

Feedback on the conference

# France is AI

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Data-Humanist



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# France is AI

## Mission

Support and promote  
Artificial Intelligence ecosystem in France



# France is AI

## Format

Two day conference :

1st day focused on Tech and Research

2nd day on Business and Applications

In between : meetups meetings!

France is AI

Conferences

Social side

**AI for GOOD**

Love Machine

What future of AI would be like for you?

Social side

**AI for GOOD**

Love Machine

What future of AI would like for you?

90% of Terminator story

10% Entertainment story

Social side

## AI for GOOD

*"WITH GREAT POWER COMES  
GREAT RESPONSIBILITY"*

VOLTAIRE & SPIDERMAN'S UNCLE

Social side

AI for GOOD

OrCam



CREDIT : Alexandre Cadain



## AI for GOOD



## AI for GOOD



# Business and Applications

## Democratizing AI



# Business and Applications

## Democratizing AI

### Use AI to solve business problems



#### Vision

Image-processing algorithms to smartly identify, caption and moderate your pictures.



#### Knowledge

Map complex information and data in order to solve tasks such as intelligent recommendations and semantic search.



#### Language

Allow your apps to process natural language with pre-built scripts, evaluate sentiment and learn how to recognize what users want.



#### Speech

Convert spoken audio into text, use voice for verification, or add speaker recognition to your app.



#### Search

Add Bing Search APIs to your apps and harness the ability to comb billions of webpages, images, videos, and news with a single API call.

<https://github.com/Microsoft/CNTK>

Data  
scarcity

### Directions

Transfer learning

Learn from rich simulations

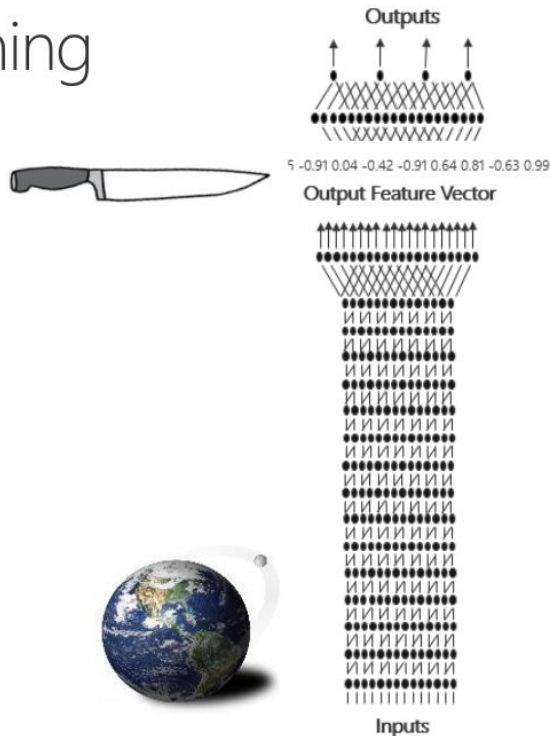
Learn generative models

### Embedded deep transfer learning

Less data with better features

ImageNet 1000, 1M photos

Cut off top layer

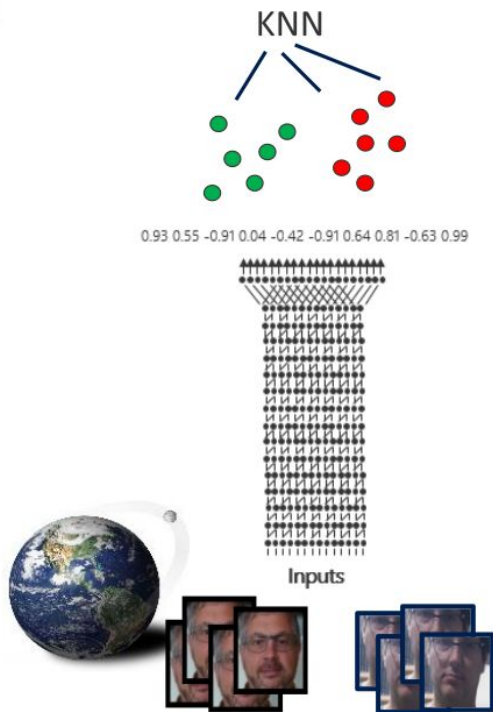


### Embedded deep transfer learning

Less data with better features

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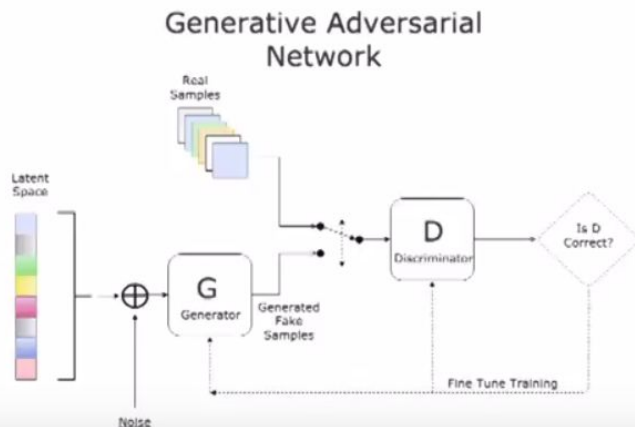
## Generating customer responses with GANs

- Personal Assistant and Bot Acceleration
  - VoiceBot, MailBot, ChatBot, .... (what we call xBot at xBrain)
  - Labelled data and Classification through user (or customer) is really hard !
- Real Life hurts :
  - How to bootstrap a bot with little efforts (data labeled) ?
  - How to manage the improvement without effort (data labelisation) ?
- From Unstructured Data to Structured Data
  - How to discover the hidden structured in the data ?
  - Clustering Algo (like K-means) or Generative models (GANs)



## Generating customer responses with GANs

**Generative adversarial networks** (GANs) are a class of artificial intelligence algorithms used in unsupervised machine learning, implemented by a system of two neural networks contesting with each other in a zero-sum game framework.




### Toward Controlled Generation of Text

Zhiting Hu<sup>1,2</sup> Zichao Yang<sup>1</sup> Xiaodan Liang<sup>1,2</sup> Ruslan Salakhutdinov<sup>1</sup> Eric P. Xing<sup>1,2</sup>

# Business and Applications

## Bots Overview and AI Rethinking Media : JAM



The image is a promotional advertisement for JAM. It features a vibrant, low-angle shot of a party scene with people dancing and confetti falling. The JAM logo, which consists of a stylized orange slice icon followed by the word 'jam' in lowercase, is positioned in the top left corner. Centered in the image is the text 'JAMAIS DEUX FOIS LA MÊME JOURNÉE' in a bold, white, sans-serif font. Below this, a line of text reads 'Je suis un chatbot : parle-moi directement dans Messenger et dis adieu à la routine.' At the bottom center, there is a white rectangular button with a blue Messenger logo and the text 'Send to Messenger'.

jam

**JAMAIS DEUX FOIS  
LA MÊME JOURNÉE**

Je suis un chatbot : parle-moi directement dans Messenger et dis adieu à la routine.

 Send to Messenger

## Bots Overview and AI Rethinking Media : JAM

- **Context is a king**
- **Readers come to be inspired**
- **From content to action :**

**reminder, reservation, payment, sharing**

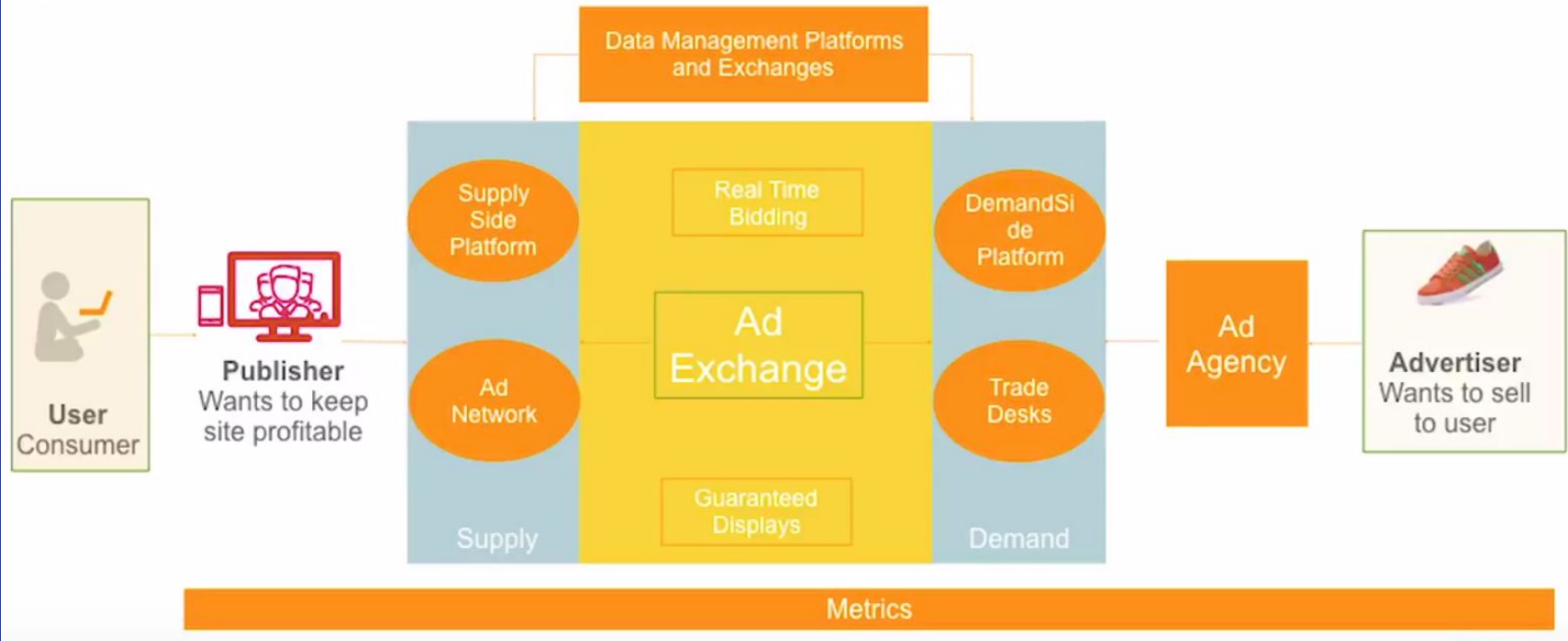
## Evolution of Computational Advertising



Vice President Of Research Criteo

## Evolution of Computational Advertising by Criteo

Now: Cartoon reality

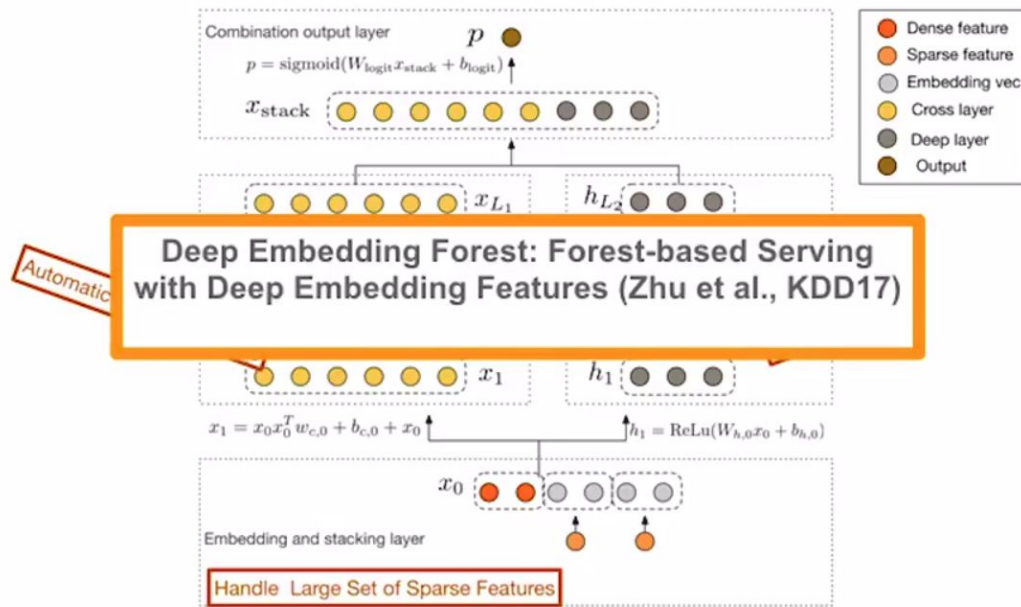


## Evolution of Computational Advertising by Criteo

- Model CTR prediction as a logistic regression problem
  - $p_t = \sigma(w_t \cdot x_t)$  where  $\sigma(x) = (1 + \exp(-x))^{-1}$  is the sigmoid function
  - Given true label  $y_t$ , we want to minimize the logistic loss  $l_t(w_t) = -y_t \log p_t - (1 - y_t) \log(1 - p_t) + \lambda \|w\|^2$
- Features of  $x_t$  can be based on publisher, user & context of interaction

## Evolution of Computational Advertising by Criteo

Deep & cross network for ad click predictions (Wang et al., AdKDD 17)




## Attributes Extraction in e-Commerce at Rakuten

### The Problem: low quality catalog

Low quality catalog:

- unstructured catalog
- missing or incorrect attributes
- poor or outdated reference values



id	url	type	color
0001	x.jpg	shoe	green
0002	y.jpg	shoe	multicolor

values in catalog  
for attribute *Phone Model*

#### Phone Models

...  
iPhone 6 (2014 - 2016)  
iPhone 6 Plus (2014 - 2016)  
iPhone 6S (2015 - .)  
iPhone 6S Plus (2015 - .)  
iPhone SE (2016 - .)  
iPhone 7 (2016 - .)  
iPhone 7 Plus (2016 - .)  
iPhone 8 (2017 - .)  
?



no attributes!

エルヴェ・ケルランについて  
1873年に先祖のシェーズ氏がセラーを設立したのが始まりで、5代に亘って素晴らしいワインの取扱いに専念してきました。

1993年から醸造したワインの輸出業に特化し、1999年ヴィンテージからは自らの銘柄でワインを造ることも始めました。現在は、ボア近郊のシャトー・ド・ラゴルドに本拠地を構えています。

ラ・ヴァーグ・ブルー・青色・  
スパークリングワイン

■ 産地品種：ソーヴェラン・ブラン100%(フランス産)  
■ 瓶詰：100%天然水方式  
■ 瓶詰め：100%天然水方式



透明感のあるラゲーン・ブルー、アプリコットなどのフルーツ、お菓子のようなクリームのニュアンスのある香ばしいアロマ、ボリュームのある爽快感にグレープフルーツの苦味、バランスの良い酸が加わる。飲み応えがありながらも爽やかな味わい。

Apple iPhone 8 Plus  
Single-SIM (SIM  
unique) - 256 Go - Or -



Shop now

Sponsored ID

Or - 256 Go -

€1,099.00 - France

Free shipping

€619.90 - Orange Mobile

Free shipping

€1,099.00 - Darty.com

Free shipping

€1,099.00 - Cdiscount



## Attributes Extraction in e-Commerce at Racuten

Possible solution: information extraction from text and picture



4 photos

Envoyez cette page à un ami et gagnez 7 €

**Descriptif**

- Fabricant : E-Com

Table Basse Oslo 60x60cm Blanc Mat Longueur : 60 cm

**Descriptif**

Fabricant	E-Com
Matière Dominante	Bois plaquage
Couleur	Blanc

**Popular search keywords**

Leroy Merlin  
Ikea  
...

Reference lists

Manufacturer	Material	Color
Ikea	Glass	Black
Castorama	Wood	Brown
Leroy Merlin	Metal	White
...	...	...

Learn to identify attribute values in product **descriptions**

- belonging to a reference list
- new and pertinent

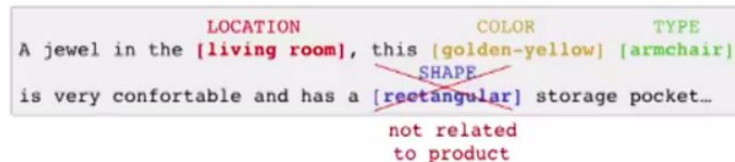
Learn to identify attribute values in product **pictures**

- belonging to a reference list
- visual

## Attributes Extraction in e-Commerce at Racuten

Learn words semantics

Named Entity Recognition (NER) problem

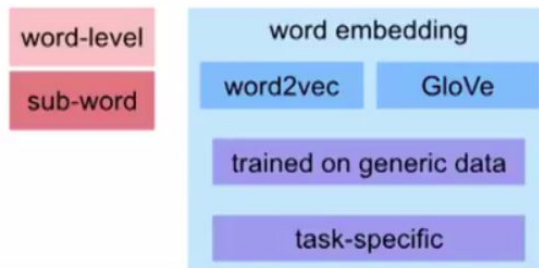


Approaches:

- CRF\*

- ✓ models dependencies between words

- ✓ handcrafted features:



## Attributes Extraction in e-Commerce at Racuten

Learn words semantics

**Named Entity Recognition (NER)** problem

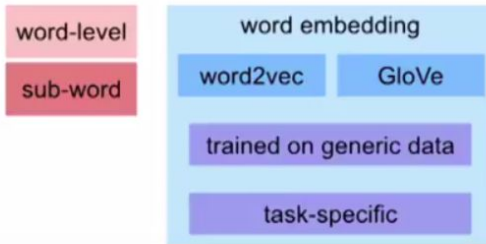
A jewel in the [living room], this [golden-yellow] [armchair]  
is very comfortable and has a [rectangular] storage pocket...

LOCATION COLOR TYPE  
SHAPE  
not related to product

Approaches:

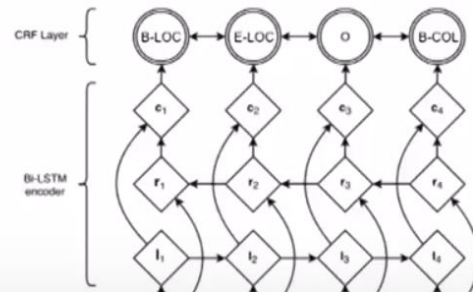
- CRF

- ✓ models dependencies between words
- ✓ handcrafted features:



- Bidirectional LSTM-CRF\*

- ✓ no feature engineering
- ✓ character-based word representation



## Attributes Extraction in e-Commerce at Racuten

### Merge text and picture information

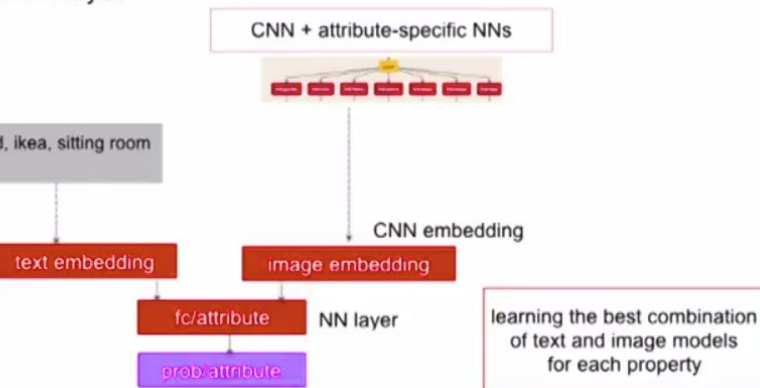
- Feature-level fusion\*:
  - ✓ Merge image and text embeddings
    - 1st order pooling: concatenation
    - 2nd order pooling\*\*: cross product + dimensionality reduction
- ✓ Multi-modal Neural Network layer

Catalog

item182, armchair, orange, wood, ikea, sitting room  
item183, ...

Approaches:

- doc2vec
- BoW+logistic regression



## MUTAN: Multimodal Tucker Fusion for Visual Question Answering

## VISUAL QUESTION ANSWERING

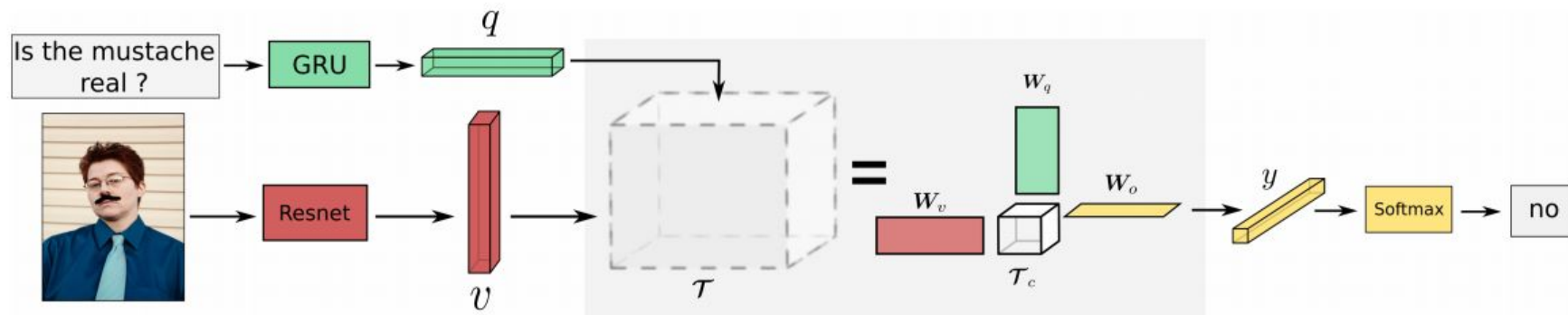


Figure 2: MUTAN fusion scheme for global Visual QA. The prediction is modeled as a bilinear interaction between visual and linguistic features, parametrized by the tensor  $\mathcal{T}$ . In MUTAN, we factorise the tensor  $\mathcal{T}$  using a Tucker decomposition, resulting in an architecture with three intra-modal matrices  $W_q$ ,  $W_v$  and  $W_o$ , and a smaller tensor  $\mathcal{T}_c$ . The complexity of  $\mathcal{T}_c$  is controlled *via* a structured sparsity constraint on the slice matrices of the tensor.

**MUTAN: Multimodal Tucker Fusion for Visual Question Answering**

## On recent advances in machine listening and ambient sound detection

### Machine perception

- Computer Vision
- Speech recognition
- Music understanding

### Challenge

what about an “everyday” ambient sound?

- smart house for isolated elderly people
- sounds surrounding a self-driving car



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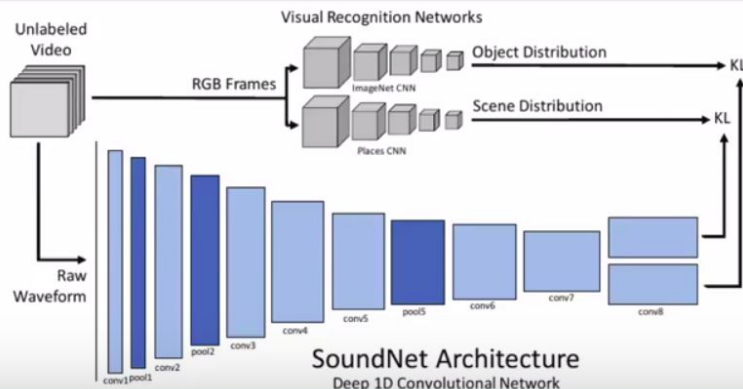
## On recent advances in machine listening and ambient sound detection

### Vision-guided learning of audio features

#### SoundNet

[Aytar et al, NIPS16]

- Leverages unlabelled video and SOA visual recognition networks for learning audio features
- principal idea : sound/video synchronization ; train audio model using visual supervision
- match posterior probabilities of classes



## AI at scala @Twitter : Ranking The Timelines

- |  |          |
|--|----------|
| · Billions of positive user engagements per day        | TRAINING |
| · 6M tweets to score per second (at peak)              | SERVING  |
| · 1 second —> total time budget to serve the timelines | LATENCY  |



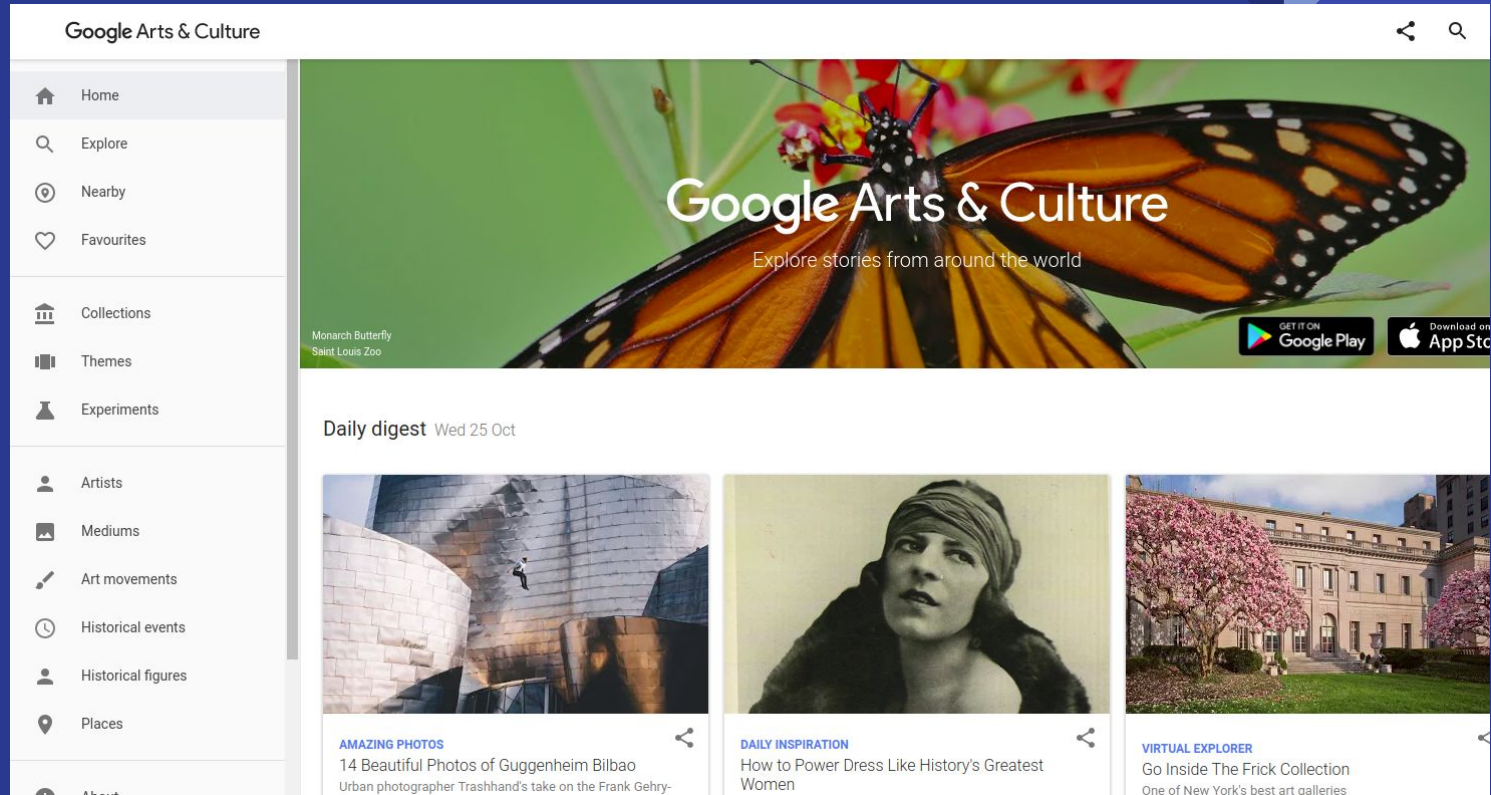
## AI at scala @Twitter : Ranking The Timelines

### The Impact of Recommendation System

- User happiness: +4.5M DAU, +500M UAM
- Engagements: +140M Fav, +35M RT, +9M replies
- Creation: +18M Tweets composed
- Ads spend: +10%

# Business and Applications

## GOOGLE RESEARCH in PARIS



CREDIT : Damien Henry

# Business and Applications

## Google Arts & Culture Lab



CREDIT : Damien Henry

# Business and Applications

GOOGLE RESEARCH in PARIS

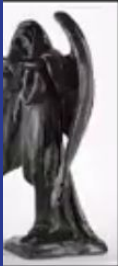


**400 000 paintings and drawings**  
**6 000 000 pictures**

# Business and Applications

## Google Arts & Culture Lab

What visual similarities can a computer vision algorithm find to connect a sculpture with a drawing?



Chester French,  
Museums of American Art



Frederic Remington,  
1903  
The Mountain Man  
Amos Carter Museum of American Art



Unknown  
Women's Bonnet  
Los Angeles County Museum of Art



Hanna Kośmicka  
"Wolf" Wool hand puppet  
The National Museum in Warsaw



Nicholas Arnantes  
Cream Pitcher  
National Gallery of Art, Washington DC



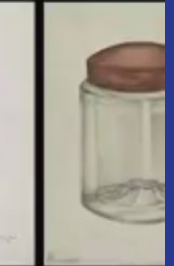
Annie B. Johnston  
Stoneware Jar  
National Gallery of Art, Washington DC



Annie B. Johnston  
Stoneware Jar  
National Gallery of Art, Washington DC



Jerome Hoxie  
Chum  
National Gallery of Art, Washington DC

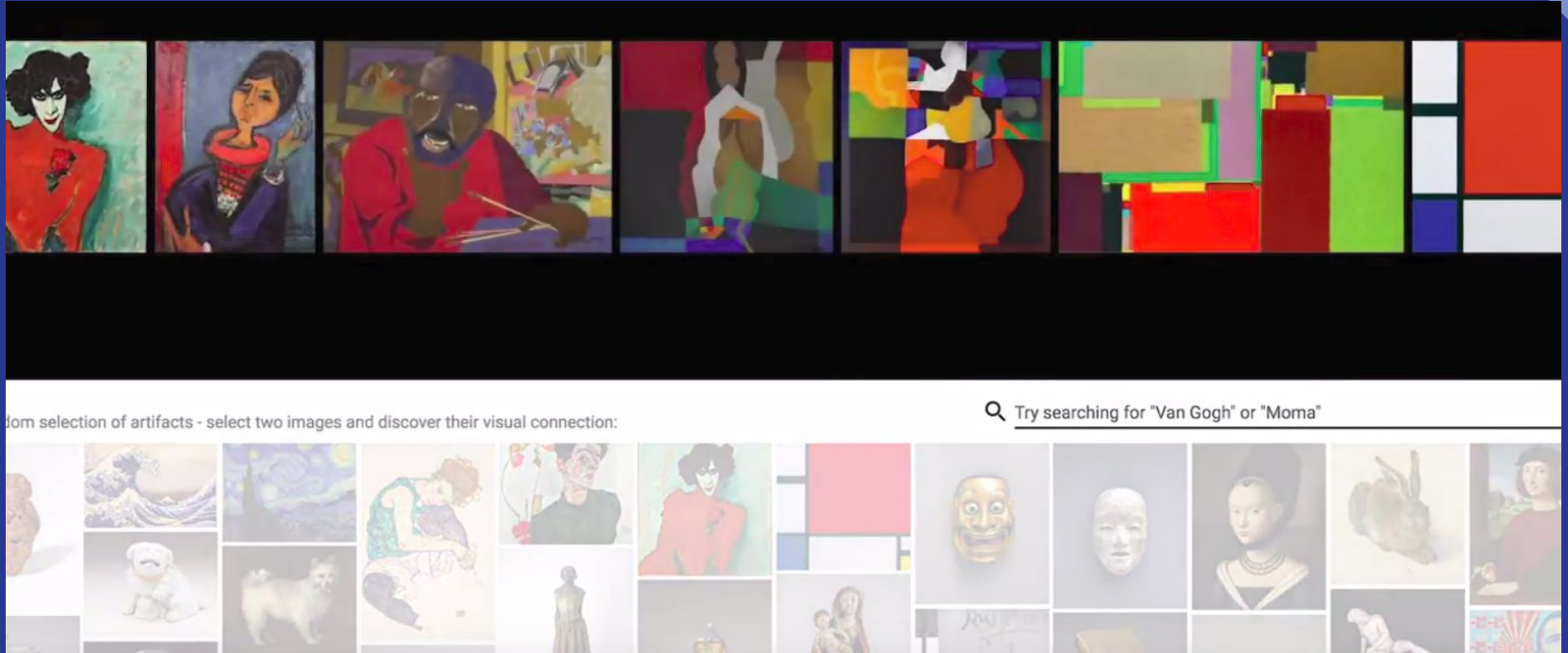


Charles Goodwin  
Shaker Sugar Jar  
National Gallery of Art, Washington DC

CREDIT : Damien Henry

# Business and Applications

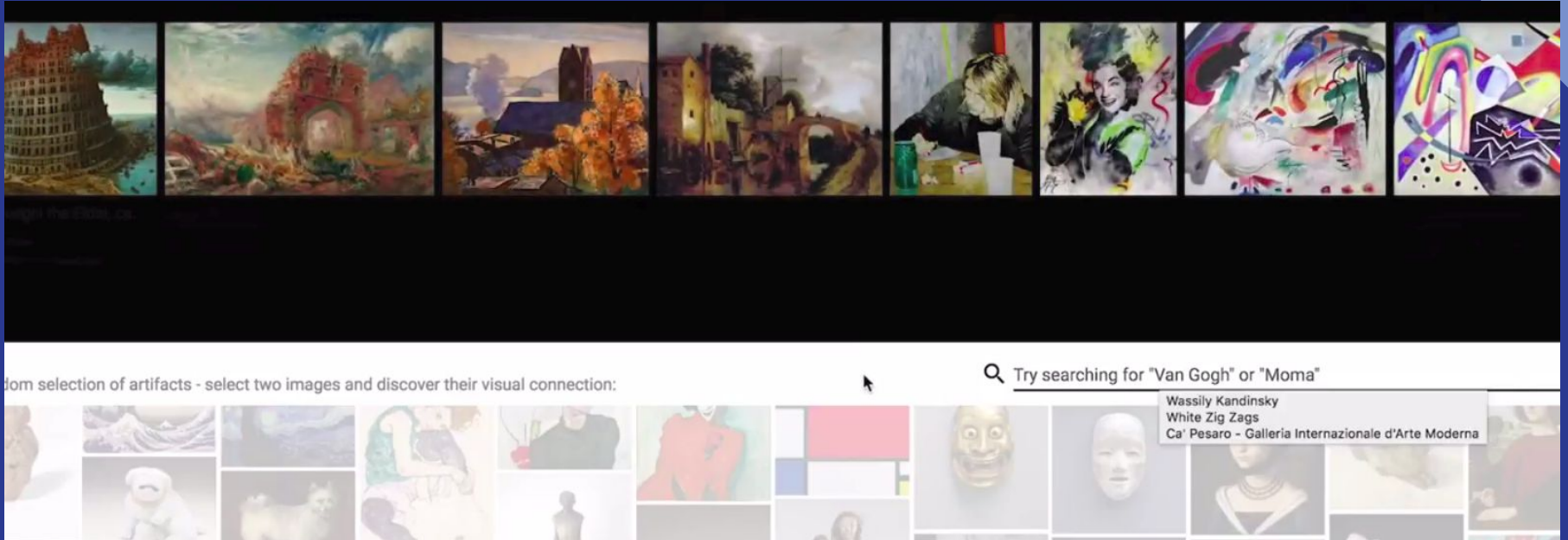
## Google Arts & Culture Lab



CREDIT : Damien Henry



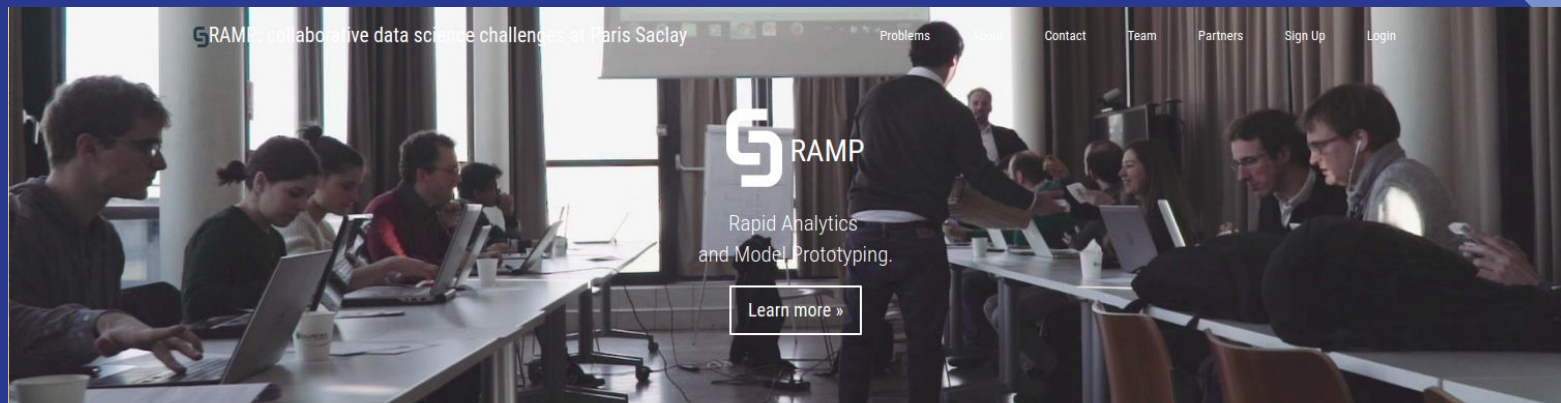
# Google Arts & Culture Lab



CREDIT : Damien Henry

# Business and Applications

## French Kaggle!



Click here for the [list of running RAMPs](#)

Click here for [data science themes](#)

Click here for [data domains](#)

Click here if you would like to [use the platform for teaching](#)





Social side

# Community

Social side

## Mission Cedric Villani



## Mission Cedric Villani

1. Directive approach?
2. GDPR
3. Crucial role of education
4. Are there enough specialists in France?
5. What is the goal of Cedric Villani's mission?



Social side

## **Mission Cedric Villani**

1. Make France a big AI player
2. Don't reserve it to profit of few



What is the goal of Cedric Villani's mission?

## **Meetup cooperation**

1. Soutien de l'association France is AI
2. Slack Intelligence Artificielle Francaise
3. Échange d'expériences et de speakers
4. Meta Meetup dans le sud de la France ?
5. Avez-vous des suggestions ?

# Ressources

## 1. Deep Embedding Forest: Forest-based Serving with Deep Embedding Features

Jie Zhu, Ying Shan, JC Mao, Dong Yu, Holakou Rahmanian, Yi Zhang

<https://arxiv.org/abs/1703.05291>

## 2. Generative Adversarial Networks

Ian J. Goodfellow, Jean Pouget-Abadie, Mehdi Mirza, Bing Xu, David Warde-Farley, Sherjil Ozair

<https://arxiv.org/abs/1406.2661>

## 3. MUTAN: Multimodal Tucker Fusion for Visual Question Answering

Hedi Ben-younes, Rémi Cadene, Matthieu Cord, Nicolas Thome

<https://arxiv.org/abs/1705.06676>

## 4. SoundNet: Learning Sound Representations from Unlabeled Video

Yousuf Aytar, Carl Vondrick, Antonio Torralba

<http://papers.nips.cc/paper/6146-soundnet-learning-sound-representations-from-unlabeled-video>

## 5. FRANCE IS AI PLAY LIST [https://www.youtube.com/channel/UCsG0yqQg3\\_r8VikxC8He3lQ/videos](https://www.youtube.com/channel/UCsG0yqQg3_r8VikxC8He3lQ/videos)