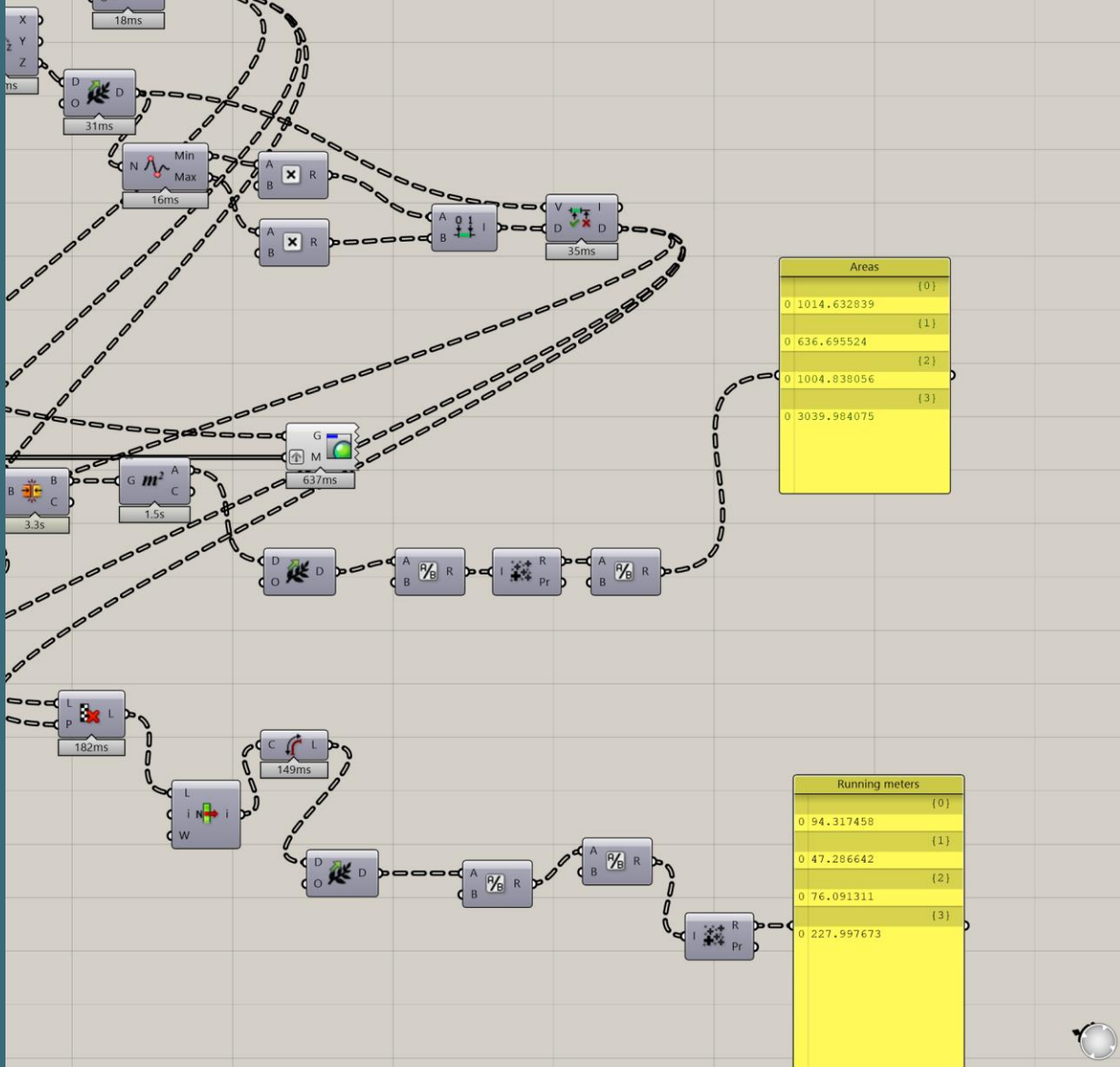
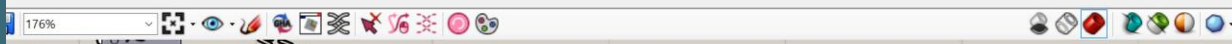
Groups
Floors
Mass

0 selected of 216 elements

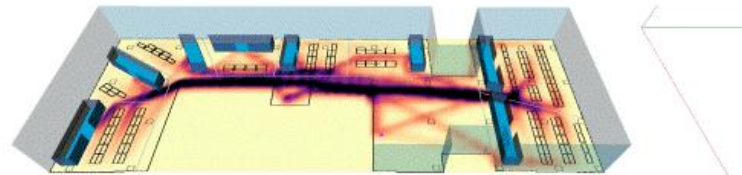
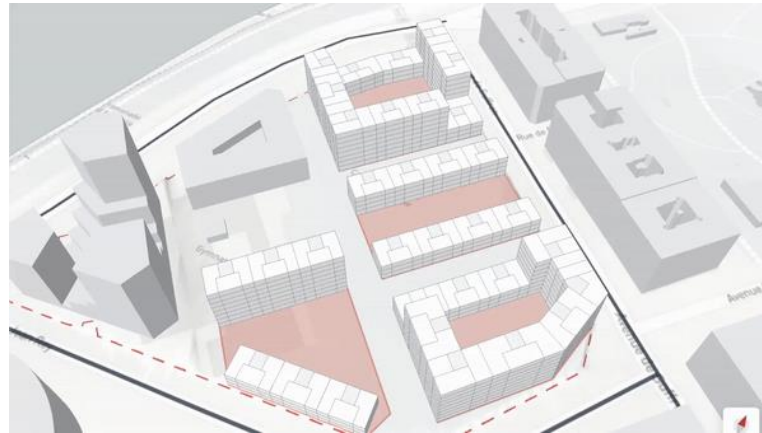
The screenshot shows a software interface for a larger project, 'Project 1040 McAllister'. The top bar displays the project name, status ('Full Contract Schedules'), budget (\$44,170,420), and duration (862 days). A 'Create Your Plan' sidebar is on the left, with a 'SUPPORT GROUP' indicator. The main view is a 3D model of a multi-story building with a red facade and a grey roof. A toolbar at the bottom contains various icons for navigation and editing.

Design optimization





AI for architects – early design



1. Adjacency: 100.130036
2. Buzz: 3.917878
3. Distraction: 0.201396
4. Views to Outside: 0.594481
5. Daylight: 0.561522
6. Work Style: 0.875945





can you write code that integrate with shopify webhooks ?



Yes, it is possible to write code that integrates with Shopify webhooks. Shopify webhooks allow you to set up a connection between your Shopify store and a specific URL on your server, so that you can be notified when certain events occur within your store. 👍 💬

Here is an example of how you might set up a webhook in Python using the `requests` library:

Copy code

```
import requests

# Set up the webhook URL and the data to send
webhook_url = "https://your-webhook-url.com"
data = { "event": "order_created", "data": { "order_id": 12345 } }

# Send the POST request to the webhook URL
response = requests.post(webhook_url, json=data)

# Check the response status code to see if the request was successful
if response.status_code == 200:
    print("Webhook successfully sent!")
else:
    print("Error sending webhook:", response.status_code)
```

This code sends a POST request to the specified webhook URL with a JSON payload containing an `event` and `data` field. The `event` field specifies the type of event that occurred (in this case, an `order_created` event), and the `data` field contains any relevant data for that event (in this case, the `order_id`).

To integrate with Shopify webhooks, you will need to set up a webhook within your Shopify store and specify the URL that you want Shopify to send webhook notifications to. You will also need to handle the incoming webhook requests and process the data they contain as needed in your code.

Text to code...

debuild.co

Describe your app.

Clear

Generate

Just describe your app!

I

Model search


Window Help Thu Jun 22 10:15 PM

localhost:3200 Incognito Update

Genie Conversation My Rules My Skills Cheatsheet Configuration Log out

Save Conversation Log

Input your query here

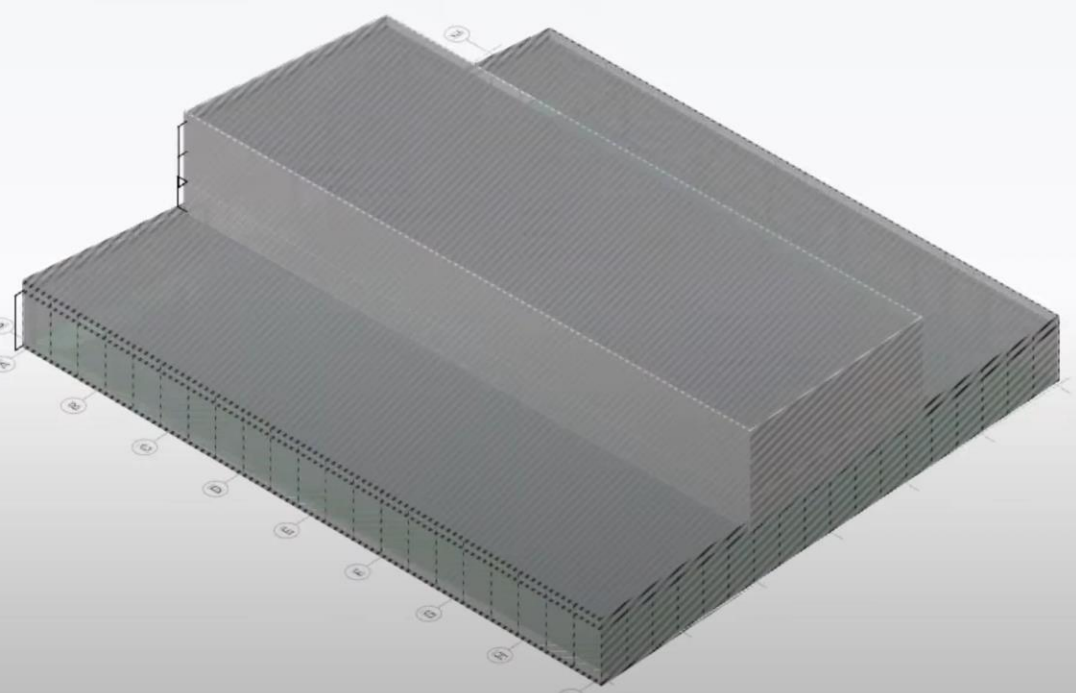


Genie is part of a research project of the Open Virtual Assistant Lab at Stanford University.

Generative Design

H Hypar AI - Mixed Use

Views
Workflow
Functions
Outputs
Properties
Share
Toggle units
Clone
Save as Template
Export
Download PNG



VIEW

PROPERTIES

ACTIONS

Prompt

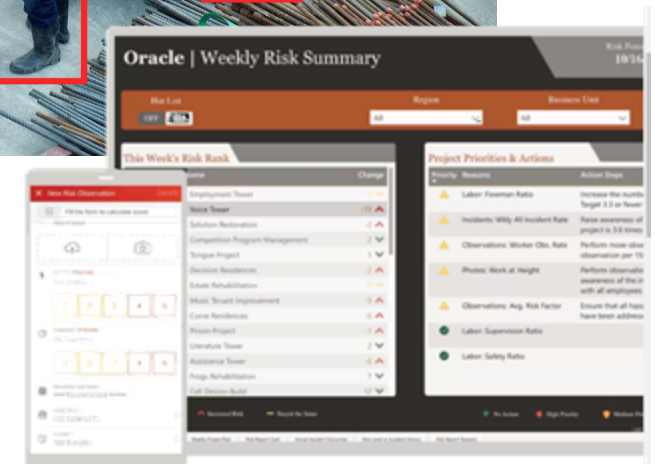
the podium is three stories tall with retail on the first floor and parking on the second and third floors

Total Usable Floor Area

Area Total

The image shows a software interface for generative design. On the left is a vertical toolbar with icons for Views, Workflow, Functions, Outputs, Properties, Share, Toggle units, Clone, Save as Template, Export, and Download PNG. The main workspace displays a 3D architectural model of a building with a stepped podium structure. On the right, a 'PROPERTIES' panel is open, showing a 'VIEW' button and an 'ACTIONS' section. Under 'ACTIONS', there is a 'Prompt' field containing the text: 'the podium is three stories tall with retail on the first floor and parking on the second and third floors'. Below the prompt, there are two data fields: 'Total Usable Floor Area' and 'Area Total', each followed by three red dots, indicating a list of values or options.

Safety on the construction site



Prompt Engineering

Tekst til billede
Midjourney

a cylinder shape **8 storey**
building on top, in the style
of mies van der rohe, in the
style of forskaren, stone
cladding, office building,
streets surrounding
building, trees along streets,
business people walking,
sunny cloudy sky, **8k**,
architectural photography,
realistic



AI Visualization Custom AI Models For Unique Images



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 argparse, os
import cv2
import numpy as np
from omegaconf import OmegaConf
from itertools import islice
from einops import rearrange
from torchvision.utils import make_grid
from pytorch_lightning import seed_everything
from torch import autocast
from contextlib import nullcontext
from imwatermark import WatermarkEncoder

from ldm.util import instantiate_from_config
from ldm.models.diffusion.ddim import DDIMSampler
from ldm.models.diffusion.plms import PLMSampler
from ldm.models.diffusion.dpm_solver import DPMSolverSampler

torch.set_grad_enabled(False)

def chunk(it, size):
    it = iter(it)
    return iter(lambda: tuple(islice(it, size)), ())

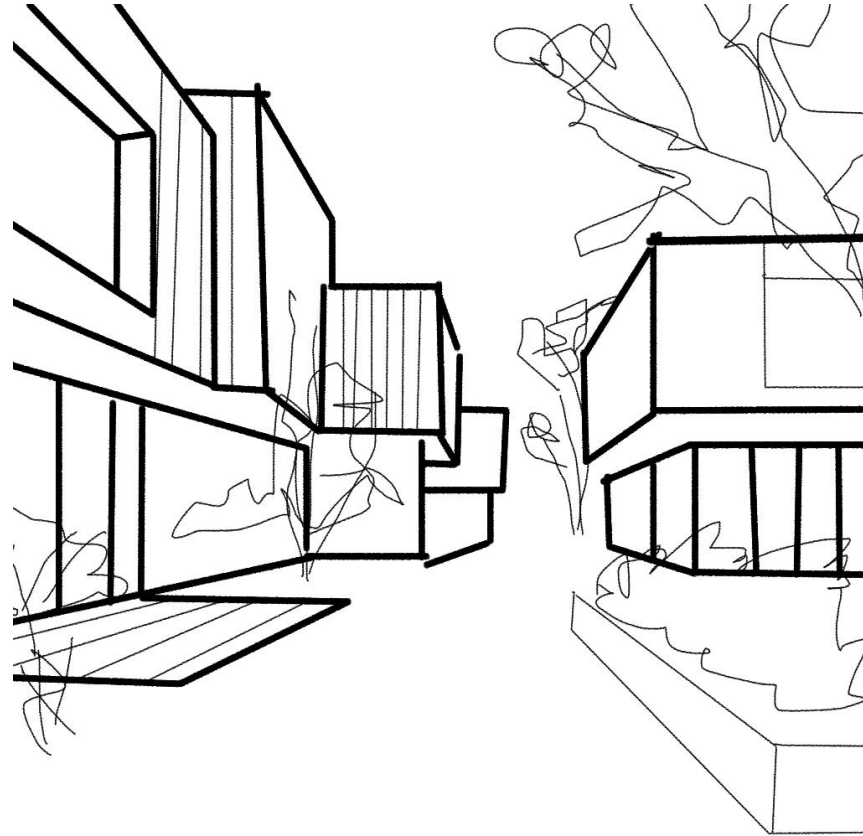
def load_model_from_config(config, ckpt, device=torch.device("cuda"), verbose=False):
    print(f>Loading model from {ckpt}")
    pl_sd = torch.load(ckpt, map_location="cpu")
    if "global_step" in pl_sd:
        print(f>Global Step: {pl_sd["global_step"]}")
    sd = pl_sd["state_dict"]
    model = instantiate_from_config(config.model)
    m, u = model.load_state_dict(sd, strict=False)
    if len(m) > 0 and verbose:
        print("missing keys:")
        print(m)
    if len(u) > 0 and verbose:
        print("unexpected keys:")
        print(u)

    if device == torch.device("cuda"):
        model.cuda()
    elif device == torch.device("cpu"):
        model.cpu()
        model.cond_stage_model.device = "cpu"
    else:
        raise ValueError(f>Incorrect device name: {device}")
    model.eval()
    return model
```

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

IDÉSKITSE

Nordisk tæt-lav arkitektur, inspireret af skalaen i Albertslund, Skarp arkitektur, brændt træbeklædning, To etager, intime mellemrum mellem husene



DIFFUSION – Low stepsize



DIFFUSION – Medium stepsize



DIFFUSION – High stepsize



DIFFUSION – Very high stepsize + inpaint





Allan Mulvad

RUNWAY





GEN-2 **Gen-2 video**
4 seconds - 4:34PM, Dec 6

Extend 4s Share Reveal prompt



View latest ↓

GEN-2 **Gen-2 video**
4 seconds - 4:38PM, Dec 6

Hey Niels, how can we improve Gen-2? [Fill out a short survey](#)

Share Reveal prompt

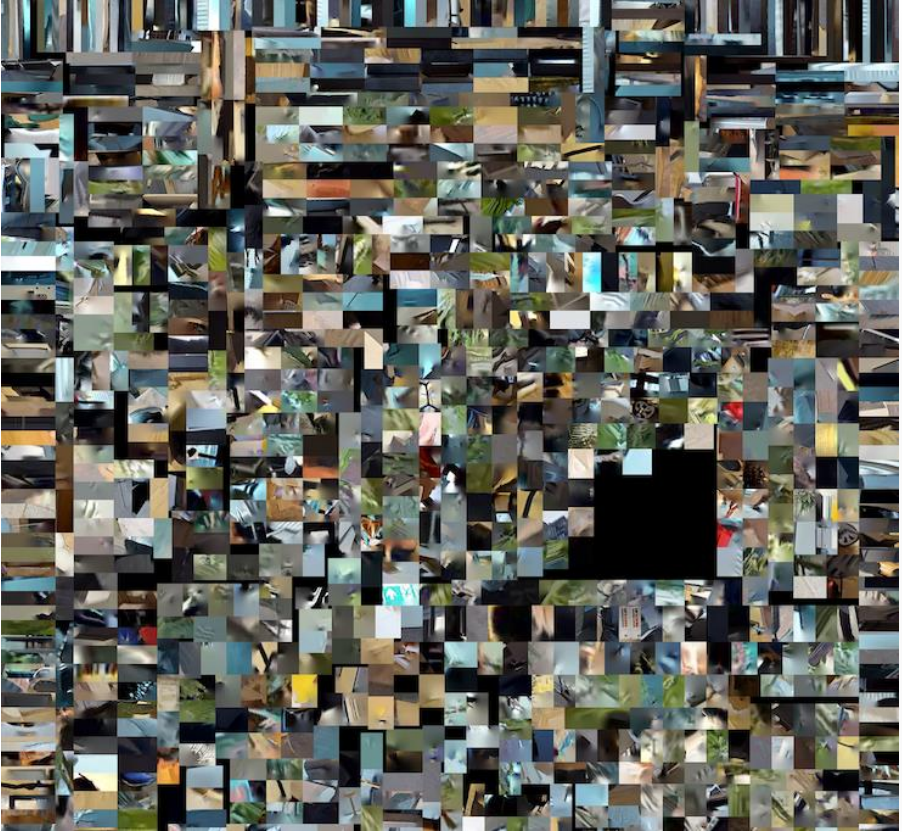
T TEXT IMAGE IMAGE + DESCRIPTION

A room full of lawyers learning about AI and discovering the dangers of the new technology. The room has a speaker that show power point presentation of generative AI

Camera Motion Motion Brush BETA Add Style

166/320 Free Preview Generate 4s

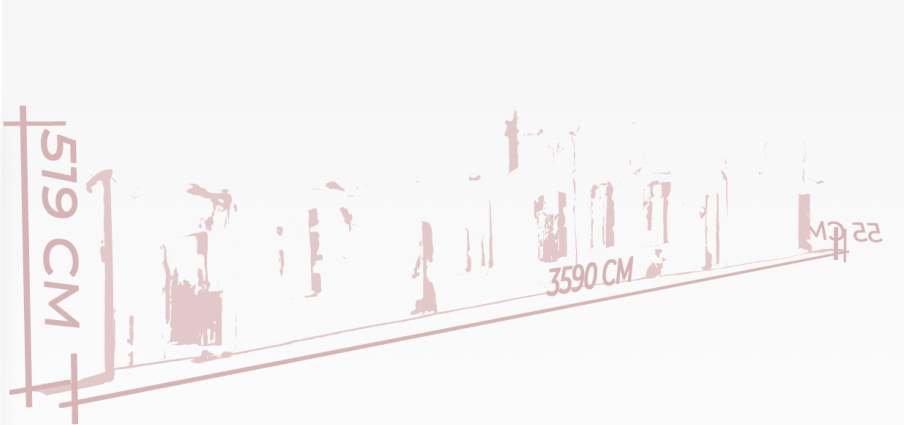
Data from reality capture



```

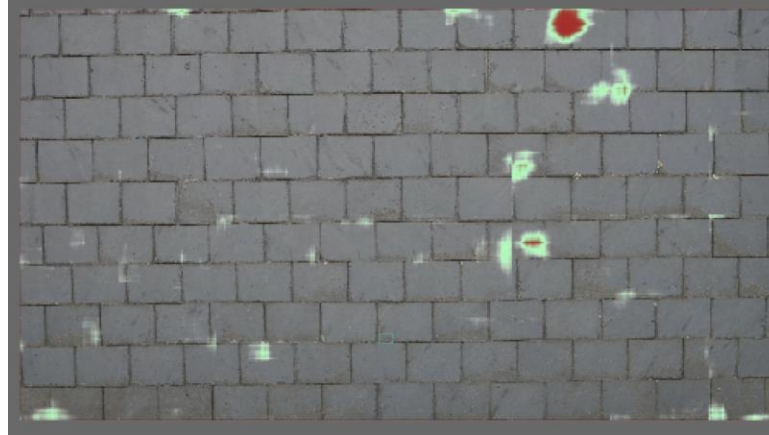
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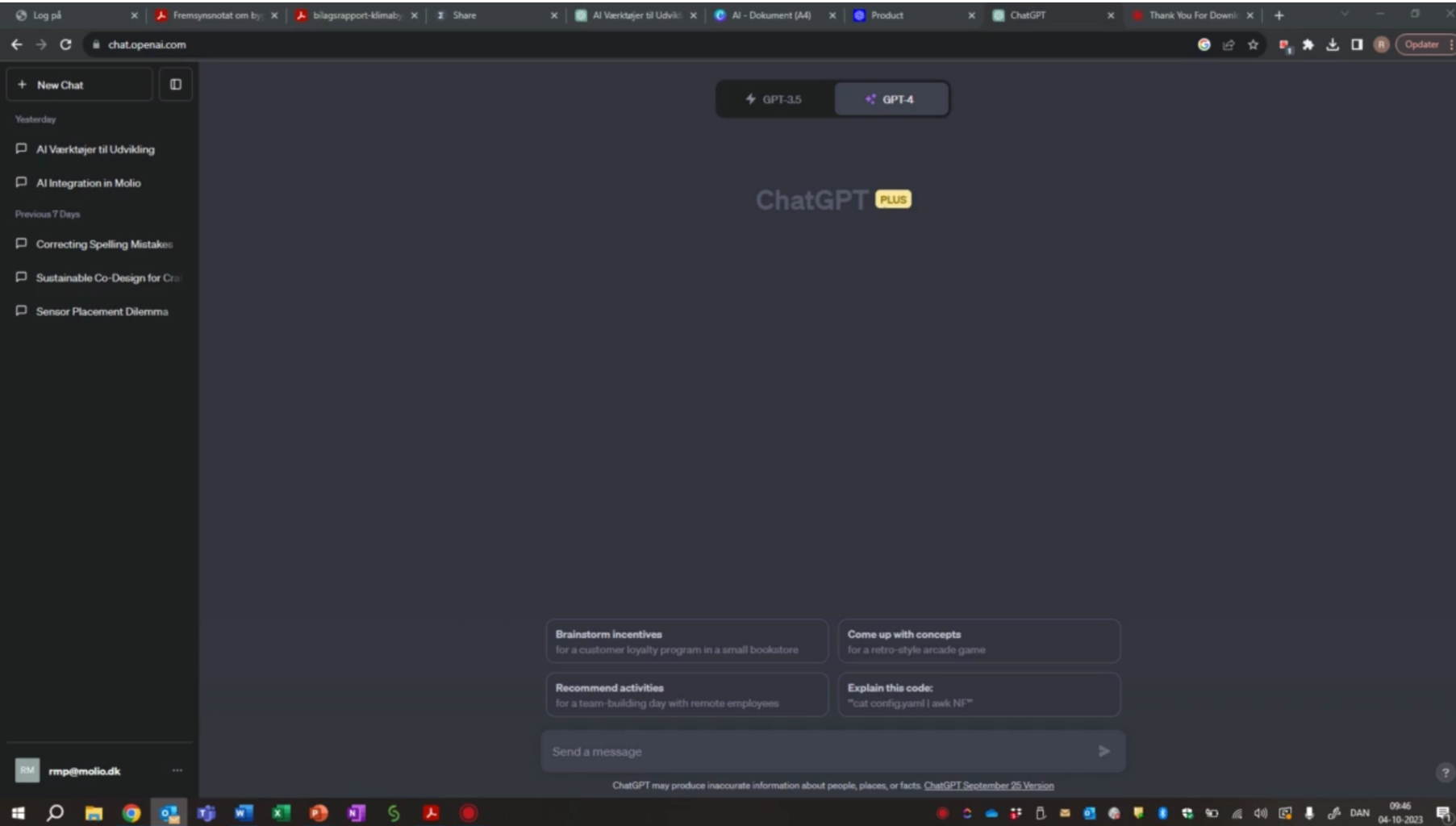
AI genereret Predictive Maintenance Plans



PPV
 Dato: 09.08.2023

By	Postnummer	Gader	Adresse	Opløsesår	Samlet m2 areal
København	2300	32	Polensgade	1945	1.446

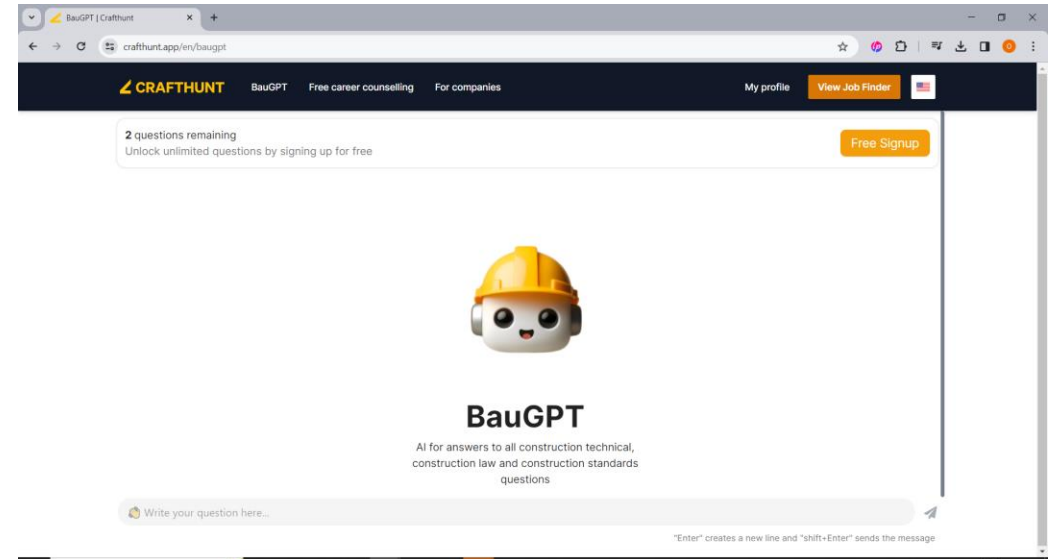
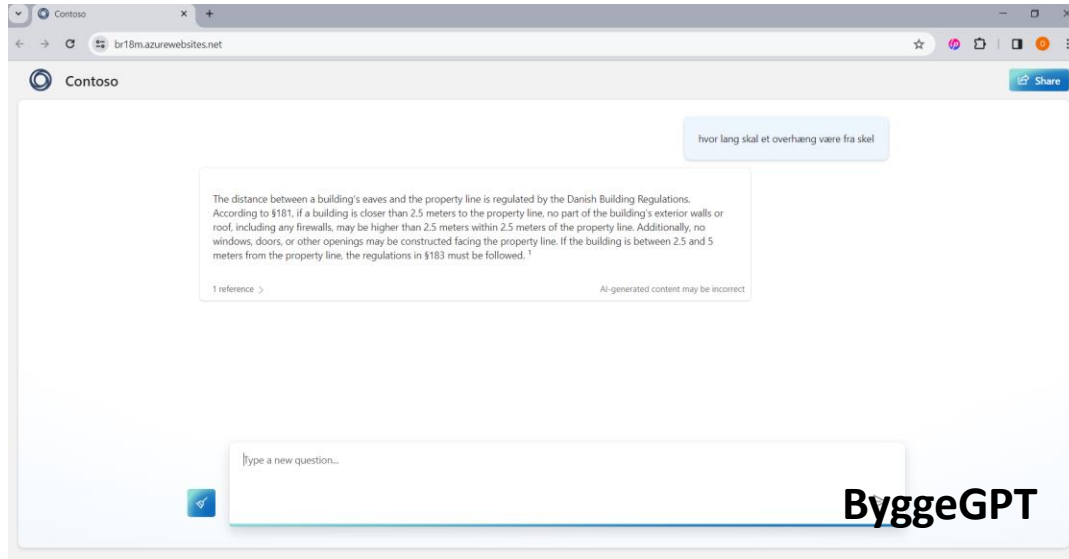
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Bæltegesimsbånd	2	1945	25	2021	5	17345	3	2020
Etageadskillelse	2	1950	27	2021	5	16225	1	2020
12 Aflys	2	1951	26	2021	5	17724	2	2020
Fælles EL-installationer	2	1940	27	2021	1	12552	1	2021
Vinduer	2	1975	23	2021	3	17354	2	2020
Ydervægge	2	1933	23	2023	10	48521	3	2020
EL-installationer	2	1950	26	2021	1	14118	1	2021
Bæltegesimsbånd	2	1961	25	2021	5	17341	3	2020
Altaner	2	1988	20	2022	5	35000	2	2020
Badeværelser	2	1937	15	2023	5	2000	1	2020
Brugsandsnæg	2	1983	25	2020	1	4000	2	2020
Døre træ	1	1988	10	2022	5	160000	3	2020
Dørtelefon anlæg	2	2004	20	2020	1	1500	1	2020
Etageadskillelse	2	1937	30	2022	10	25000	1	2020
Faldstammer	2	1937	20	2020	1	4000	2	2020
Fælles EL-installationer	2	1937	25	2020	1	3500	1	2020
Hovedtrappe (overflader)	2	1937	30	2026	10	480000	2	2020
Inddækninger og Ispkanter	2	1937	15	2022	5	12000	2	2020
Kafaføringsluger	2	1937	15	2022	5	25000	2	2020
Kulak	2	1937	25	2020	1	3500	1	2020
Kølder	2	1937	40	2024	10	25000	2	2020
Køkkener	2	1937	15	2023	5	5000	1	2020
Naturlig ventilation	2	1937	25	2027	10	70000	2	2020
Porte, gennemgangsporte	2	1937	25	2024	5	8000	2	2020
Sokkel	2	1937	30	2024	5	15000	2	2020
Sålbænke	2	1937	25	2022	10	8500	5	2020
Tagbelægning	1	1937	5	2027	5	35000	3	2020
Tagkonstruktion	2	1937	30	2022	5	8000	2	2020
Tagrender og nedløb	2	1937	15	2027	5	3500	1	2020
Tagvinduer	1	1937	5	2022	5	5000	1	2020
Udvendig fællesbelysning	2	1937	25	2020	1	2000	1	2020
Udvendig træbeklædning	2	1937	30	2020	5	8000	2	2020
Udvendige trapper	2	1937	25	2024	10	20000	1	2020
Varmeanlæg	2	1983	25	2020	1	5000	1	2020
Vasker	2	1983	25	2021	5	14000	1	2020
Vinduer træ	1	1988	10	2022	5	250000	3	2020
Ydervægge	2	1937	30	2022	10	45000	3	2020
Altaner	2	1945	25	2022	5	14400	2	2020
Brugsandsnæg	2	2010	25	2020	1	6000	2	2020
Døre træ	2	2010	25	2022	5	29000	3	2020
Dørtelefon anlæg	2	1945	30	2020	1	2500	1	2020
EL-installationer	2	2010	30	2020	1	3500	1	2020
Faldstammer	2	1945	35	2020	1	4500	2	2020
Gasinstallation	2	1945	25	2020	1	1500	1	2020
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Kafaføringsluger	2	2010	15	2022	5	15000	2	2020
Kulak	2	1945	30	2020	1	8000	1	2020
Kølder	2	1945	50	2025	10	5000	2	2020
Naturlig ventilation	2	1945	40	2025	10	20000	2	2020
Skorstene og brandkamme	2	2010	25	2022	5	5000	3	2020
Sokkel	1	1945	25	2020	5	20000	2	2020
Sålbænke	2	1945	25	2022	5	10000	1	2020
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Tagkonstruktion	2	1945	30	2022	5	25000	2	2020
Tagrender og nedløb	2	1945	25	2022	5	4500	2	2020
Tagvinduer	2	1945	20	2022	5	1000	1	2020
Udvendig fællesbelysning	2	1945	25	2020	1	2500	1	2020
Udvendige trapper	1	1945	20	2020	10	35000	1	2020
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Ydervægge	2	1945	30	2022	10	110000	3	2020



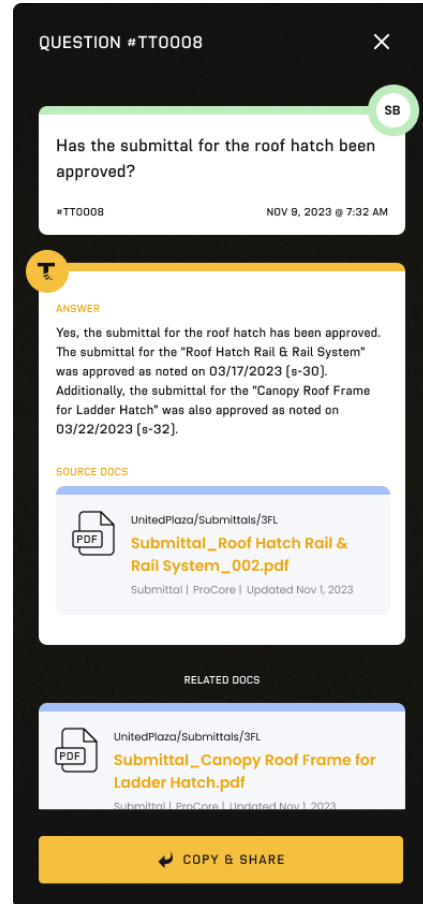
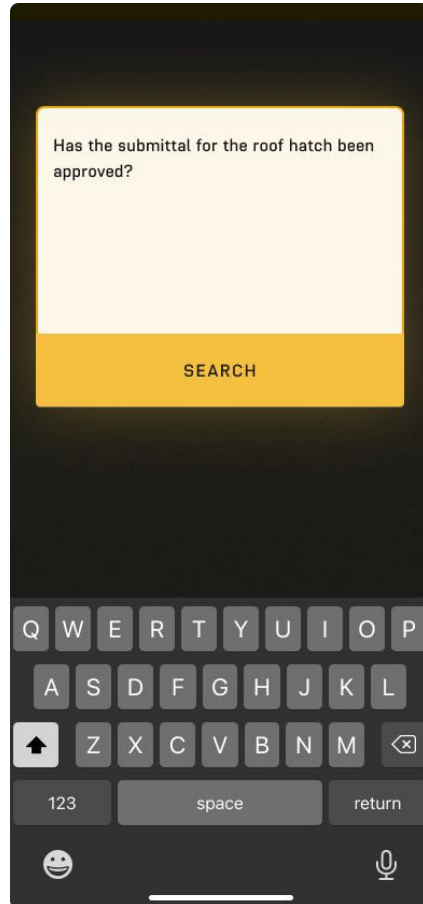
AI for bidding




Build GPT making building information available



Trunk text – Making project information available in the field



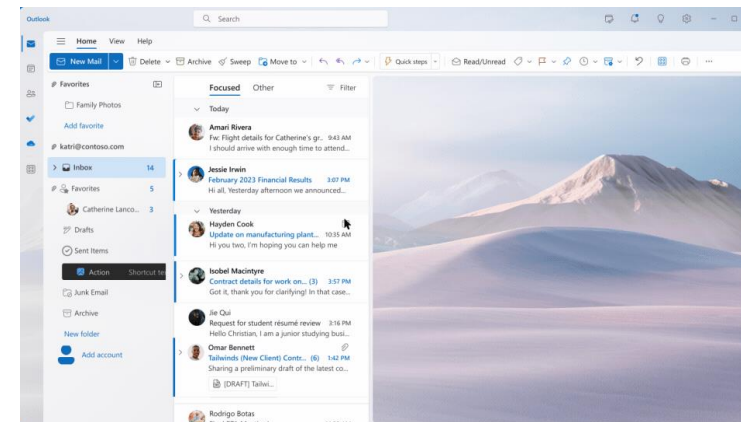
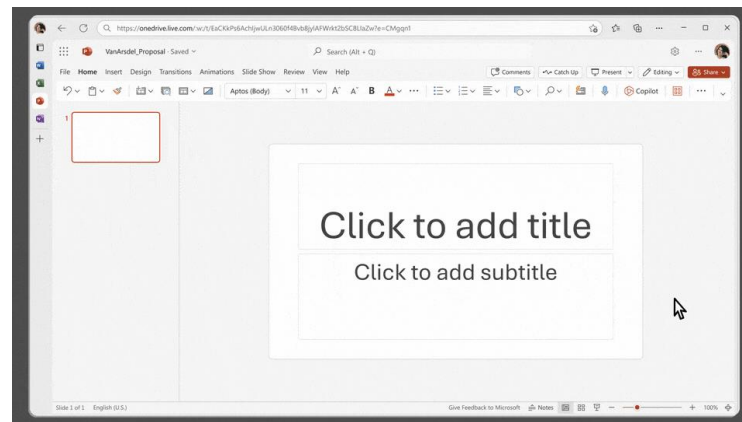
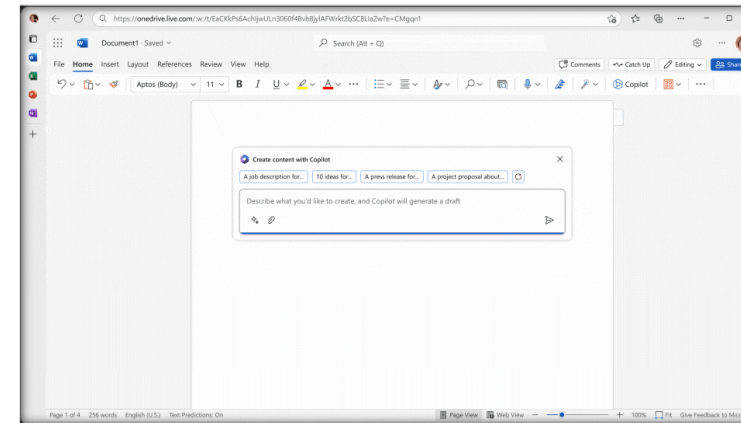
"I use TrunkText daily, saving me hours of time searching through project documents, files, folders."

 **MEP Superintendent**
Suffolk



Microsoft Copilot – A new way of working

Country	Customer	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	COGS
France	VanArdeet	Biodegradable Cleaning Products	Low	4345	\$10	\$302	\$1,329,440	\$15,294	\$1,514,146	\$
USA	VanArdeet	Biodegradable Cleaning Products	Low	4245	\$10	\$352	\$1,494,240	\$14,942	\$1,479,298	\$
Australia	VanArdeet	Biodegradable Cleaning Products	None	4124	\$10	\$352	\$1,451,648	\$0	\$1,451,648	\$
Mexico	VanArdeet	Biodegradable Cleaning Products	Medium	3954	\$10	\$352	\$1,391,808	\$83,508	\$1,308,300	\$
France	Contoso Pharmaceuticals	Biodegradable Cleaning Products	Low	4952	\$10	\$127	\$628,904	\$6,289	\$622,615	\$
France	Contoso Pharmaceuticals	Recycled Can	Low	4903	\$0	\$127	\$622,681	\$6,227	\$616,454	\$
Canada	Proseware	Natural Personal Care Products	Low	1954	\$270	\$302	\$596,198	\$5,961	\$590,237	\$8
Canada	Proseware	Biodegradable Cleaning Products	High	1950	\$220	\$302	\$600,980	\$84,137	\$516,843	\$4
USA	VanArdeet	Compostable Food Packaging	Low	1254	\$3	\$380	\$476,520	\$4,765	\$471,755	\$
USA	Proseware	Natural Personal Care Products	Medium	1465	\$224	\$302	\$442,430	\$26,546	\$415,884	\$20
USA	Proseware	Sustainable Snack Packaging	Medium	1410	\$120	\$302	\$425,820	\$25,549	\$400,271	\$11
Australia	Proseware	Natural Personal Care Products	Medium	1369	\$224	\$302	\$413,438	\$24,806	\$388,632	\$23
USA	VanArdeet	Compostable Food Packaging	Medium	1052	\$3	\$380	\$399,760	\$23,986	\$375,774	\$
Canada	VanArdeet	Compostable Food Packaging	Low	880	\$312	\$380	\$332,400	\$3,724	\$328,676	\$2
Canada	Proseware	Sustainable Snack Packaging	Medium	1298	\$120	\$302	\$391,996	\$23,520	\$368,476	\$1
Australia	VanArdeet	Compostable Food Packaging	None	954	\$3	\$380	\$362,520	\$0	\$362,520	\$
Canada	Contoso Pharmaceuticals	Biodegradable Cleaning Products	Low	2785	\$110	\$127	\$353,695	\$3,537	\$350,158	\$2



Hvad vil det betyde for os?



Spare tid og fjerner
rugbrødsarbejde

Give tidlig
indsigt, hurtige beslutninger og
konsekvenser

Bruge vores kompetencer
bedre

Fungere i det kaos og anarki,
som vi åbenbart foretrækker

Vil udfordre forretningsmodellen
hos mange i branchen

Vi har med AI en moden, billig
og tilgængelig teknologi til
rådighed, som kan sætte os i
stand til at løse problemer vi
ikke har kunne løse før...

Hvad er problematisk ved AI?

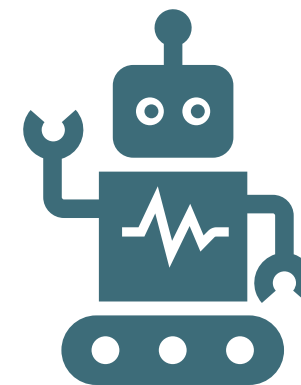
Det kræver
kompetence at
bygge og
benytte AI'er



AI systemer skal
støtte menneskelige
beslutningsprocesser
og analyser – ikke
overtage dem



Der er etiske og
irreversible
implikationer af at
automatisere

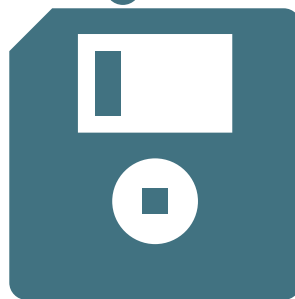


Hvad er problematisk ved AI?

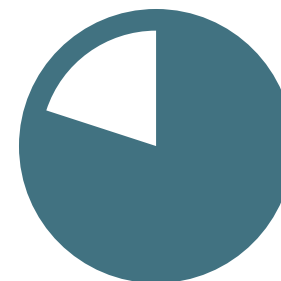
Er AI fair og uden bias? Kan man genskabe svar og predictions? Er systemerne transparente?



Vi bør kun bygge AI hvor vi har buer af data og menneskelig viden



AI er en 80% teknologi – som kan hallucinere – er AI løsningerne robuste?



Replicability?

The same prompt gives different results

Prisnedbrydning: (Bemærk: Dette er et skøn baseret på gennemsnitlige danske priser og kan variere baseret på konkrete leverandører, materialer og arbejdsvilkår.)

1. Fjernelse af eksisterende køkkener:

- Arbejds løn (2 timer pr. køkken): 17 køkkener x 2 timer x 450 kr/time = 15.300 kr.
- Bortskaffelse: 17 køkkener x 500 kr = 8.500 kr.

2. Forberedende arbejder:

- Arbejds løn (3 timer pr. køkken): 17 køkkener x 3 timer x 450 kr/time = 22.950 kr.
- Materialer (el, vandinstallationer, maling m.m.): 17 køkkener x 1.500 kr = 25.500 kr.

3. Installation af nye køkkener:

- Køkkenelementer og bordplader: 17 køkkener x 40.000 kr = 680.000 kr.
- Hvidevarer: 17 køkkener x 20.000 kr = 340.000 kr.
- Arbejds løn (8 timer pr. køkken): 17 køkkener x 8 timer x 450 kr/time = 61.200 kr.

4. Finish og rengøring:

- Arbejds løn (2 timer pr. køkken): 17 køkkener x 2 timer x 450 kr/time = 15.300 kr.
- Rengøringsmaterialer: 1.000 kr.

Total pris: 1.169.750 kr.

Alle priser er ekskl. moms. Det anbefales at indhente konkrete priser fra lokale leverandører og håndværkere for at få en mere nøjagtig beregning.

Ved accept af dette tilbud bedes du venligst tage kontakt, så vi kan planlægge arbejdet og sikre en gnidningsfri proces.

Prisoversigt:

1. Nedrivning af eksisterende køkkener:

- Arbejds kraft: 17 køkkener x 5 timer/køkken x 250 kr./time = 21.250 kr.
- Bortskaffelse: 17 køkkener x 1.000 kr./køkken = 17.000 kr.

2. Forberedelse af rummet:

- Reparationer: 17 køkkener x 3 timer/køkken x 250 kr./time = 12.750 kr.
- El og VVS arbejde: 17 køkkener x 8 timer/køkken x 350 kr./time = 47.600 kr.

3. Montering af nye køkkener:

- Skabe, bordplader, vask: 17 køkkener x 20.000 kr./køkken = 340.000 kr.
- Hårde hvidevarer (ekskl. enhedspriser): 17 køkkener x 15.000 kr./køkken = 255.000 kr.
- Montering: 17 køkkener x 10 timer/køkken x 250 kr./time = 42.500 kr.

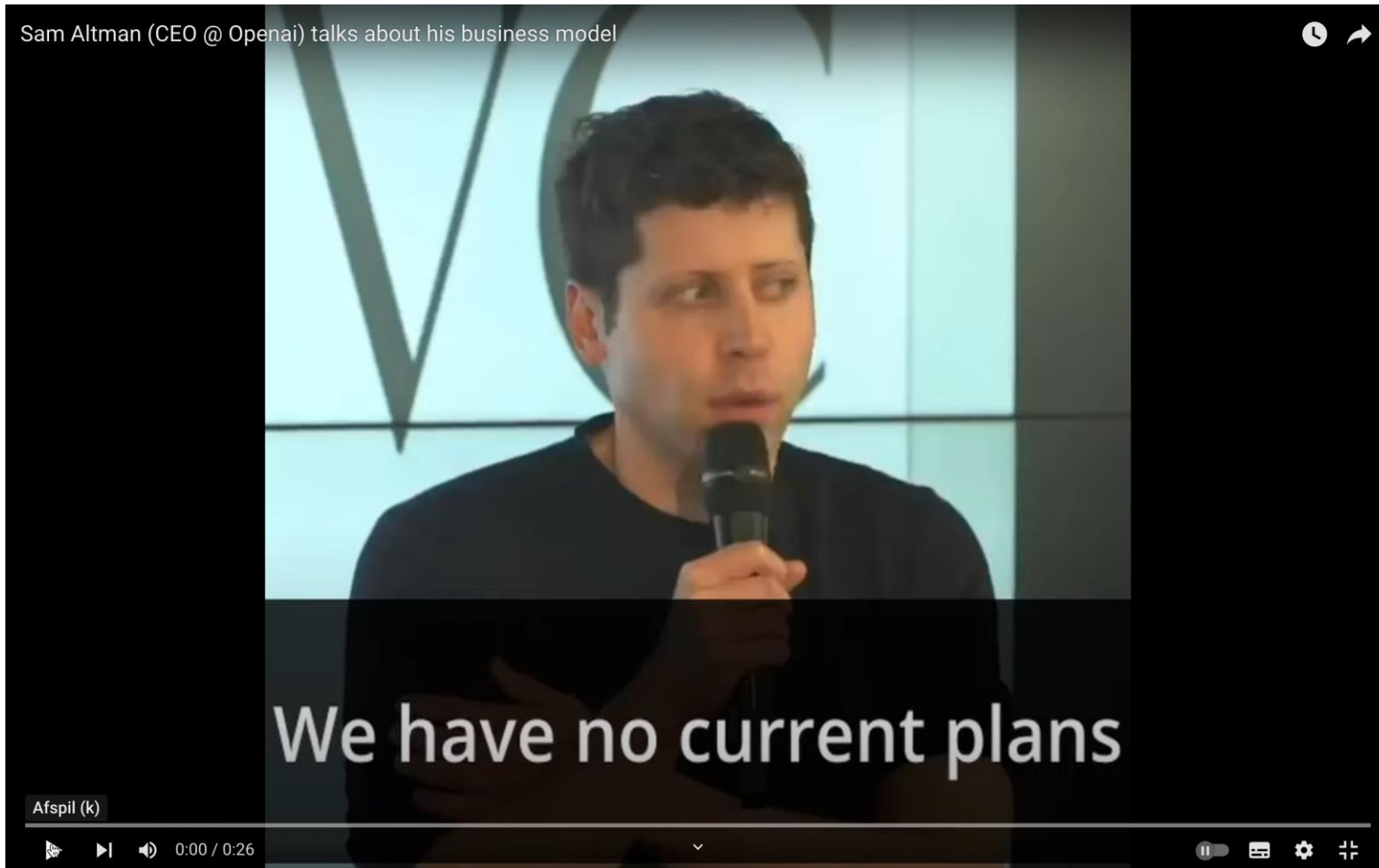
4. Rengøring og aflevering:

- Rengøring: 17 køkkener x 3 timer/køkken x 200 kr./time = 10.200 kr.

Samlet pris: 756.300 kr.

Bemærkninger:

Whats next?



AI will challenge business models. Most of us make a living selling hours. We are going to look at how much the deliveries and delivery speed are worth to the customers. And we will look at who can deliver what and draw new boundaries.

Maximizing Your 10 Minute Break

Disconnect from technology

Get some fresh air

Take deep breaths

Socialize with others



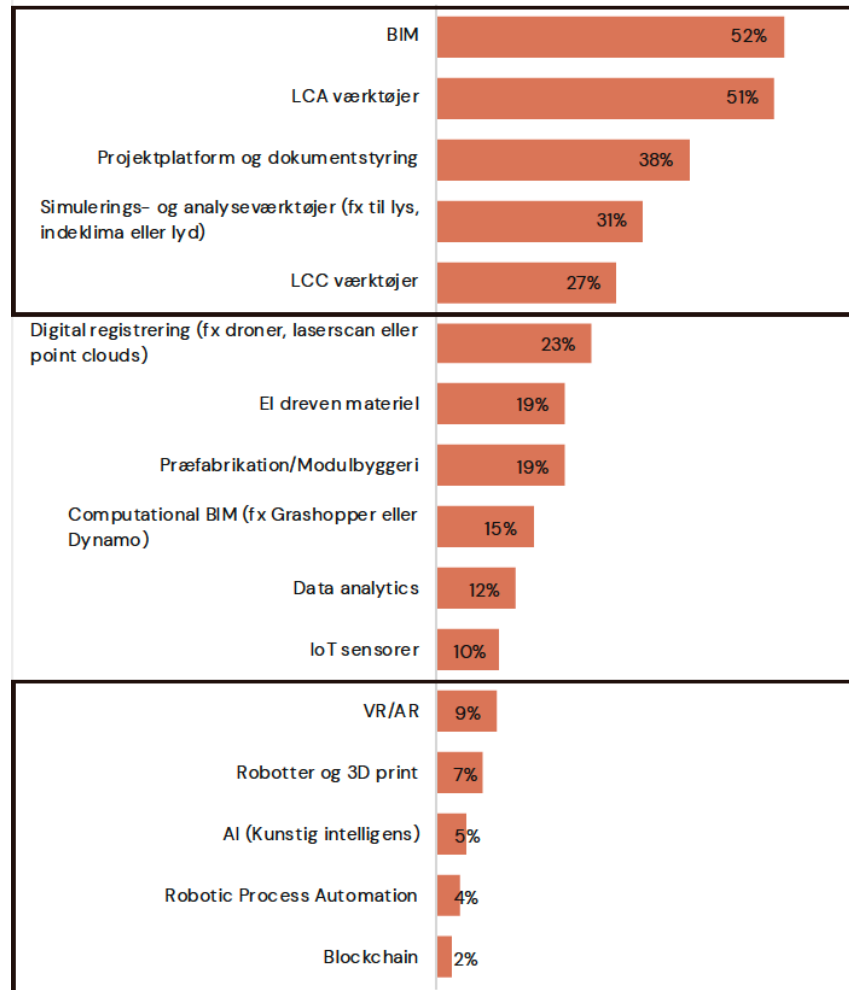
CON 'TECH LAB_



Bruger byggeriet AI



Source: Byggeriets Modenhedsmåling



Årets nøgletal kort fortalt III / III



Branchens brug af kunstig intelligens er firedoblet

21%

anvender AI i deres arbejde, sammenlignet med 5% sidste år. Det gælder primært frit tilgængelige generative modeller blandt arkitekt- og ingeniørvirksomheder.

Omtrent en tredjedel af de virksomheder, der anvender AI, gør det i form af AI-modeller, der er udviklet til byggebranchen eller er i gang med at træne deres egne modeller.



Dokumentation giver procesoptimering og besvær på samme tid

74%

af entreprenører og produktleverandører dokumenterer deres ressourceforbrug.

Dokumentation bruges som redskab til at optimere interne processer, men det opleves samtidigt omkostningstungt og tidskrævende.

2023

Fire bølger af AI

2024-2025

2025-26

2026-28



Første bølge:

AI Natives

ChatGPT, Midtjourney, Gemini

Anden bølge:

1. Early startups:

Harvey, Perplexity

2. Fast midmarket

incumbents: Zapier,

Notion, ...

3. Outlayer enterprise:

Microsoft, Adobe

Tredje bølge:

1. Next startups: ...

Fjerde bølge Big Wave:

1. Real enterprise

adoption

EU sætter allerede spillereglerne

REPORT / STUDY | Publication 08 April 2019

Ethics guidelines for trustworthy AI

On 8 April 2019, the High-Level Expert Group on AI presented Ethics Guidelines for Trustworthy Artificial Intelligence. This followed the publication of the guidelines' first draft in December 2018 on which more than 500 comments were received through an open consultation.

According to the Guidelines, trustworthy AI should be:

- (1) lawful - respecting all applicable laws and regulations
- (2) ethical - respecting ethical principles and values
- (3) robust - both from a technical perspective while taking into account its social environment



See also

[A European approach to artificial intelligence](#)

Related topics

[Advanced Digital Technologies](#)

[Artificial Intelligence](#)

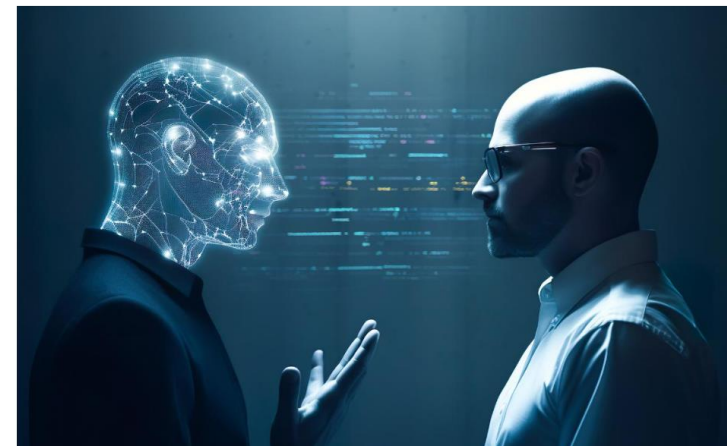
European Parliament

EU AI Act: first regulation on artificial intelligence

Society Updated: 14-06-2023 - 14:06
Created: 08-06-2023 - 11:40



The use of artificial intelligence in the EU will be regulated by the AI Act, the world's first comprehensive AI law. Find out how it will protect you.



Hvad gør virksomhederne?



Styrke den enkelte medarbejder



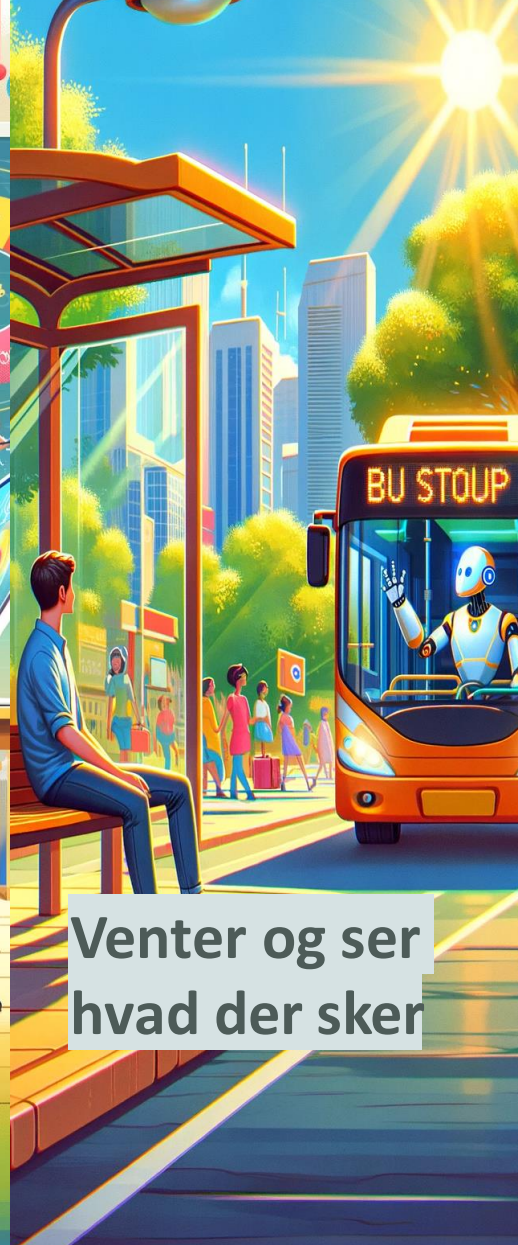
Skabe sandkasser



Bygge specifikke værktøjer og rulle dem ud?

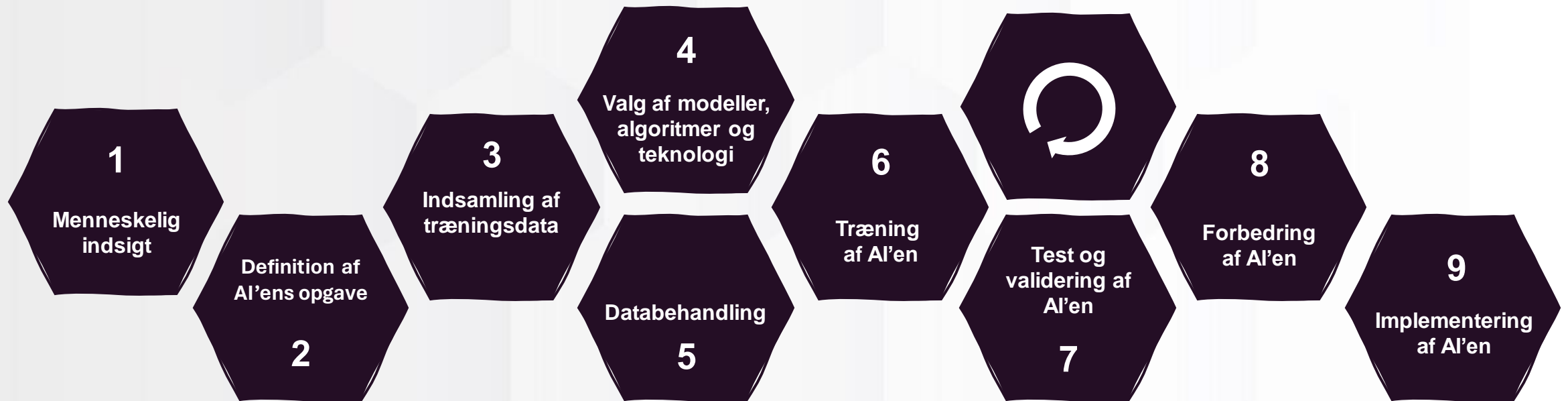


Planer og strategier



Venter og ser hvad der sker

AI-Kogebog: 'Sådan arbejder man med AI'



AI Strategi



Step 1 - Find dit første
AI ide - den bedste
usecase



Step 2 - Planlæg og
byg din første AI -
køgebogen



Step 3 - Definer jeres
AI strategi



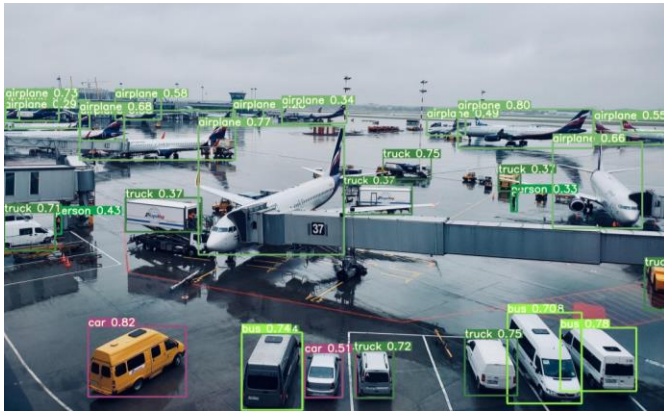
Step 4 - Byg og
implementer flere Aler

```
{  
  00.1:  
  'Smart Vedligehold'  
};
```

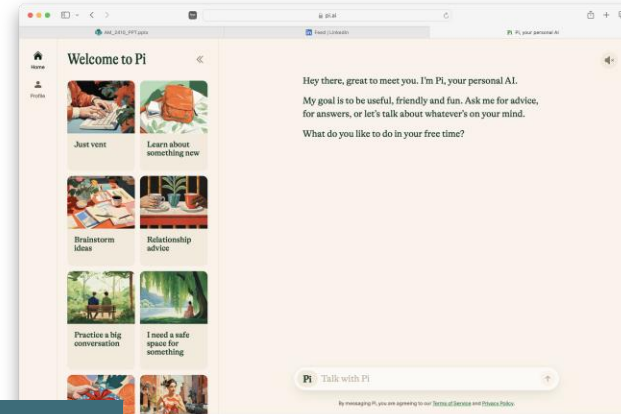
CON
TECH
LAB_

Hvad bruger I af AI-værktøjer?

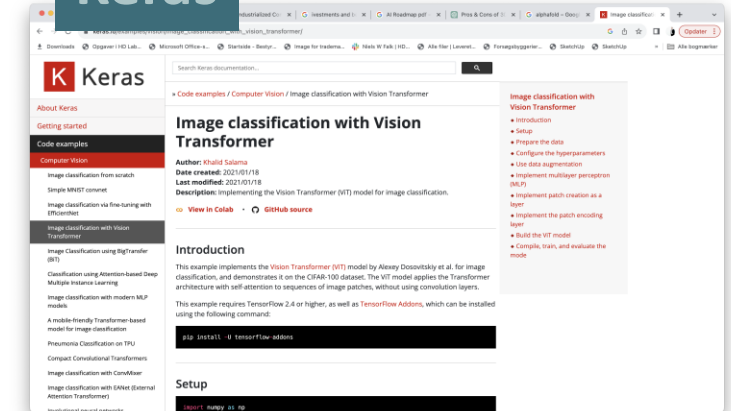
YOLO



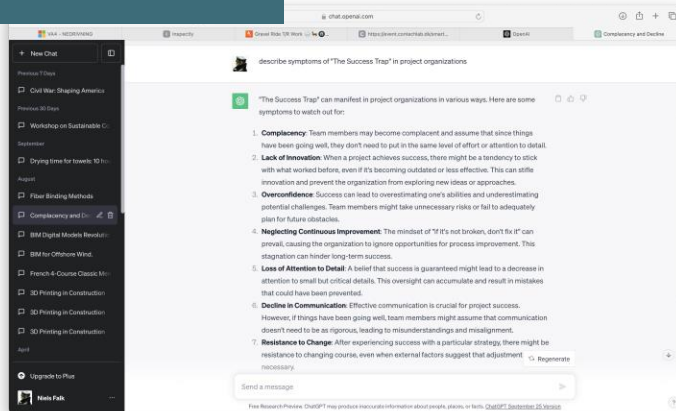
PI



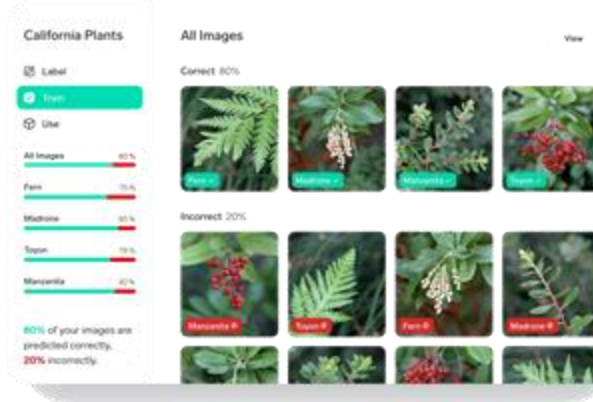
Keras



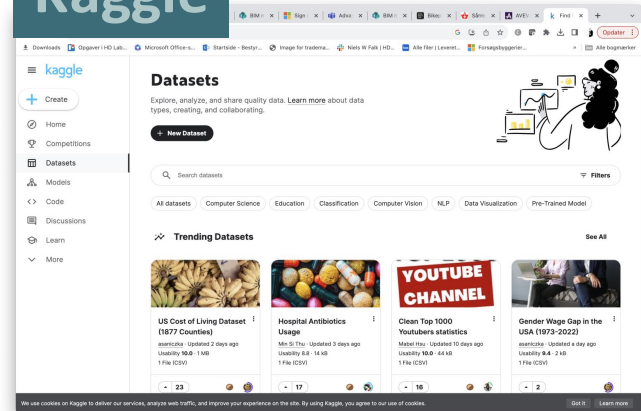
CHAT GPT



LOBE



Kaggle



Workshop | Runde 1

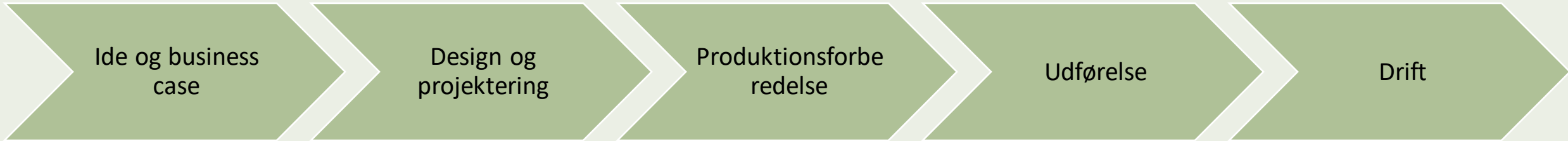
Find sammen i grupper af 3-4 og diskuter:

Hvordan bruger i eller ser i AI bliver brugt i dag i byggeriet?

Hvordan arbejder i - i jeres rolle - med Gen AI 2027 (3. Gen AI bølger)?

Vision og inspiration

Workshop framework



Bæredygtighed & dokumentation

3D-modeller

Simulering & Analyse

Økonomi, Risiko og Tidsplan

Indkøb & Aftaler

Arbejds miljø & sikkerhed

Workshop | Runde 2

Find sammen i grupper af 3-4 og diskuter:

Hvilke store udfordringer ser i dag i som branchen skal være opmærksom på?

Hvilke udfordringer er top of mind om 5 år?

Tak for idag og husk...

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

Afslutningskonference og Scrap book

Mandag d. 25. eller 26.06.2024

kl. 09:00-15:30

Lokation: DI/Molio