



adaptTo()

EUROPE'S LEADING AEM DEVELOPER CONFERENCE

28th – 30th SEPTEMBER 2020

AEM.AI & AEM Content Science Platform

Odysée T., Adobe France

About me (1/2)

- @Adobe France
 - AEM Consultant – 3 years
 - Multi-solutions Architect – 4 years

About Me (2/2)

- Machine Learning Addict
 - Pytorch/TensorFlow/Horovod developer
 - Low Cost Distributed Computing



Distributed Computing

VS



Low Cost Distributed Computing

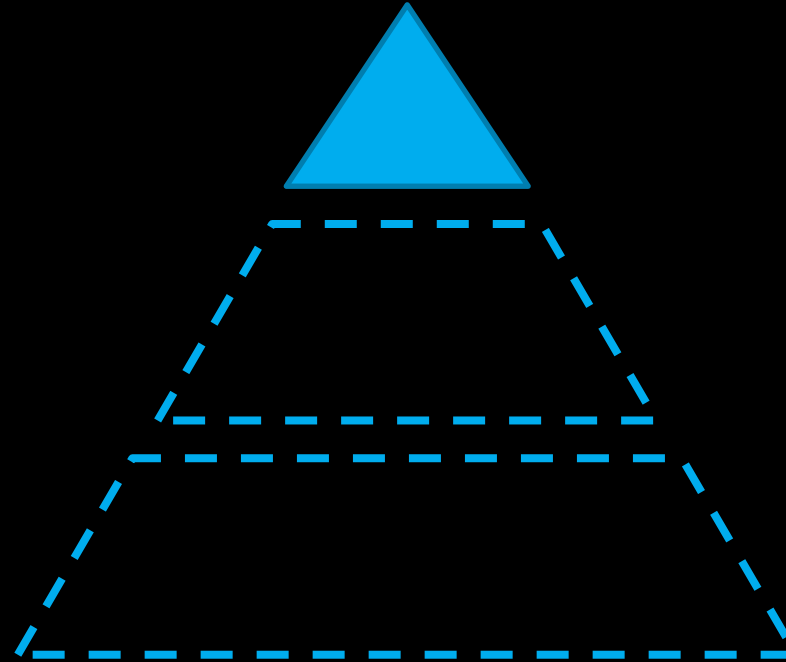


Plug AI into AEM

AI Capabilities in AEM

AEM's current state

Adobe Sensei

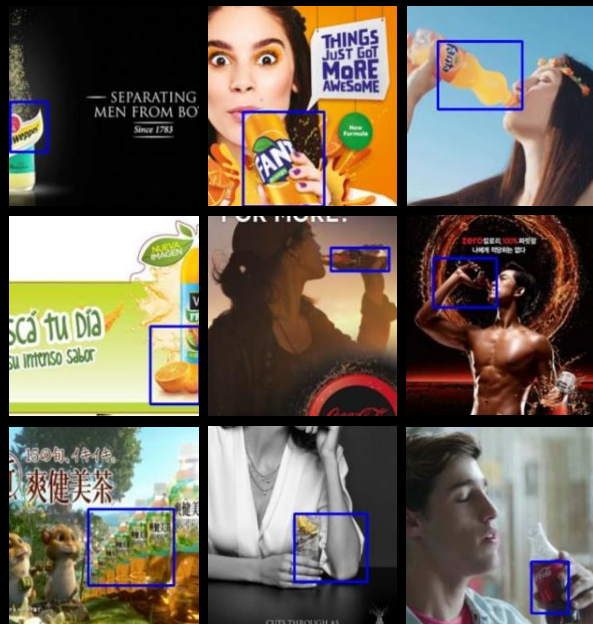


AI Capabilities in AEM

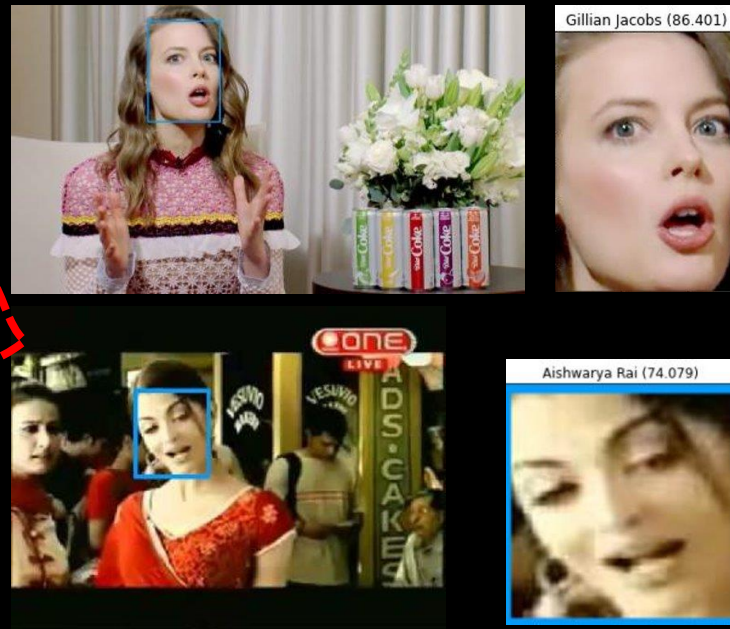
- Smart Image and video tagging
- Smart Crop
- Smart Translation
- Smart Form Conversion
- ...
- Thanks to **Adobe Sensei!**

AEM Content & Commerce AI

Logo Classification



Facial Recognition



BETA

But what about...

- Chatbot,
- Text Analysis,
- Video Transcription,
- Natural Language Capabilities on Search
- ...
- AI Capabilities are **much larger!**

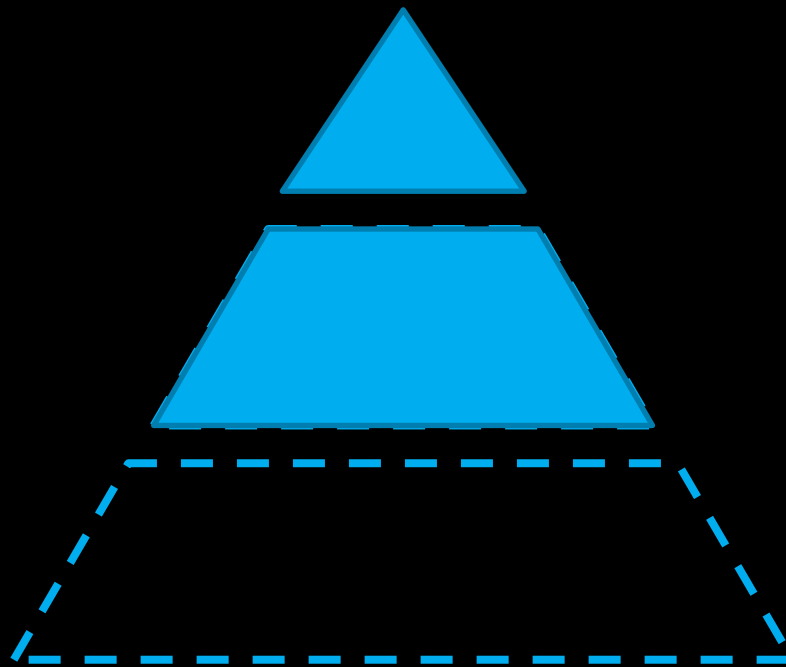
AI Capabilities in AEM

AEM Current State

Adobe Sensei

AEM.AI

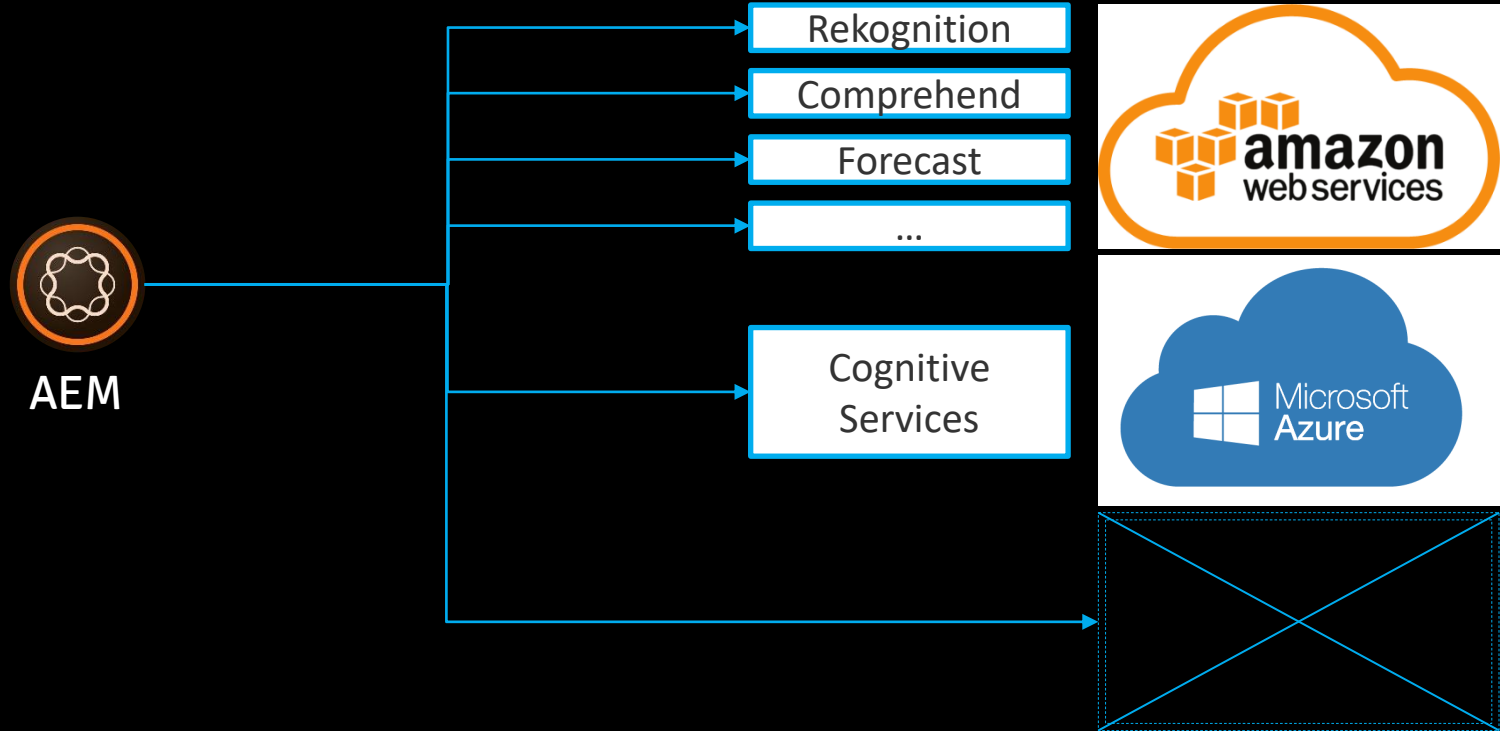
AWS, Azure, Partner's AI
platform, ...



AEM.AI

- Open source project
- Integration with 3rd party AI service providers
 - **AWS Java SDK v1 & v2**
 - **Azure**
 - ...

AEM.AI – Integration with 3rd parties



Share Link Download Checkout Properties Edit (e) Annotate ... Close

Renditions 1175609064 1 of 6 assets

original
98.6 KB 1024x683 jpg

RENDITIONS

Bounding Boxes
71.3 KB 1024x683

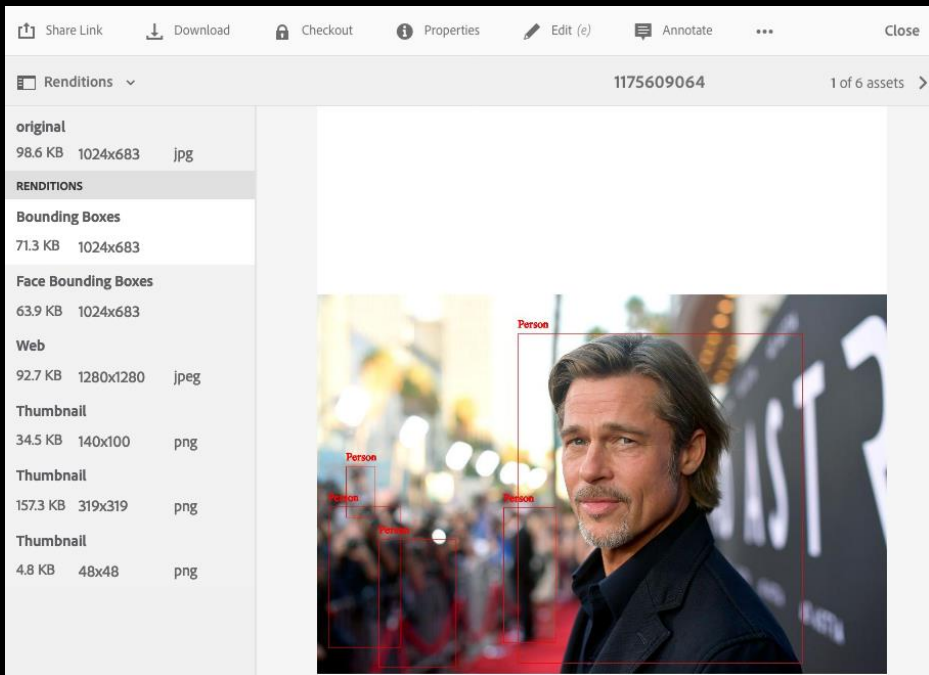
Face Bounding Boxes
63.9 KB 1024x683

Web
92.7 KB 1280x1280 jpeg

Thumbnail
34.5 KB 140x100 png

Thumbnail
157.3 KB 319x319 png

Thumbnail
4.8 KB 48x48 png



Share Link Download Checkout To Collection Move (m) Quick Publish Manage Publication ... Cancel Save & Close

1175609064

Basic Advanced IPTC IPTC Extension Camera Data Other Product Data [AWS Rekognition](#) Insights

Label and Tags

Detected Labels

- Person(99.13763)
- Human(99.13763)
- Fashion(99.0838)
- Premiere(99.083)
- Red Carpet Prem
- Red Carpet(97.18)

Faces and Celebrities

Recognized Celebrities

- Brad Pitt(100.0)

Age range
36 - 52

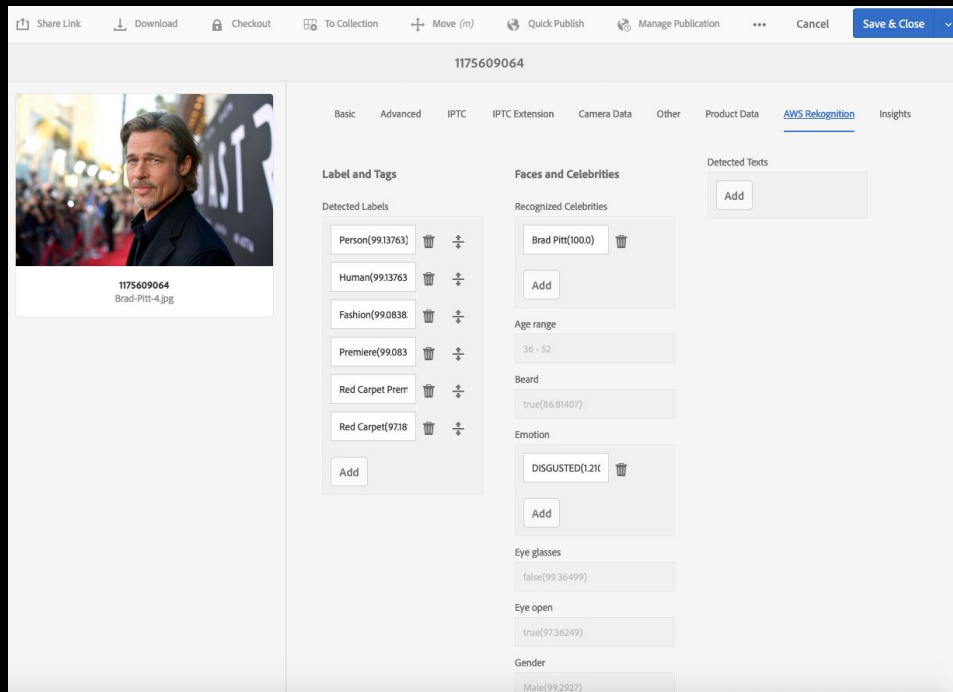
Beard
true(86.81407)

Emotion
DISGUSTED(121)

Eye glasses
false(99.36499)

Eye open
true(97.36248)

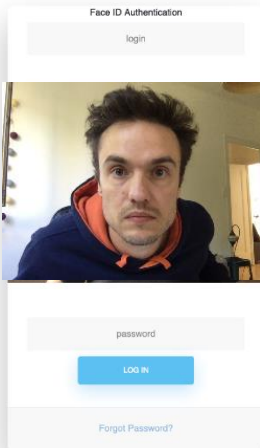
Gender
Male(99.2322)



Welcome to My Site!


This is the main welcome page of your web site. A few notes about this site:

- It is built entirely with the Core Components - see the [Component Library](#) to view the components in all their shapes and forms.
- Only the Hello World component has been built custom to illustrate how further components can be built (which also shows how JavaScript is best initialized for components, so that it also works well with the Page Editor).
- The page header and footer are assembled as Experience Fragments, which [can also be localized if needed](#).
- The Style System is used to insert a semantic <header> and <footer> element to the corresponding Experience Fragment components, as well as a <main> element to the container of the page content. This allows to apply some CSS specifically to these sections of the page.



Face ID Authentication

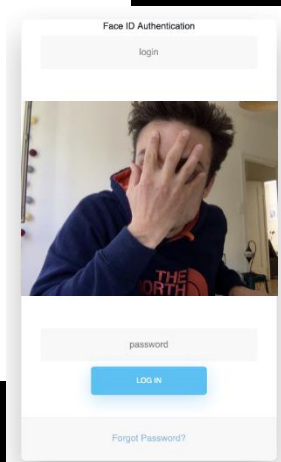
login



password


LOG IN

[Forgot Password?](#)



Face ID Authentication

login

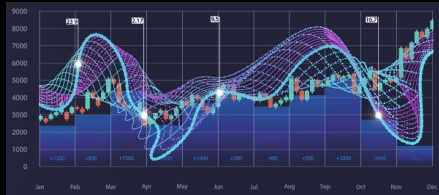


password

LOG IN

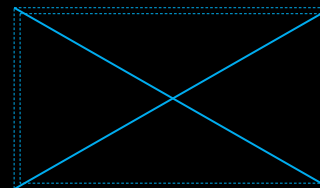
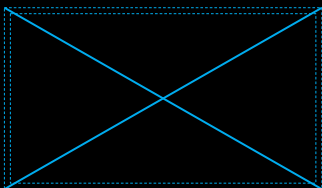
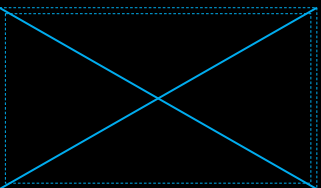
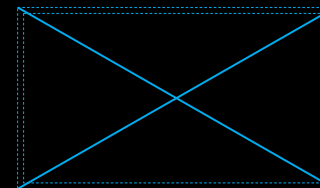
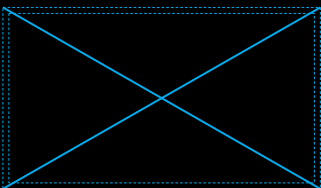
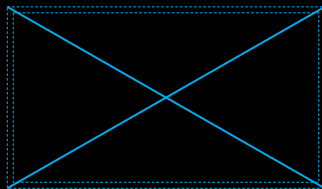
[Forgot Password?](#)

- Enable digital identity verification
 - Authentication
 - Identification
 - Payments



- Author write content by speaking
- Voice and chat bots
- Product Demand Planning

AEM.AI – Open Ecosystem



Also supported
in AEM Content
and Commerce
AI beta

- Semantic query, scored probability, synonyms, search suggestions



AI Capabilities in AEM

AEM Current State

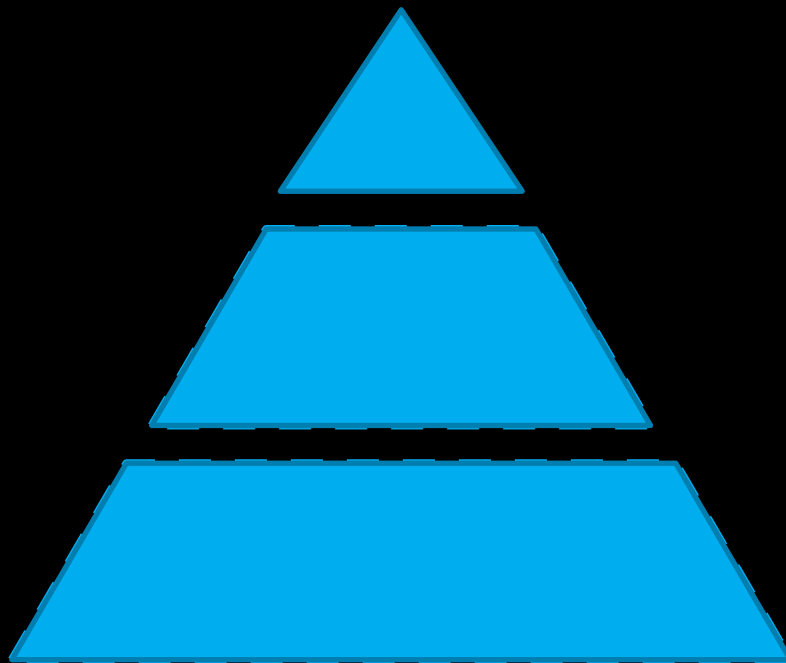
Adobe Sensei

AEM.AI

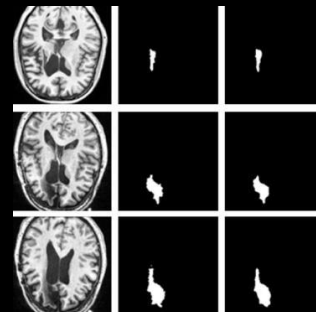
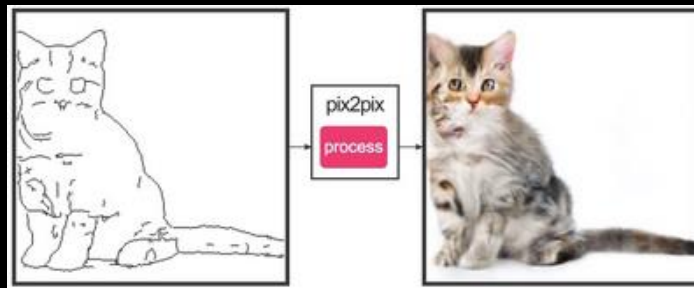
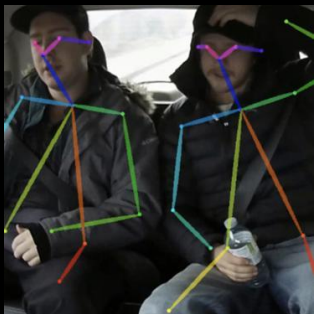
AWS, Azure, Partner's AI platform, ...

AEM_CSP

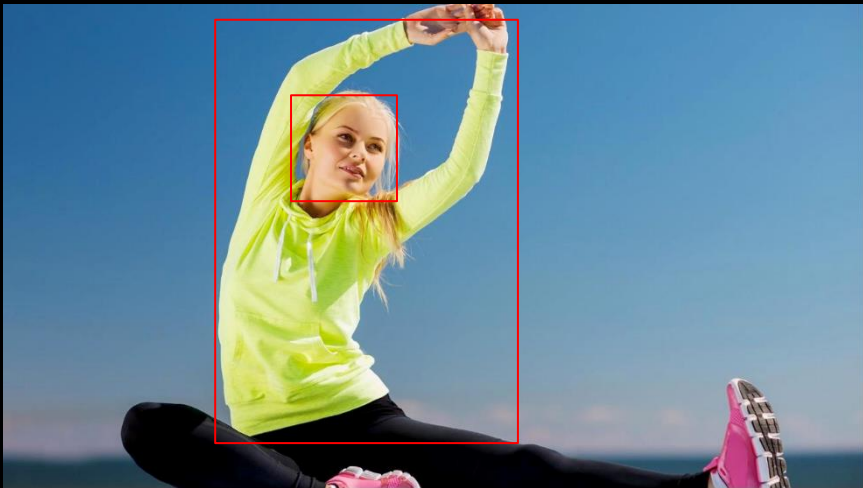
Data Science, State-of-the-Art AI Models, ...



Plenty of cool AI models out there!!!



AI Model: Image Captioning



Generic

“A woman stretching with her arms to the left and up”

Specific

“Lisa A. stretching with the We.Retail Soleil Tunic”

AEM_CSP

AEM_CSP – Typical AI Workflow

01

Define



02

Prepare
Content



03

Create AI
Model



04

Train the
AI Model



05

Inference



AEM

ML
Fwk



Data
Science
Server

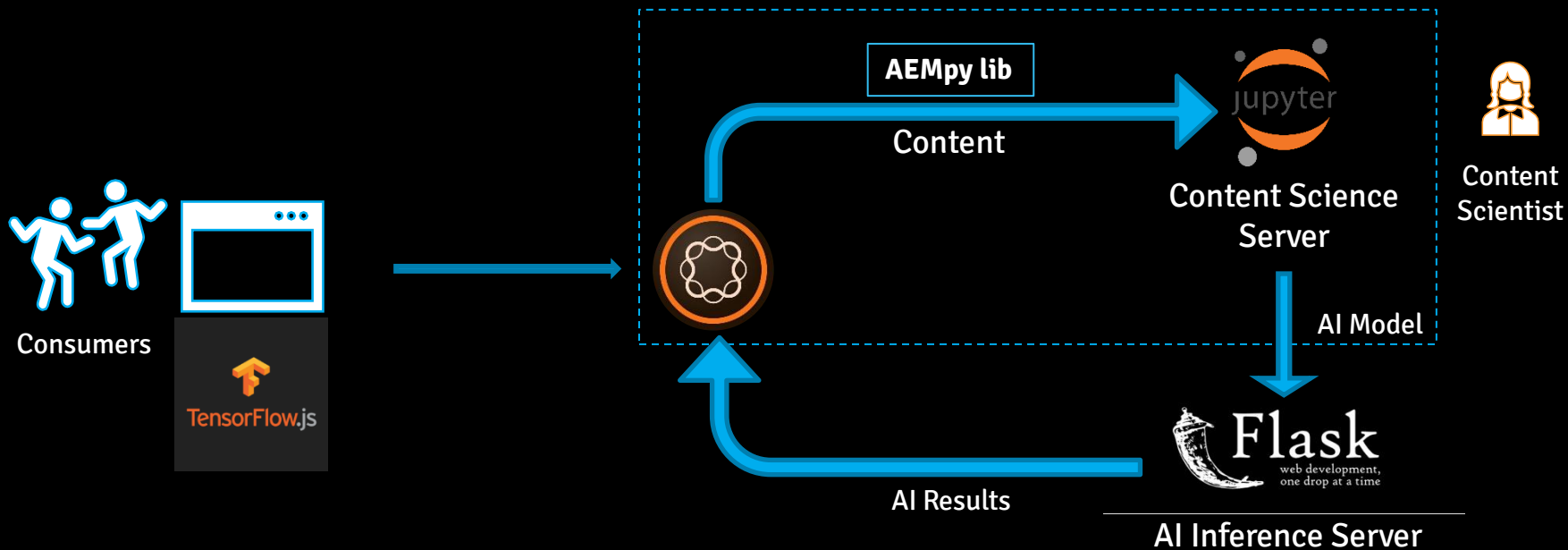


Python
Web
Server



mod_wsgi

Architecture



AEMpy: Python library for AEM (1/3)

> Python

```
import aempy

myaem = aempy.AEM()

# 1. or
myaem = aempy.AEM(user="admin", password="admin")

# 2. or
myaem = aempy.AEM(host="localhost", port="4502", user="admin", password="admin")
```


> Python

```
import aempy

assets = aempy.Asset()

# 1. Request an image
img = assets.get_image("/content/dam/myimage.jpg")

# 2. Display the image using high level API
assets.display(img)

# 3. Access properties
img['jcr:content']['metadata']['dam:size']
```

AEMpy: Python library for AEM (3/3)

> Python

```
import aempy
system = aempy.System()
```

```
# 1. Request error log
errorslog = system.get_errorlog(5)
```

```
# 2. Split and display using Pandas (lib)
dfLog = pd.DataFrame([sub.split(" ") for sub in errorslog])
```

	0	1	2	3	4	5	6	7	8
0	06.08.2020	23:27:08.220	*ERROR*	[sling-threadpool-4861cef9-78cf-4110-9809-3a9b...	com.day.cq.replication.Agent.publish	>>	Content-Length:	0	None
1	06.08.2020	23:27:08.220	*ERROR*	[sling-threadpool-4861cef9-78cf-4110-9809-3a9b...	com.day.cq.replication.Agent.publish	>>	Content-Type:	application/octet-stream	None
2	06.08.2020	23:27:08.220	*INFO*	[sling-threadpool-4861cef9-78cf-4110-9809-3a9b...	com.day.cq.replication.Agent.publish.queue	Job	for	agent	publish
3	06.08.2020	23:27:30.069	*INFO*	[sling-default-2-health-org.apache.sling.disco...	org.apache.sling.discovery.oak.SynchronizedClo...	execute:	no	topology	connectors
4		None	None	None	None	None	None	None	None

Content Science Server

File Edit View Insert Cell Kernel Navigate Widgets Help

File Edit View Insert Cell Kernel Navigate Widgets Help

File Edit View Insert Cell Kernel Navigate Widgets Help

```
In [1]: 1 %load_ext autoreload
2 %autoreload 2
3
4 from aempy import aem as cq
5 import pandas as pd
6 import seaborn as sns
7 import pandas as pd
8 import matplotlib.pyplot as plt
```

executed in 7.11s, finished 08:43:16 2020-08-21


1 AEM

```
In [2]: 1 aem = cq.AEM()
2 sess = aem.get_session()
3
4 executed in 30ms, finished 08:43:16 2020-08-21
```

```
In [4]: 1 # Assets
2 assets = cq.Assets()
3 img = assets.get_asset("/content/dam/we-retail/en/people/womens/women_6.jpg")
4 assets.display(img)
```

executed in 500ms, finished 08:44:55 2020-08-21

Request: http://localhost:4502/content/dam/we-retail/en/people/womens/women_6.jpg.infinity.json
Request: http://localhost:4502/content/dam/we-retail/en/people/womens/women_6.jpg




Demo: Image Captioning

What's Next?

- **pix2code-template: Mockup to Components**
- **Image generation: From text to image**
- Fork and contribute:
 - github.com/houseofai/aem.ai
 - github.com/houseofai/aem.csp
 - github.com/houseofai/aempy

Appendix

AI Model: Super resolution Image

Server-side



AEM Assets



4096 × 2160 – 2 MB



1280x1060– 500 KB

Network

Client-side



Browser

Super Resolution



1280x1060– 500 KB



4096 × 2160 – 2 MB