Visual Search and Recognition at ViSenze

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Agenda

• About ViSenze
• Deep learning behind ViSenze’s Solution
• ViSenze’s practices to accelerate the R&D efficiency using deep learning
About ViSenze
ViSenze is a global visual search provider, catering to the $1.67 trillion e-commerce and retail markets. Built for scale and performance, ViSenze processes over 100 million images every day and is used by some of the largest Internet companies like Rakuten, ASOS and UNIQLO.

ViSenze has been recognized amongst:

- Best AI Product in Retail by CognitionX London
- Top 5 deep learning companies by VentureBeat
- Top 20 artificial intelligence companies by DataMation
- Top 40 global Breakthrough Brands by InterBrand
Growth of visual content and how major players are driving this shift

Amazon Visual Search

Pinterest Lens

Samsung Bixby Vision

Google Lens

3,000,000,000 images uploaded online per day, 2015

250,000,000 visual Searches per month, on Pinterest – May 2017

360,000,000 Visual Searches per month, on Taobao - Aug 2017

Search Solutions and Use Cases

**Visual Search**
Enhance search and discovery

**Search by Image**
Enable shoppers to search using an image or screenshot

**Search by Color**
Color palettes allow users to broaden their experience to new product categories
Image Search is now a common feature on leading retailer apps

H&M, ASOS and UNIQLO Visual Search powered by ViSenze
Recommendation Solutions and Use Cases

Visual Recommendation and Discovery

- Improve discoverability and conversions
- You May Also Like
  Recommendations based on what shoppers are viewing
- Out of Stock Alternatives
  Suggest visually similar products when shopper is viewing an out of stock item
How It Works: Product recommendation
Tagging Solutions and Use Cases

**Automated Tagging**

Improve discoverability and conversions

- Color
- Pattern
- Fashion Attributes*
- Custom Attributes**

**Catalogue Management**

Tag entire image libraries based on visual attributes for better search results

**Image Filtering and Moderation**

Tag entire image libraries based on visual attributes

*Q3 2017 Availability
**Subject to requirements analysis
How It Works: Tagging (Demo Video)

https://www.youtube.com/watch?v=qblI5vZnVlw
Improving User Engagement Through Artificial Intelligence

A.I. powered visual search and recognition solutions improve engagement and conversions

- 30% higher conversions on image search over text-based search
- 50% higher CTR of shoppers who click on visually similar products
- 5x higher conversion rates for shoppers clicking on visually similar products
- 160% increase in engagement for shoppers who used find similar
ViSenze Enterprise Ready Solutions

- Scales during traffic spikes without compromising user experience
- Industry leading performance. Latency under 200ms
- Above 90% accuracy as per customer evaluations

Built-in failovers and professional services ensure high availability and support for troubleshooting
EGAMI makes the camera shoppable

Download our Showcase app below:
Deep learning behind ViSenze’s Cloud-based Visual Search and Recognition System
Visual Search 1-2-3

Query image

Features (AlexNet)

Similarity + kNN (Cosine similarity)

Image Database

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What have we used?

• FFLD (sliding windows)
• Deformable Part Models
• Fast-RCNN
• Faster-RCNN
• SSD
• DSOD
Visual Embedding

Similarity:
- Exact match (the exact same item)
- Different variations of the same product
- Same category
- Similar category
- ...

Needs to combine multiple embeddings
DL Problems ViSenze is working on

• CNN feature learning and indexing
• CNN Model compression
• Interpretation and visualization of CNN
• Robust fine-tuning and Incremental learning for various CV tasks
• Large-scale product category and attribute classification
• Automatic training/test data bias discovery
ViSenze’s Practices to Accelerate the R&D Efficiency using Deep Learning
- Pascal TitanX and 1080Ti, DGX-1 with 8 V100
- Move from single server management to centralized training management
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