

UNBOX AI

One model for one company's every task

UNBOX AI research is published in top conferences such as NeurIPS, AISTATS and ICMLA (www.unboxai.org)



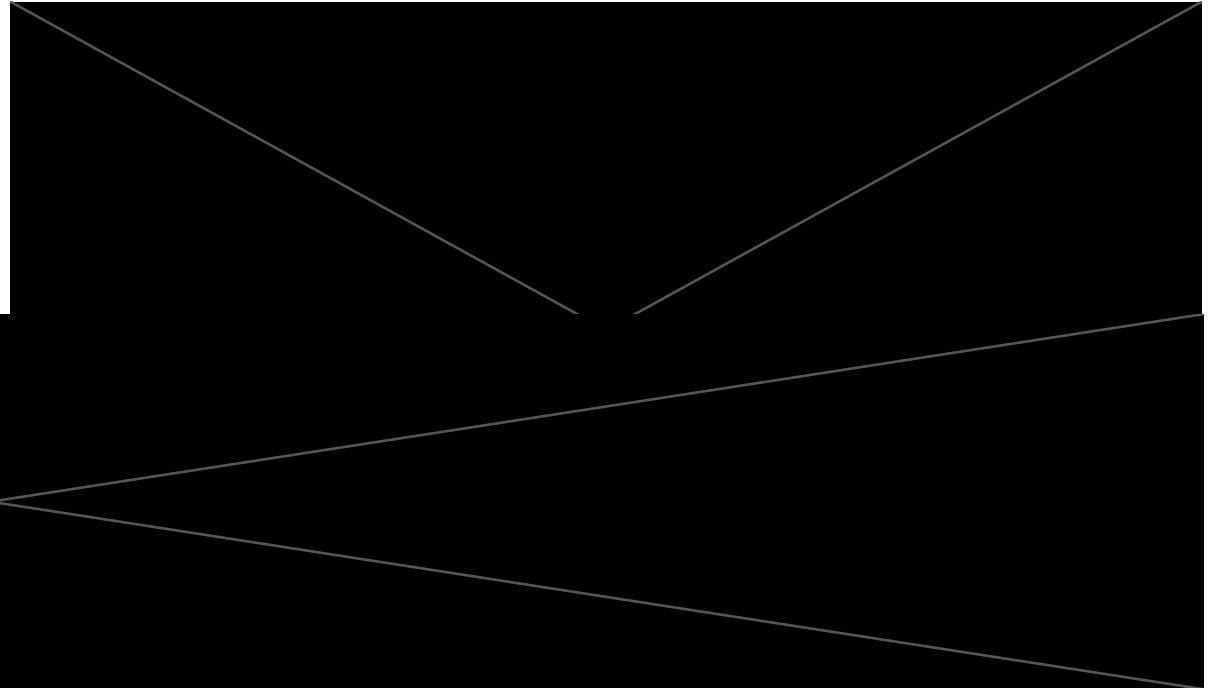
Gunnar Carlsson, is Professor of Mathematics Emeritus at Stanford University, and with 42 years of research experience, Carlsson is one of the most renowned mathematicians in the world and one of the founders of Topological Data Analysis. He is also president and co-founder of the artificial intelligence platform Ayasdi.



Rickard Brüel Gabrielsson, (COO) Stanford BSc '16, MSc '19, MIT PhD '25, is a top researcher in artificial intelligence and a serial entrepreneur. Learn more at www.bruel.org



John Gabrielsson, (Sales) One of Sweden's renowned top tech-entrepreneurs, experienced in startups and working with large company clients.

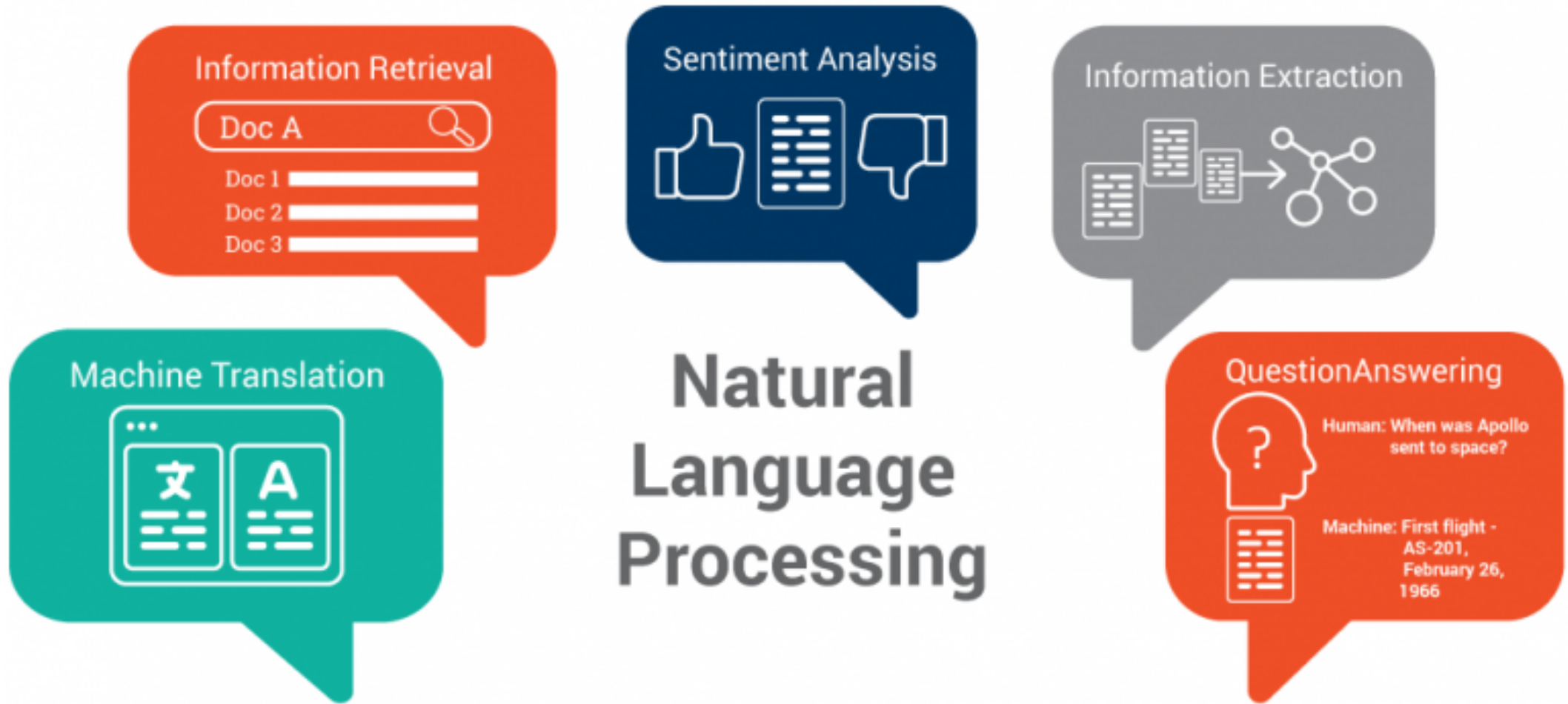


First we tell the story of

- More general problem formulation
 - Pooling of data
 - Building core model
 - Treating all tasks as fine-tuning
- For natural language processing (NLP)



AI and NATURAL LANGUAGE PROCESSING



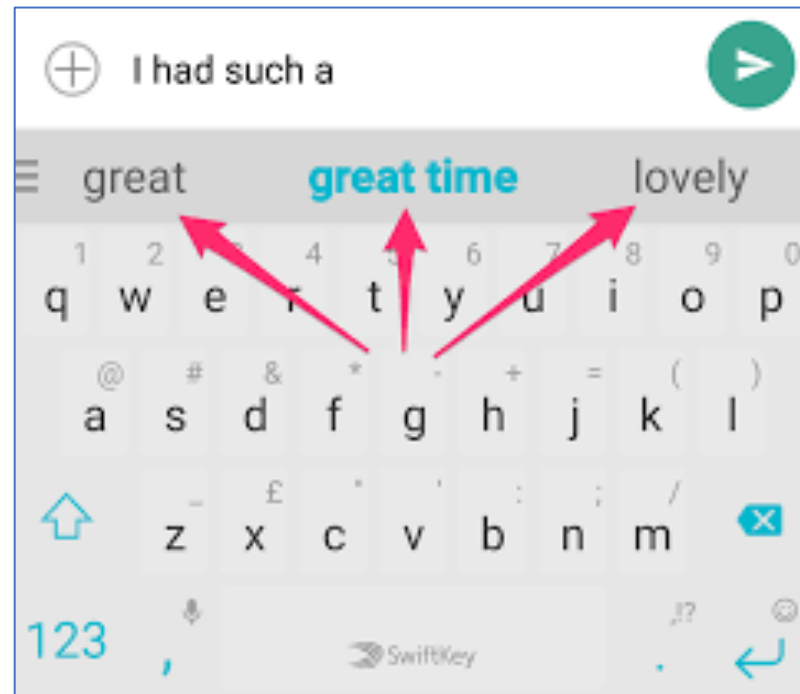
IN ORDER TO PREDICT WHAT YOU WILL DO I HAVE TO KNOW WHO YOU ARE

Action1 --> Action2 --> Action3 --> ?

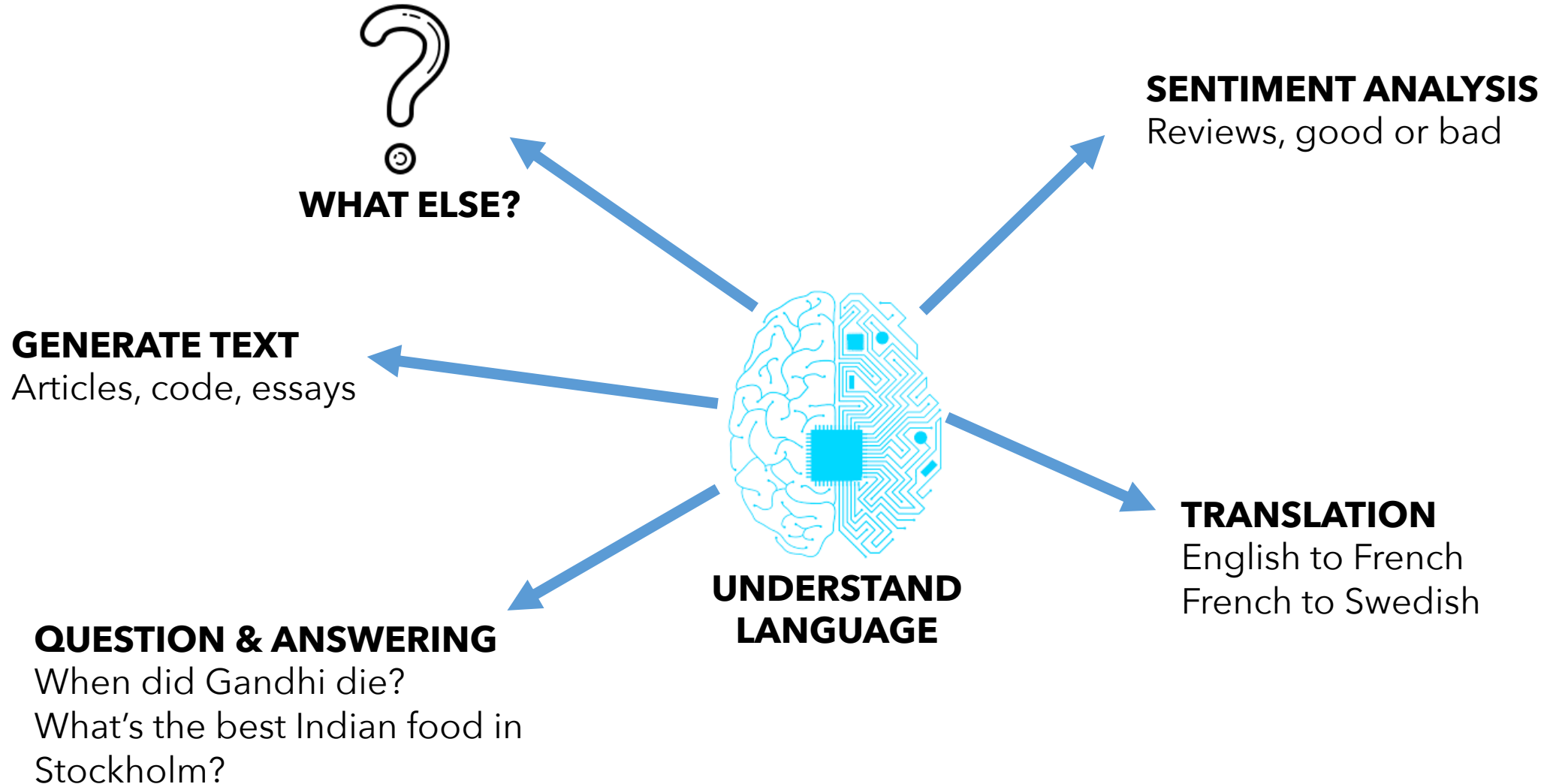
Action1 --> Action2 --> Action3 --> Action4 --> ?

...

NEED TO LEARN MEANING OF WORD, SENTENCE, PARAGRAH, AND DOCUMENT...



Language understanding is the core driver of performance on downstream finetuning tasks!



A REVOLUTION

RESEARCH TEAMS IN TRANSLATION, SENTIMENT ANALYSIS, QUESTION-ANSWERING ARE DEAD

VISION, GENOMICS IS SEEING THE SAME TRENDS

THE CORE PROBLEM IS THE SAME, AND IT'S WHAT IS IMPORTANT!



UNDERSTAND THE INTERNET - KNOWLEDGE UNDERSTANDING?

(A few weeks ago)

Through learning this sequential task, we learn multiple tasks automatically.

The three settings we explore for in-context learning

Zero-shot

The model predicts the answer given only a natural language discription of the task. No gradient updates are performed.

1 Translate English to French: ← task description
2 cheese => ← prompt

Traditional fine-tuning (not used for GPT-3)

Fine-tuning

The model is trained via repeated gradient updates using a large corpus of example tasks.

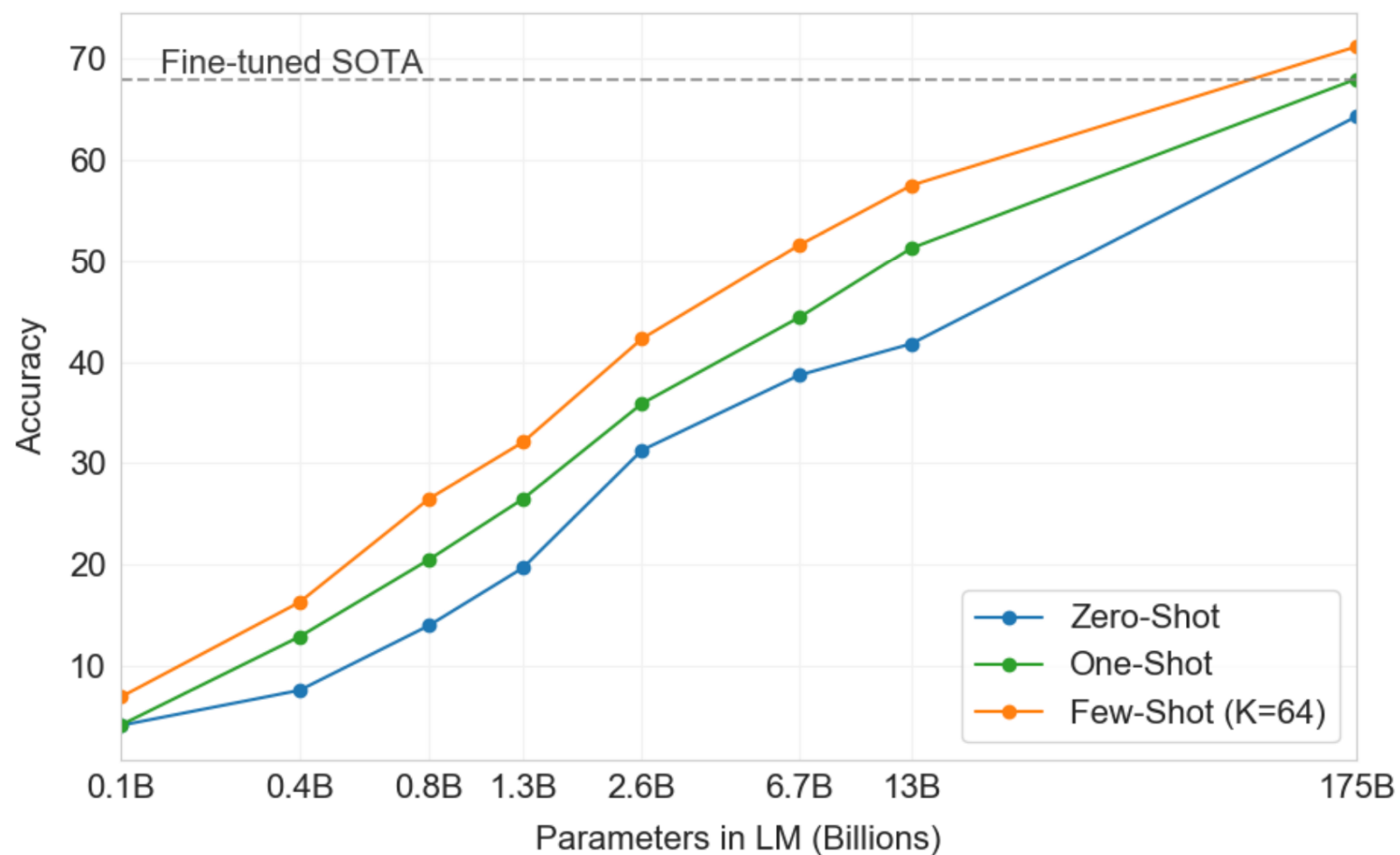
1 sea otter => loutre de mer ← example #1



gradient update



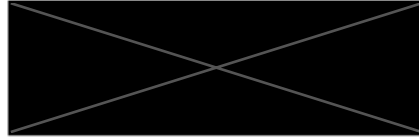
TWICE THE DATA, TWICE THE PERFORMANCE NO SIGN OF STOPPING



INSIGHTS

More general problem formulation allows for:

1. Pooling the data
2. A single model
3. Powerful insights that combines all aspects of the company



(FOOD RETAILER WITH ~USD10 billion in yearly sales)

IN ORDER TO PREDICT WHAT YOU WILL DO I HAVE TO KNOW WHO YOU ARE

SIMPLY ADD TO CARTS:

7300156482013 -> 7391835916455 -> 7394376615771 -> 7314727381834 ->
7312631400818 -> 7310867561006 -> 7310610020385 -> 7310240055368 ->
7394376616037 -> 8076802085738 ...

I.e: Product1 -> Product2 -> Product3 -> Product4 -> ...

We developed and trained a new state-of-the-art AI ¹ on 50 million data points for several days and ... In **42%** ² of cases our AI picks (based on your history) exactly the product you were looking for, while only in **4%** ³ of cases is that product among your historically most popular purchases and only in **2%** of cases is that product among the ten most popular products on Coop online. This could increase sales with **23%** ³ based on comparison with RichRelevance's sales metrics.

Also, if our AI doesn't pick the exact product, it might still be close; substitutes ⁴ learned by the AI:

Check out some real runs in Stockholm in April:

You buy	AI recommends
	
	
	

Hamburgare 4X120g:
1. Hamburgare 6X90g
2. Hamburgare Av Naturbeteskött Coop
3. Hamburgerbröd Coop 8-Pack Fryst

Fetaost:
1. Fetaost EKO
2. Fetaost Laktosfri
3. Halloumi

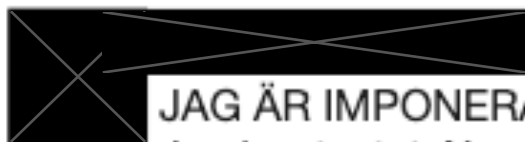
Wasa Knäcke Naturell Glutenfri:
1. Wasa Knäcke Sesam & Havssalt Glutenfri
2. Musliknäcke Glutenfri
3. Mörkt Sandwich Bröd Glutenfri

1: We developed new techniques originally used for natural language processing (as seen on iPhones), where each cart is treated as a sentence

2: We look at top 10 predictions.

3: Top historical user purchases is RichRelevance's best model and we look at top 10 historical purchases. It is estimated that RichRelevance drives 2.5% of all sales on Coop online

4: Target product in black and substitutes (or "best 2nd guesses") in blue. So if the AI doesn't get the exact product you were looking for, it can still get something close.



September 8th at 10:22 AM

JAG ÄR IMPONERAD!

Jag har testat AI-motorn på <http://34.102.243.32/> och flera gånger föreslår den precis den produkt jag tänkt köpa, eller något bättre. Även om jag lägger in varor som jag inte alls tycker är relaterade så kommer det upp saker som jag faktiskt är på väg att köpa. Detta vore utmärkt spännande att testa på verkligheten.

mjölk

🔍

Type of user

New user

▼

userType

private

▼

Device

desktop

▼

userPostalCode

12833

▼

storeId

016001

▼










Pick users with different histories

?










Search took 0.166 seconds

IF YOU SEARCH FOR MILK WE KNOW IF YOU LACTOSE INTOLERANT

Search results:

	laktosfri mjölk
	laktosfri mjölk
	lättmjölk
	mjölk längre hållbarhet
	mellanmjölk
	lättmjölk färsk
	mellanmjölk
	mellanmjölk längre hållbarhet
	standardmjölk
	

Recommendations:

	Laktosfri Lättmjölk
	Laktosfri Lättmjölk
	Laktosfri Yoghurt Naturell EKO
	Laktosfri Mellanmjölk
	Laktosfri Yoghurt Naturell
	Cottage Cheese Laktosfri 1,5%
	Rättvisemärkta Bananer
	Laktosfri Mellanmjölk
	Laktosfritt Bordsmargarin

Cart:

	fetaost laktosfri
	laktosfri yoghurt

WE ALWAYS RECOMMEND YOUR NEXT ITEMS

färs

Search

Type of user

New user

▼

userType

private

▼

Device

desktop

▼

userPostalCode

12833

storeId

016001


▼


Pick users with different histories


?

Search took 0.142 seconds


Search results:


nötfärs


färs quorn

nötfärs

Recommendations:

Kycklingbröstfilé

Mellanmjölk

Standardmjölk

Cart:

IF YOU'RE VEGETARIAN, "MEAT" MEANS A VERY DIFFERENT THING!

färs

Search

Type of user

New user

▼

userType

private

▼

Device

desktop

▼

userPostalCode

12833

storeId

016001


▼


Pick users with different histories


?

Search took 0.114 seconds


Search results:


färs quorn


vegansk färs

vegansk färs


Recommendations:

Dumplings Kyckling

Thyme & Garlic Vegan

Filet Pieces

Cart:

vegetariska dumplings

mejeri











Type of user: New user, userType: private, Device: desktop, userPostalCode: 12833, storeId: 016001

Pick users with different histories

Search took 0.155 seconds

WE LEARN CATEGORIES AND SIMILAR PRODUCTS WITHOUT ANY ANNOTATION!

Search results:

	Mellanmjölk
	Standardmjölk
	Ägg Frigående M/L 24-Pack
	Lättnmjölk
	Mellanmjölk
	Bregott Mellan
	Juice Apelsin
	Bregott Normalsaltat
	Mellanmjölk Längre Hållbarhet
	Standardmjölk

Recommendations:

Click to add to cart

SKU: 7310867561006 Mellanmjölk

Weight:

Score:

Prob:


SearchInfo:

Category: Mejeri & Ägg, Juice -bröstflä

Mjölkdryck, Drickfärdig Juice

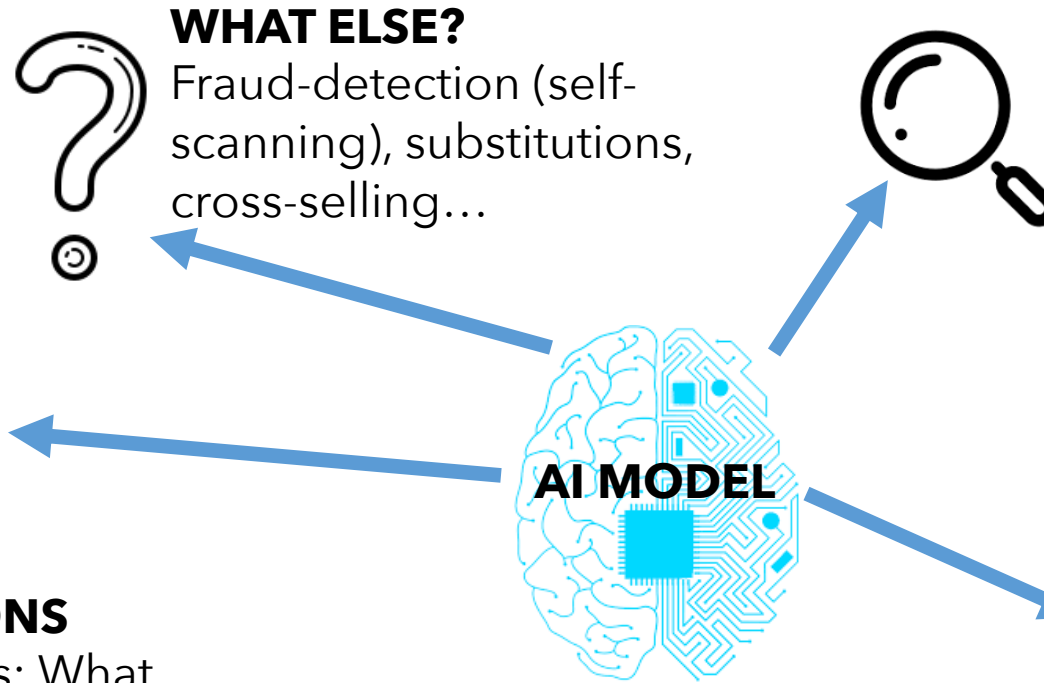
Similar products:

- Juice Äpple
- Juice Tropisk
- Juice Apelsin/Äpple/Mandarin
- Apelsin & Mangojuice
- Juice Ananas & Guava

	Apelsin
	Ägg Frigående M/L 24-Pack
7340011491996	

Cart:

Most (if not all) problems are sequential and can therefore be understood by our model. What it learns is not only to recommend products, but rather to **understand users and products**. This means it can solve several tasks, and it's gets better by every task we train it to solve – i.e. it shows strong synergy effects. Already it solves several tasks well:



WHAT ELSE?

Fraud-detection (self-scanning), substitutions, cross-selling...

SEARCH

Understanding users: know what people are looking for. Does your user want lactose free milk when he searches for "milk"?

RECOMMENDATIONS

Understanding users: What food do your user want to buy? Fill your cart with minimal effort. Make users happy and drive sales.

UNDERSTAND YOUR USERS THROUGH PRODUCTS

Is your user a vegetarian, lactose intolerant, a family, young, or old?

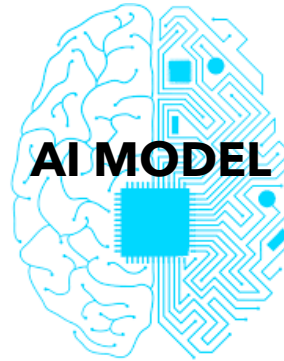


MARKETING

Understanding users: know who to target when and how. What food and what channels produce the best engagement for *this* user?

CUSTOMER LOYALTY and ENGAGEMENT

We can predict when a user will stop coming back and categorize their behavior in terms of purchases. We learn what products maximizes loyalty and know what type of customers we should target because they are the most loyal.



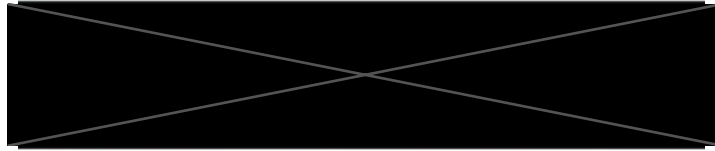
UNDERSTAND YOUR USERS THROUGH YOUR PRODUCTS

Is your user a vegetarian,
lactose intolerant, a
family, young, or old?

OPTIMIZE STORE ASSORTMENT

What products are substitutes or
cannibalistic? What products cover most
of the usage? What product offering
maximizes engagement and loyalty?
Recommend best substitute





(CALL CENTER COMPANY WITH ~30,000 employees)

IN ORDER TO PREDICT WHAT YOU WILL DO I HAVE TO KNOW WHO YOU ARE

SIMPLY EMPLOYEE EVENTS:

(show up at work) -> (first break) -> (time spent in call) -> (time between calls) -> (time spent in call) -> (time of lunch) -> (break time) -> (leaves work) -> ...

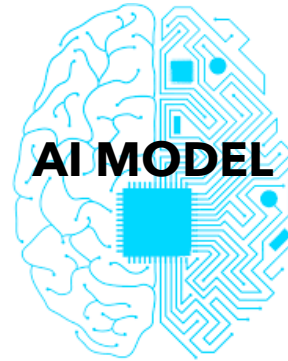
ATTRITION: EMPLOYEE LOYALTY and ENGAGEMENT

We can predict when a employees will quick and categorize their behavior in terms of their actions. We learn what actions maximizes employee loyalty and know what type of employees we should target because they are the most loyal.



OPTIMIZE CLIENT ASSORTMENT

What employees should work where?
Outbound vs inbound?



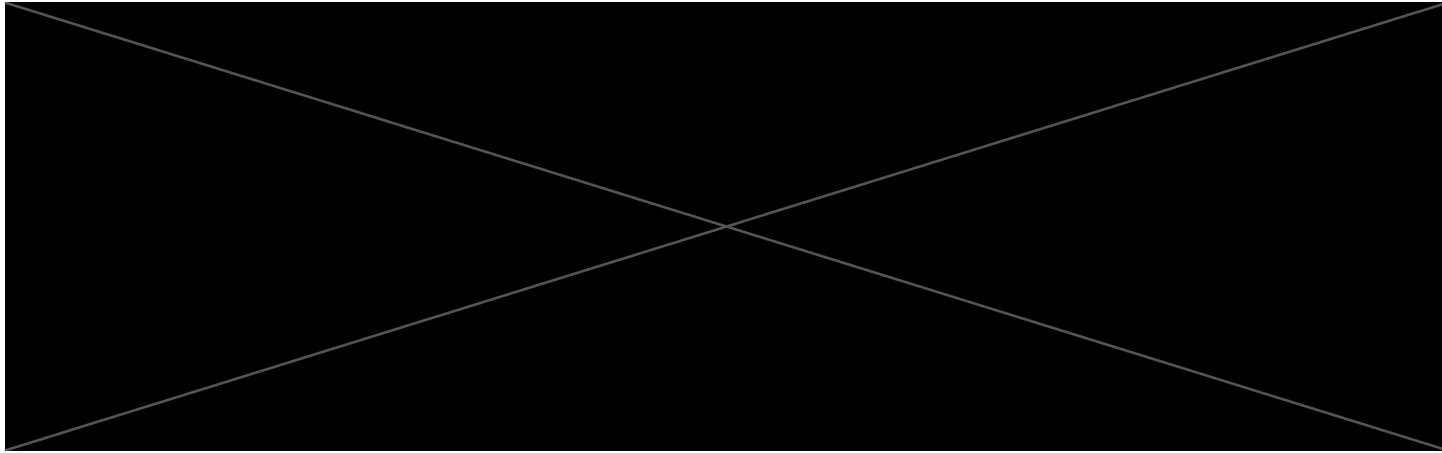
UNDERSTAND YOUR EMPLOYEES THROUGH THEIR ENGAGEMENT

What makes your employee tick and what defines a high performer?

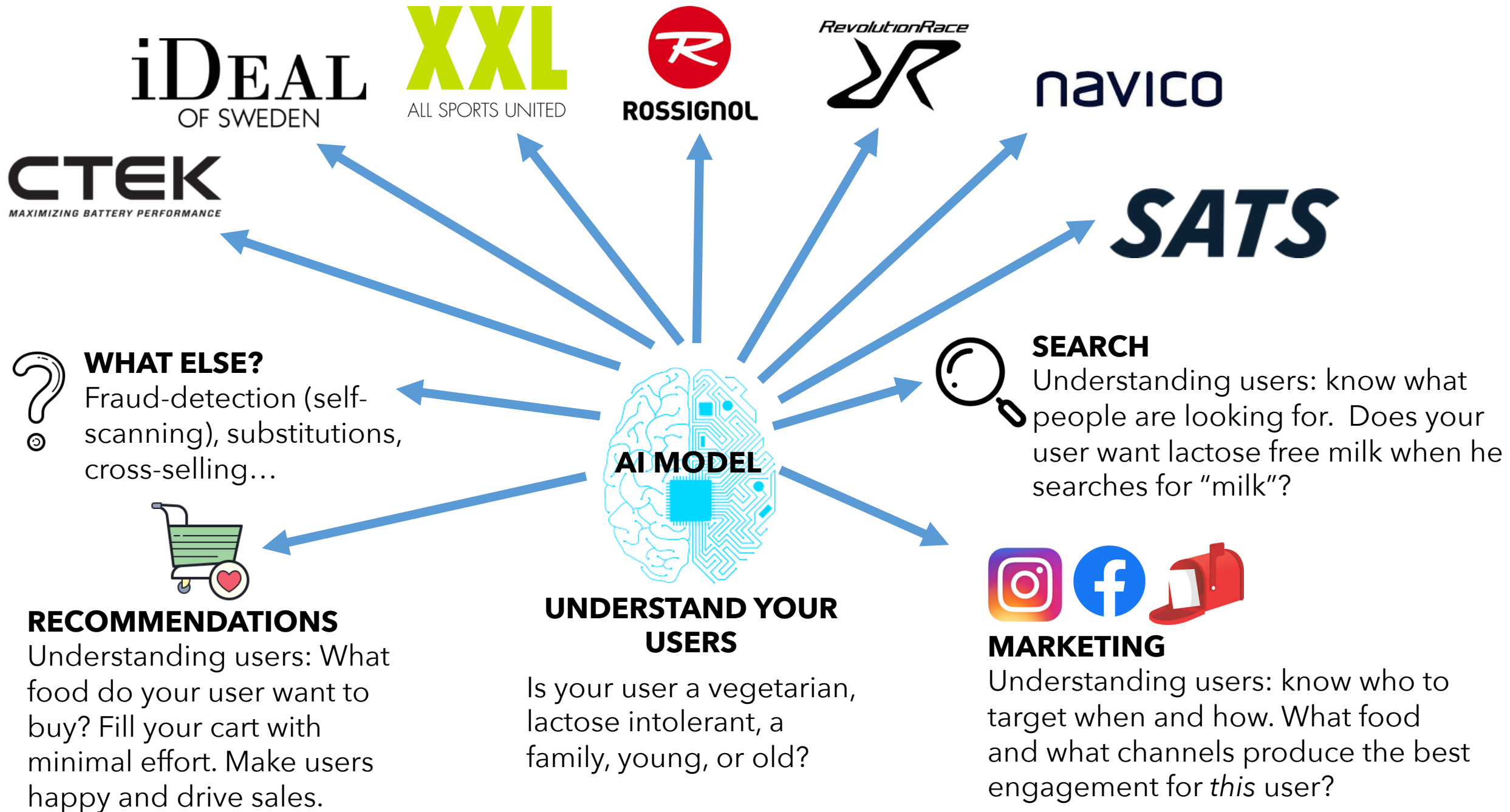


ACROSS TASKS, BUT WHAT ABOUT ACROSS COMPANIES?!

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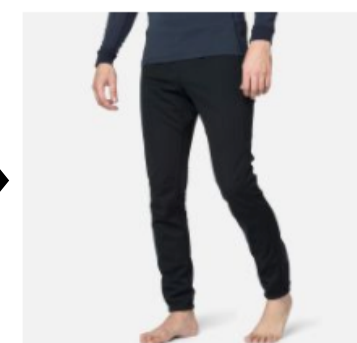
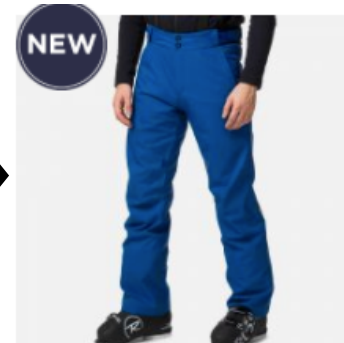
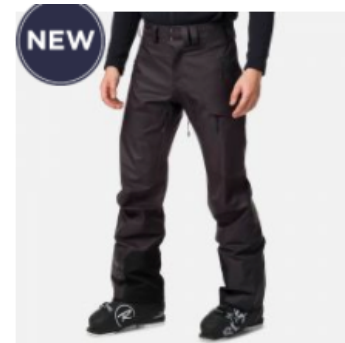
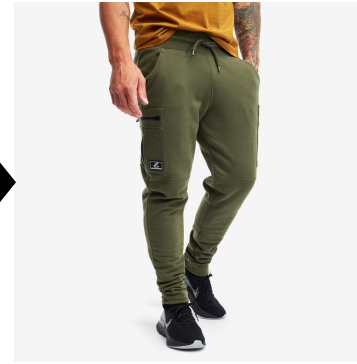
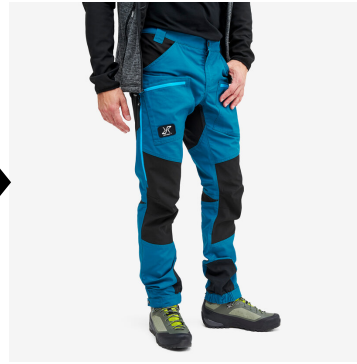


(USD10 BILLION DOLLAR PRIVATE EQUITY FUND)



COMPANIES SHARE A LOT OF USER AND PRODUCT BEHAVIOR

I.e. they have similar sequences!



MEN'S ATELIER S RIDE FREE PANTS

5 200,00 kr

MEN'S HYPERPLAN JACKET

6 800,00 kr

MEN'S SKI SKI PANTS

2 000,00 kr

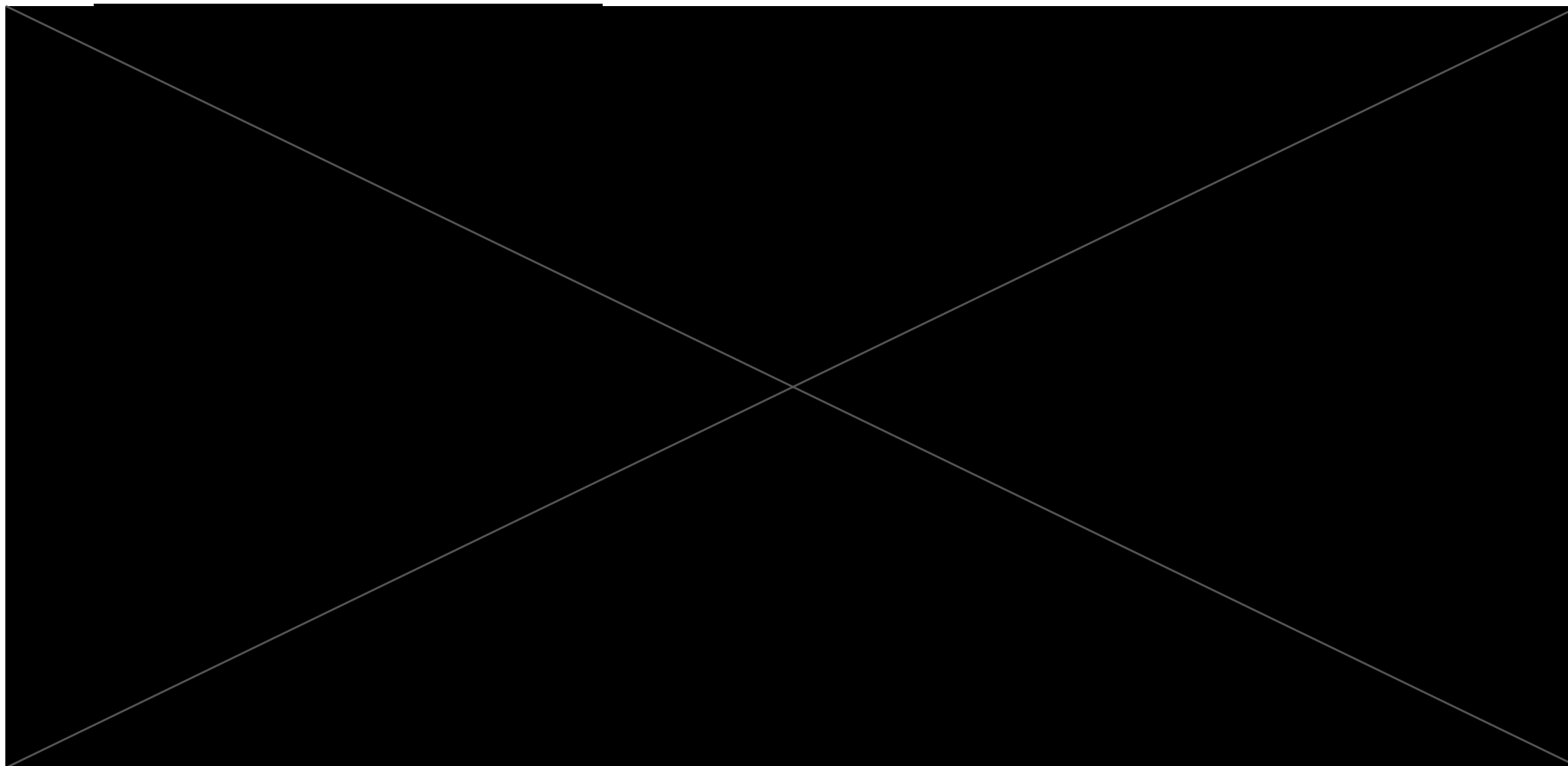
MEN'S SOFTSHELL PANTS

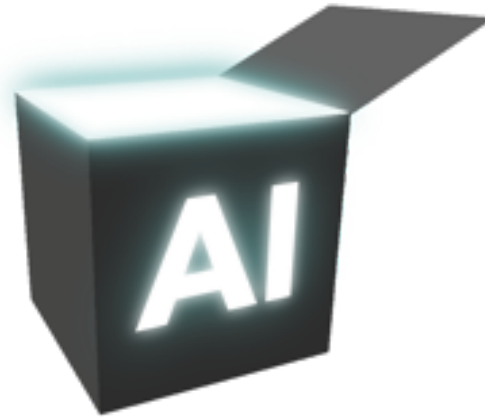
1 300,00 kr



UNBOX AI

We also work with:





UNBOX AI

One model for one company's every task

Thank you!

Contact:

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