



FAIR official Video & HBO Silicon Valley Series

Official FAIR video, 2018

 facebookresearch

[Repositories 38](#) [People 12](#)

Search repositories... Type: All ▾

StarSpace
Learning embeddings for classification, retrieval and ranking.
C++ ★ 1,344 120 Updated 33 seconds ago

ParlAI
A framework for training and evaluating AI models on a variety of openly available dialog datasets.
Python ★ 2,459 383 BSD-3-Clause 1 issue needs help Updated 2 hours ago

Top languages
Python Lua C
Matlab

Most used topics
artificial-intelligence python

A screenshot of a GitHub organization page for "facebookresearch". The page shows two main projects: "StarSpace" and "ParlAI". "StarSpace" is described as learning embeddings for classification, retrieval and ranking, and is implemented in C++. "ParlAI" is a framework for training and evaluating AI models on a variety of openly available dialog datasets, implemented in Python. The page includes sections for top languages (Python, Lua, C, Matlab) and most used topics (artificial-intelligence, python).

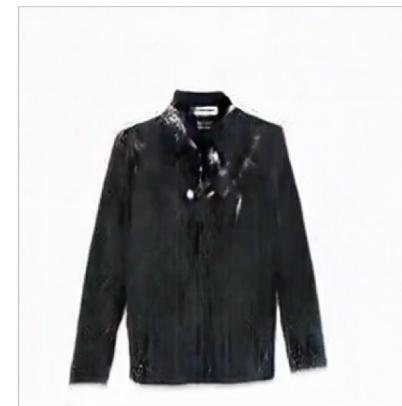
HBO Silicon Valley Coverage





Creative Fashion Networks

[JACKETS & SWEATERS]





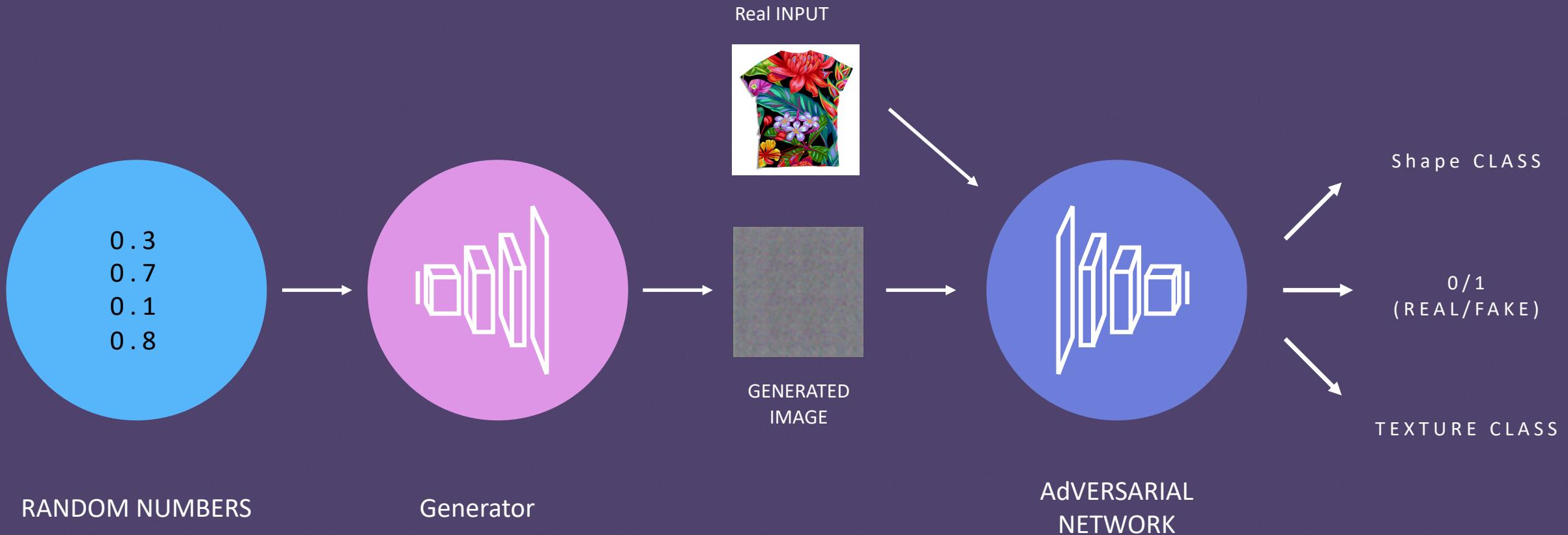
Creative Fashion Networks

AI Creativity Potential impact

- benefit people's experience
- Additional sources of inspiration for creating unexpected products that are related to the brand DNA.

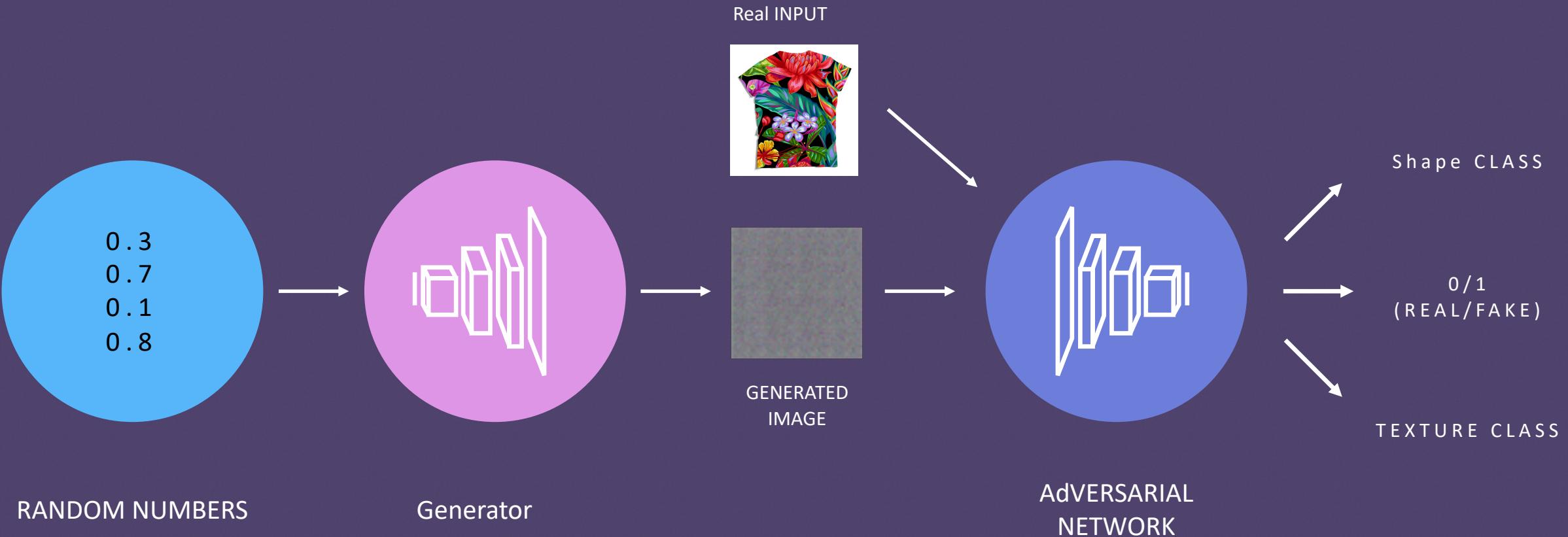


Creativity on Shape and Texture with Holistic Loss



[Slide credit, our F8 presentation with Camille Couprie]

Creative Fashion Networks

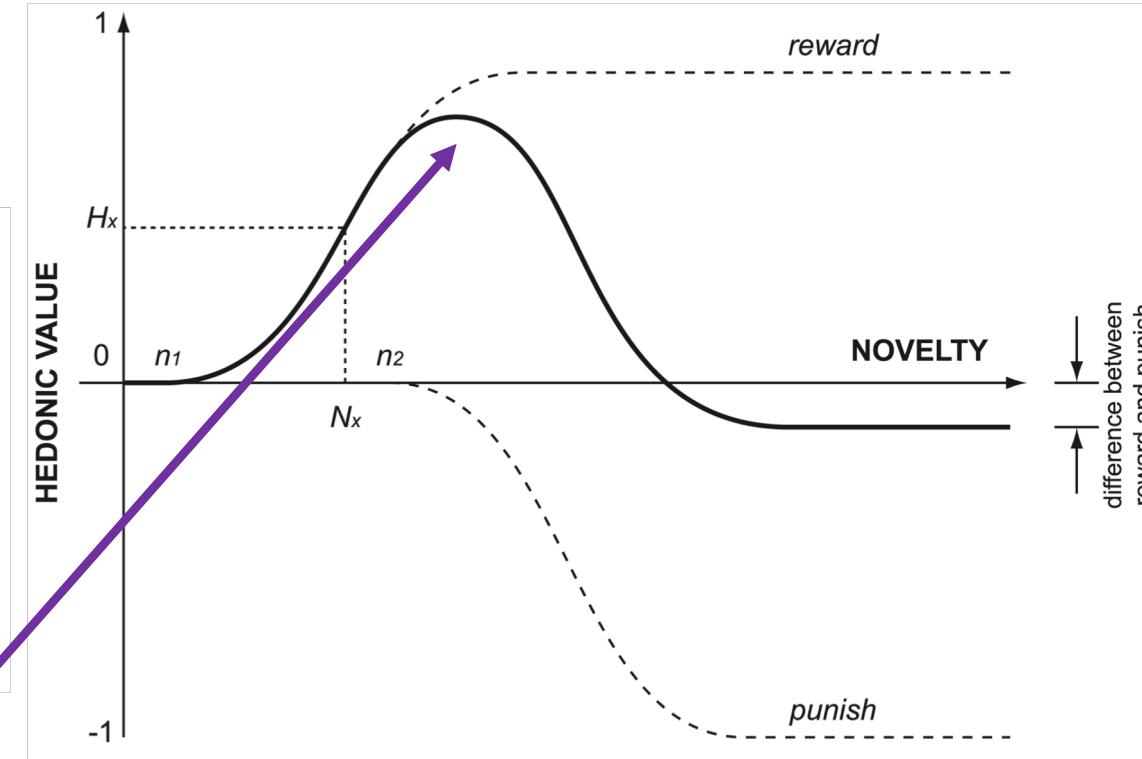




Creative Fashion Networks

- Holistic CAN, denoted CAN(H)

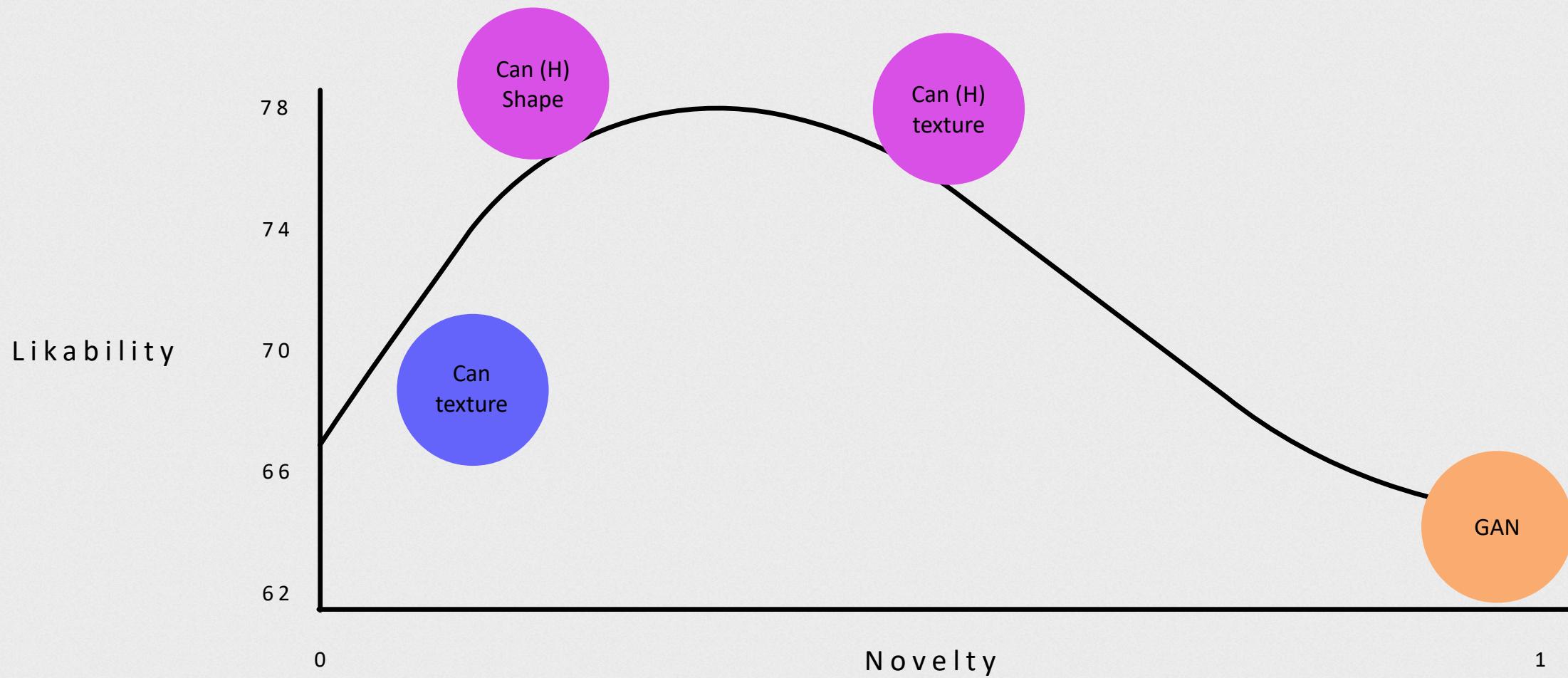
$$\begin{aligned} \min_G \max_D V(D, G) = \\ \mathbb{E}_{x, \hat{c} \sim p_{data}} [\log D_r(x) + \log D_c(c = \hat{c}|x)] + \\ \mathbb{E}_{z \sim p_z} [\log(1 - D_r(G(z))) - \sum_{k=1}^K (\frac{1}{K} \log(D_c(c_k|G(z)) + \\ (1 - \frac{1}{K}) \log(1 - D_c(c_k|G(z))))], \end{aligned}$$



$$\mathcal{L}_{MCE} = - \sum_i \frac{1}{K} \log \text{softmax}(D_c(x_i))$$

$$= - \sum_i \frac{1}{K} \log \left(\frac{e^{D_{c,\hat{c}_i}(x_i)}}{\sum_{k=1}^K e^{D_{c,k}(x_i)}} \right)$$

Creative Models are Most Popular



judged by humans and measured as a distance to similar training images



"interesting" Shapes

[Slide credit, our F8 presentation with Camille Couarie]



Creative Fashion Generation

- ECCV18 workshop best paper award
- Media attention
 - New scientist
- F8 conference presentation
 - High impact main Facebook conference

Hui Wu
@HuiWu_

Follow

Super excited to present best paper award to @Mohamed88817101 at Computer Vision for Fashion, Art and Design workshop at #ECCV2018

Thanks @IBMResearch for sponsoring the award 🏆

See you at the next workshop 🎉🎉
@negar_rz @wxswxs





Creativity/Ambiguity Loss loops back to help understanding the unseen

IMAGINE TO SEE

Parakeet Auklet is a small bird that has a short **orange** bill. The bird's plumage is **dark** above and **white** below.

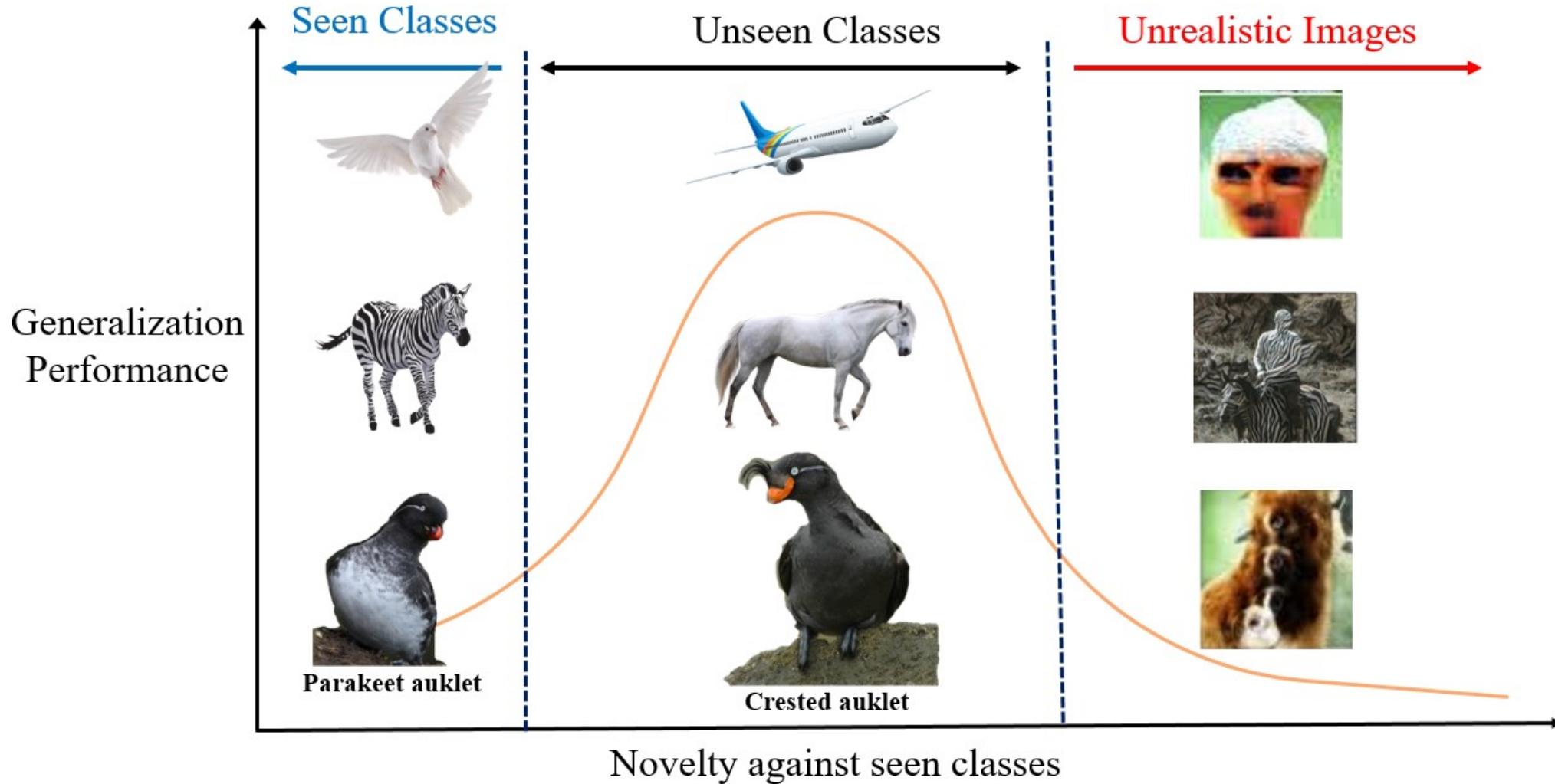


IMAGINE TO CREATE



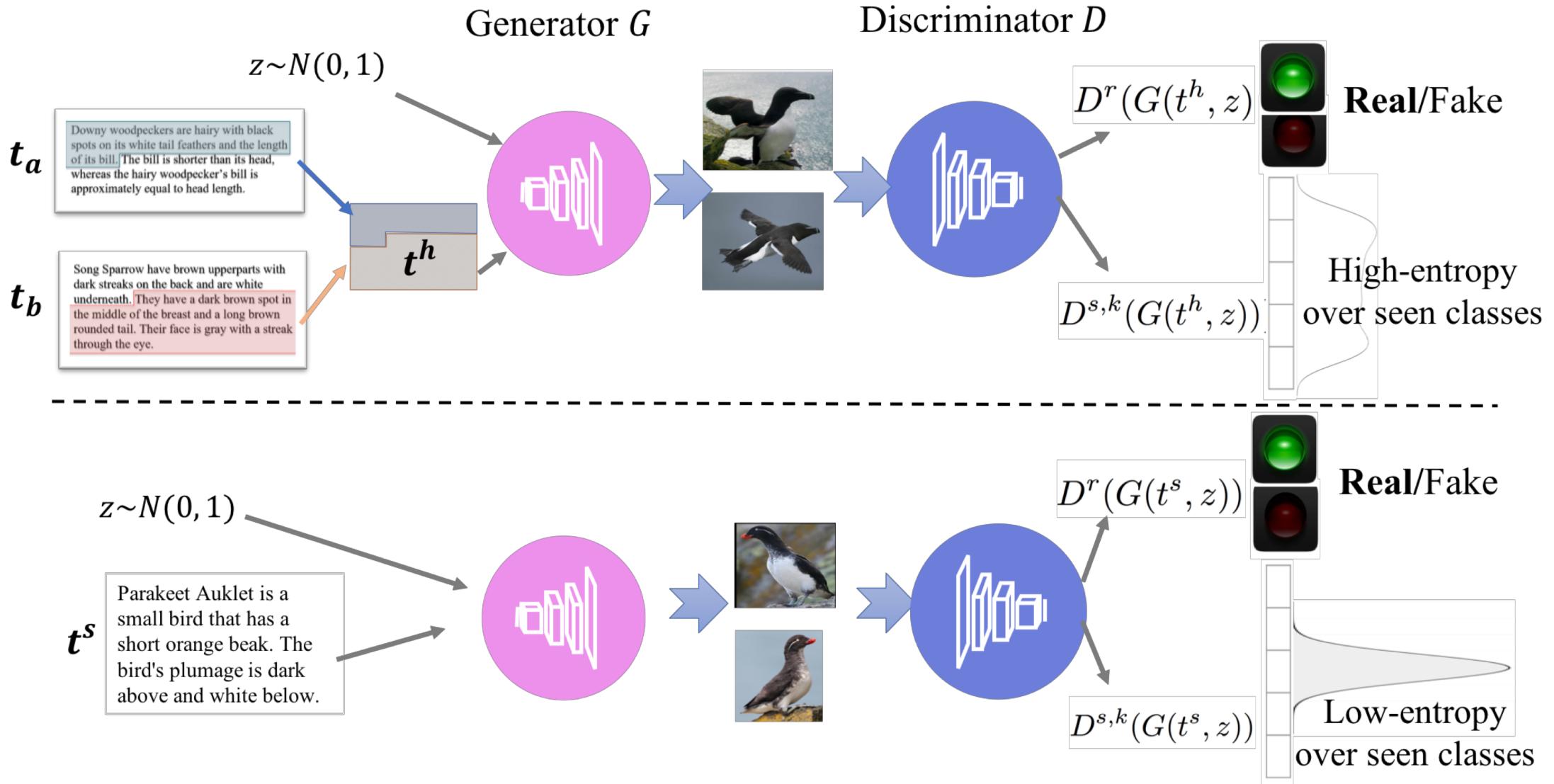


Creativity Inspired Zero-Shot Learning, ICCV19 S



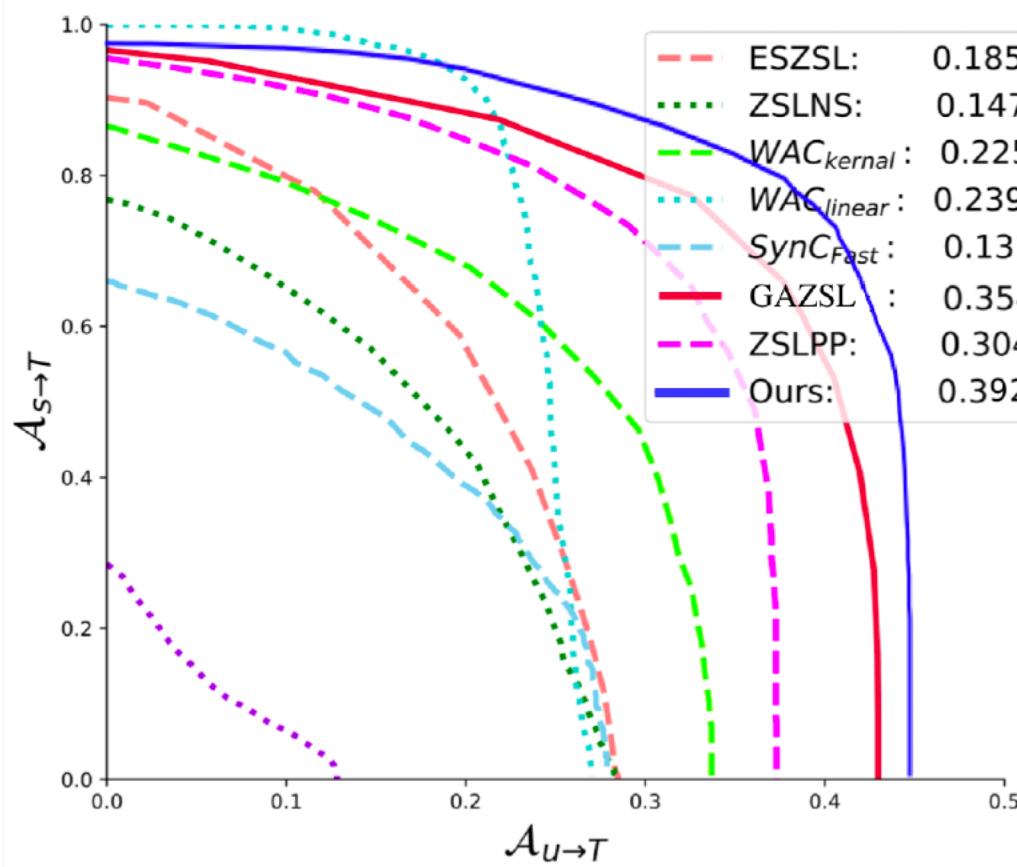


Creativity Inspired Zero-Shot Learning, ICCV19 S

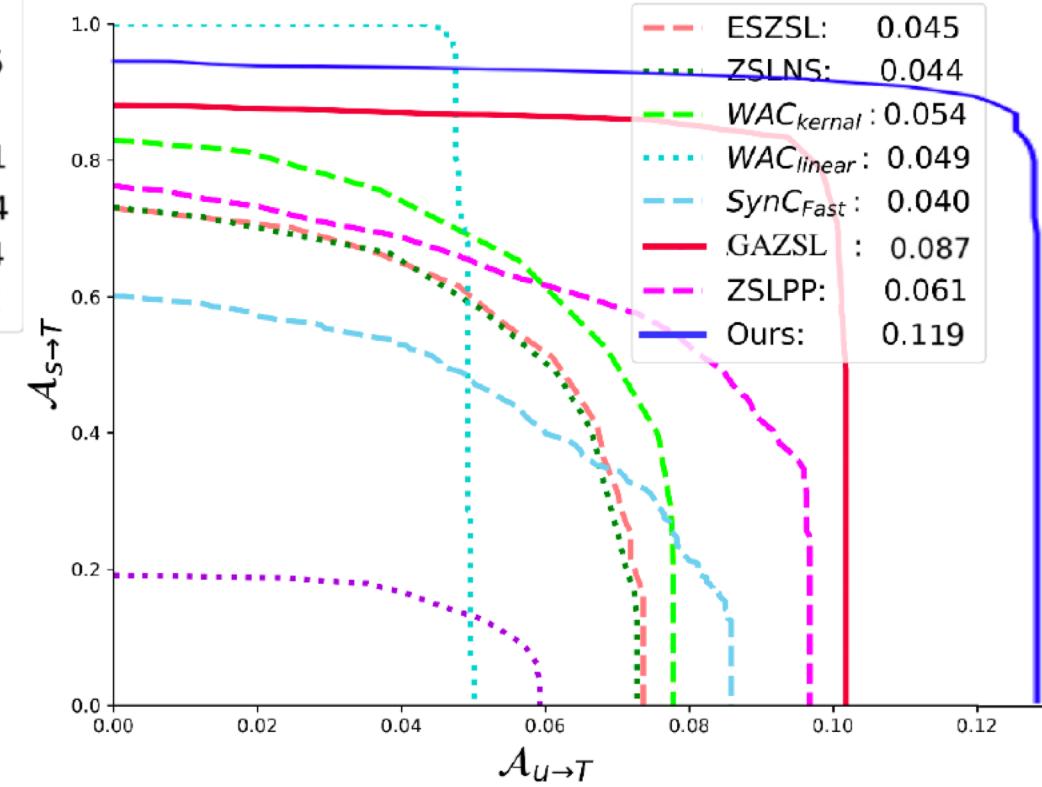




Generalized ZSL Results on CUB



(a) CUB with SCS splitting



(b) CUB with SCE splitting



More Results

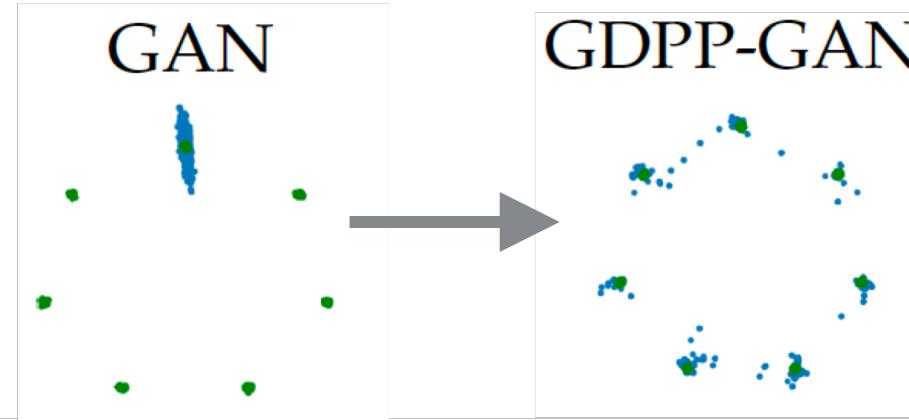
	CUB			NAB		
	25%	50%	100%	25%	50%	100%
ESZSL [39]	27.9	27.3	22.7	28.9	27.8	20.9
ZSLNS [35]	29.2	29.5	23.9	28.8	27.3	22.1
ZSLPP [13]	42.3	42.0	36.3	36.9	35.7	31.3
GAZSL [55]	49.7	48.3	40.3	41.6	37.8	31.0
CGAZSL	50.3	48.9	46.2	41.0	40.2	34.2

Table 3: Zero-Shot Retrieval using mean Average Precision(mAP) (%) on CUB and NAB with SCS splitting.



Helping the Imaginator:

Generative DPP (Elfeki, Couprie, Elhoseiny, ICML19)



Our loss only requires a generator G and a feature extraction function ϕ , which is:

- 1. Resisting mode collapse
- 2. Data Efficient
- 3. Time Efficient
- 4. Stabilizes adversarial training
- 5. Producing higher quality samples
- 6. Architecture invariant
- 7. Unsupervised: No labels
- 8. Cost free: No trainable parameters
- 9. Generic: The loss can be added to **ANY** generative model.

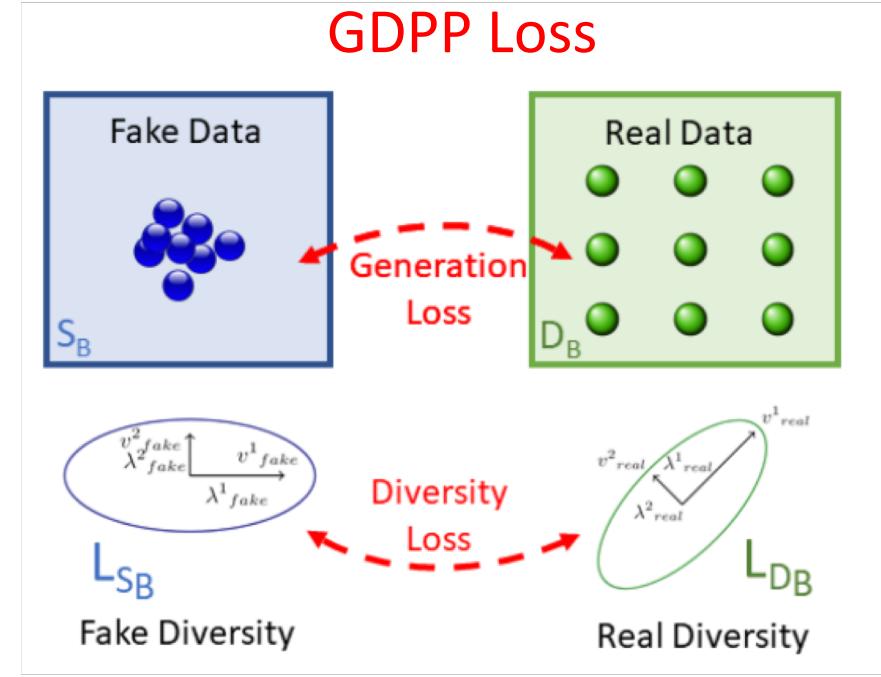
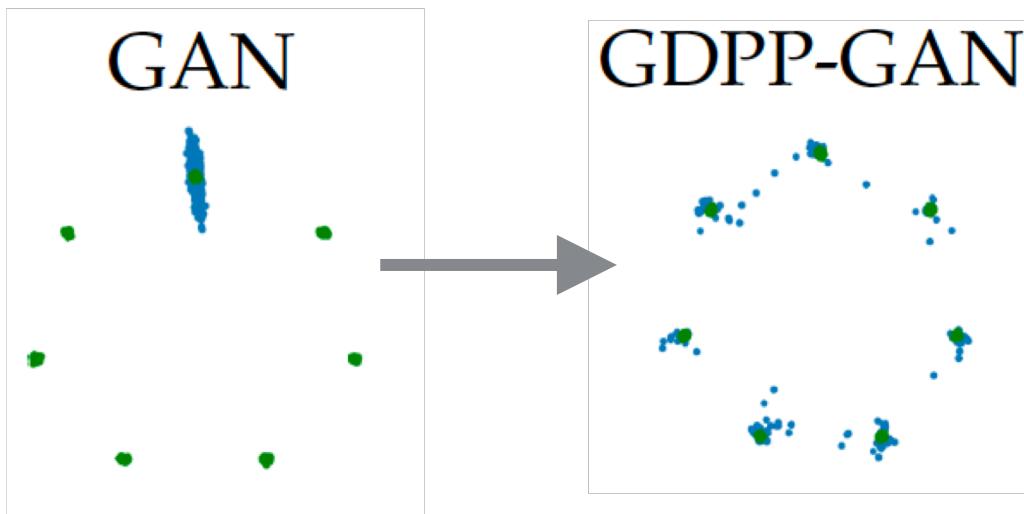


Helping the Imaginator:

Generative DPP (Elfeki, Couprie, Elhoseiny, ICML19)

Use DPP to model the diversity of fake and real data through a diversity kernel L_S : $P(S \subseteq Y) \propto \det(L_S)$; where S is the selected subset.

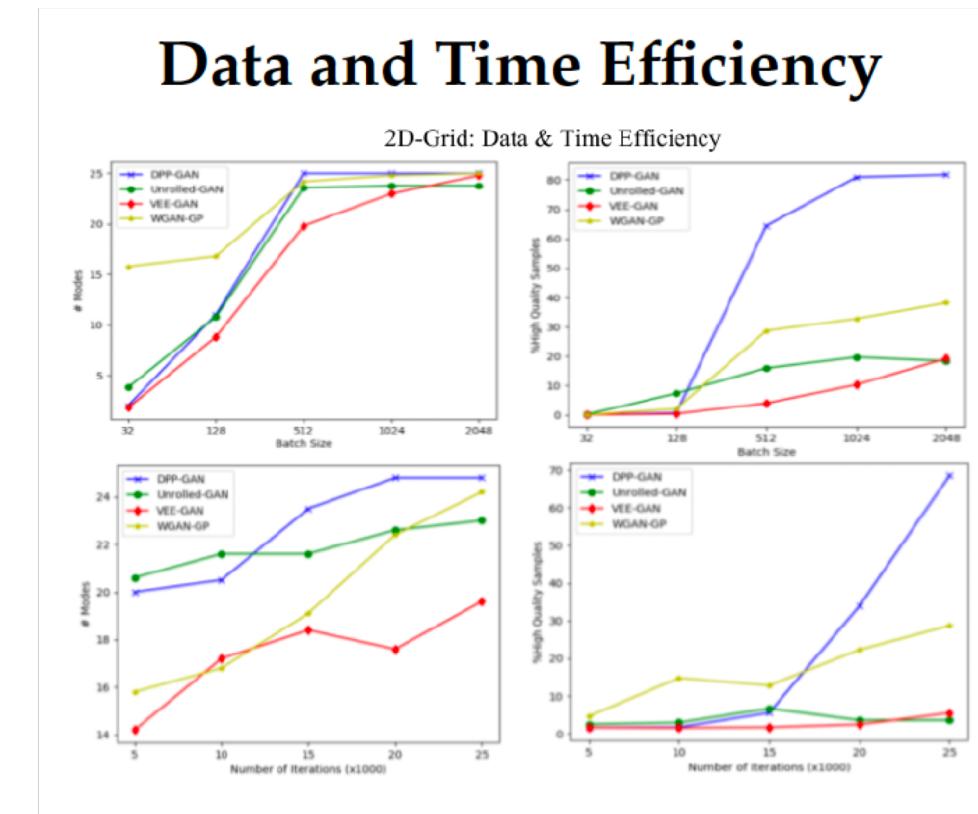
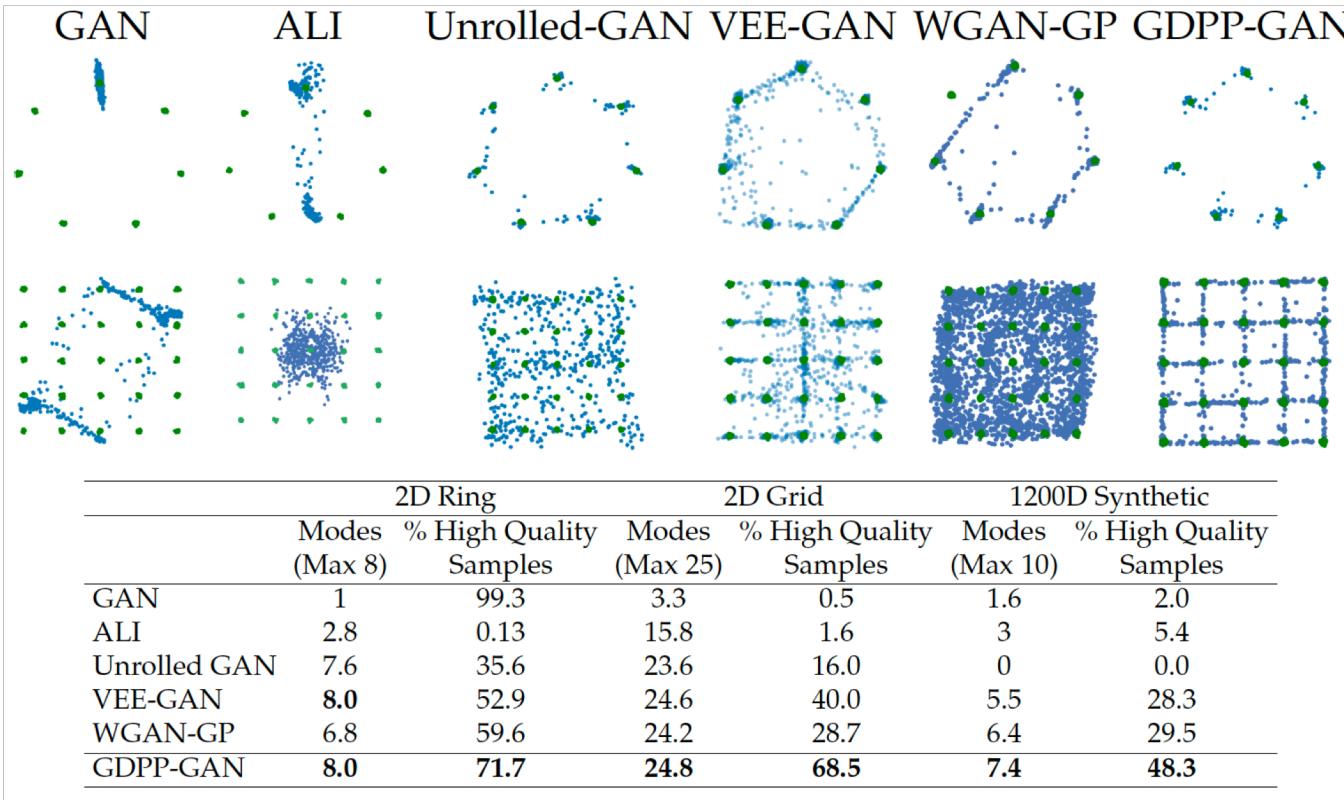
$$L_S = \phi(S)^T \phi(S)$$



$$\begin{aligned} \mathcal{L}^{DPP} &= \mathcal{L}_m + \mathcal{L}_s = \\ &\sum_i \|\lambda_{real}^i - \lambda_{fake}^i\|_2 - \sum_i \hat{\lambda}_{real}^i \cos(v_{real}^i, v_{fake}^i) \end{aligned}$$



Helping the Imaginator: Generative DPP (Elfeki, Couprie, Elhoseiny, ICML19)

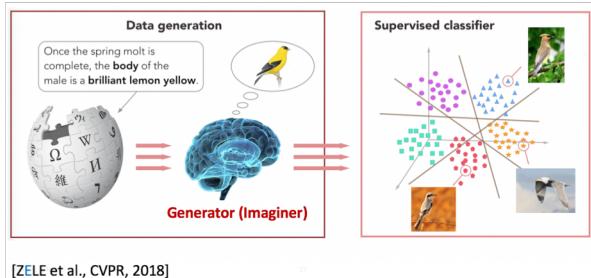


Recent Work Summary

Semantically Guided Visual Recognition

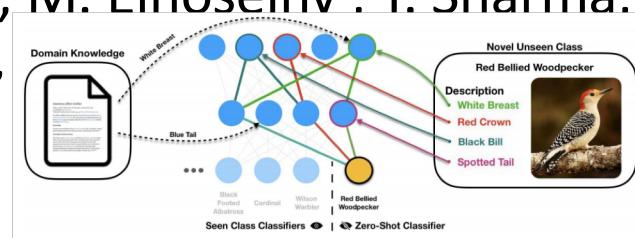
- Generative Zero-Shot Learning (ZSL).

Ethan Zhu, Elhoseiny, Li, Elgammal, CVPR, 2018



[ZELE et al., CVPR, 2018]

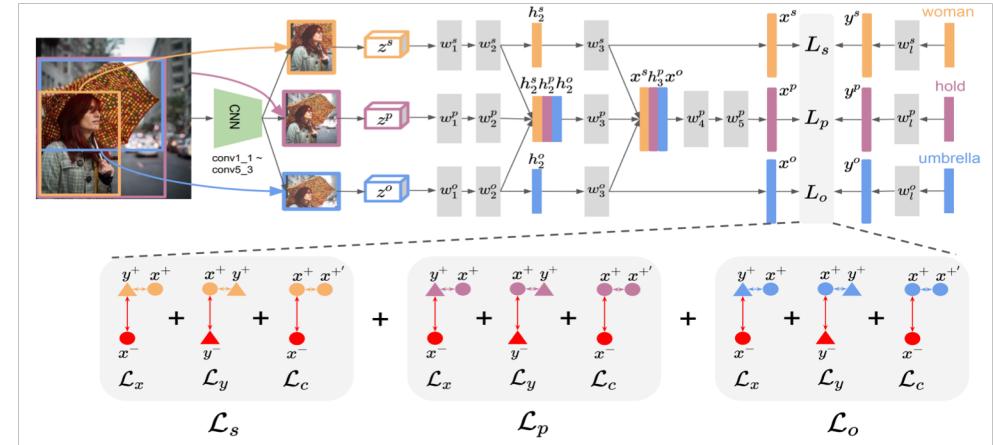
- Interpretable ZSL. [Selvaraju*, Chattpadhyay*, M. Elhoseiny, T. Sharma, D. Batra, D. Parikh ,



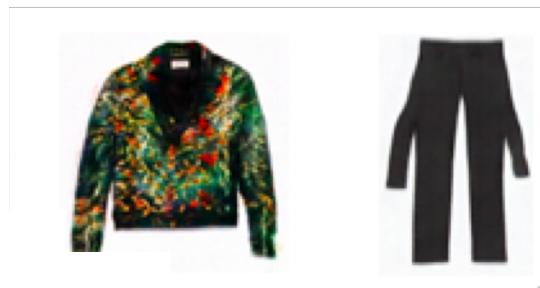
Creativity

- Creative Adversarial Nets, 2017
[Elgammal, Liu, Elhoseiny, Mazzone]
- Fashion Generation by Sbai, Elhoseiny, Bordes, LeCun, Couprie. 2018

- Large Scale Visual Relationship Understanding, [Zhang, Khaldis, Paluri, Rohbrach, Elhoseiny, AAAI, 2019, accepted]



Fashion



Art

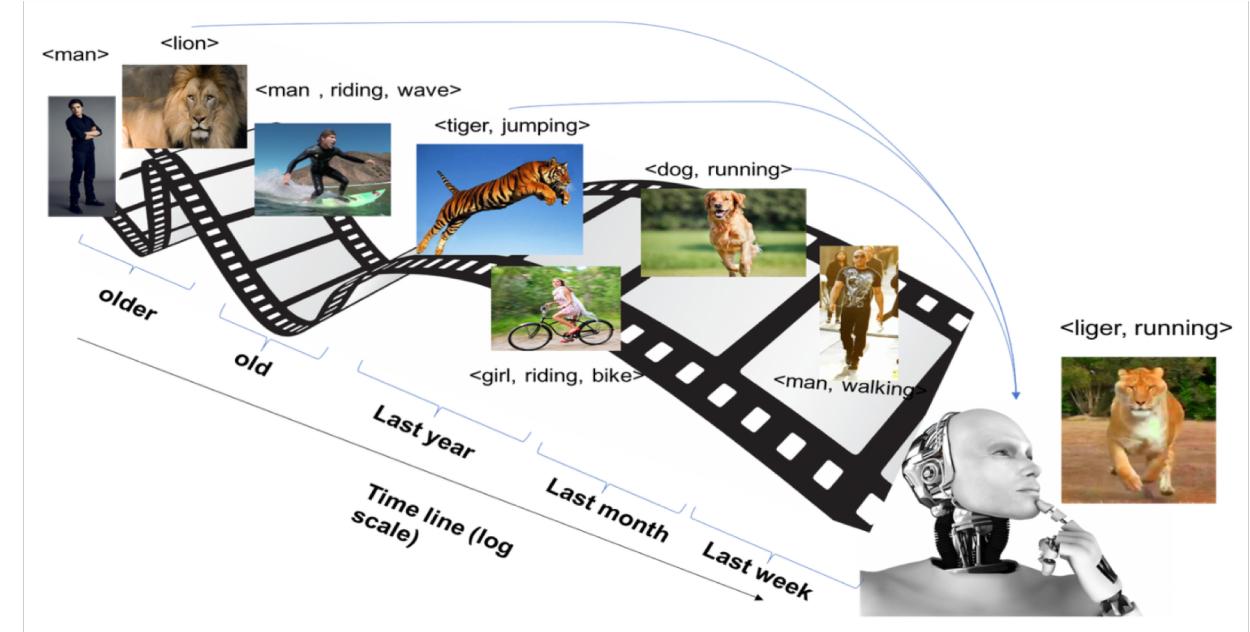




Research Mission

Efficient Learning for Visual Understanding and Generation

- Visual Understanding
 - Zero/few examples
 - Use language guidance.
 - Single epoch,
 - Continual Learning



- Visual Generation
 - Creativity in Fashion, Art
 - Creativity in 3D generation
 - Language Guided Creativity





Recognition

- 2018: **United Nations Biodiversity conference** (~10,000 audience from >192 countries and tens of important organization) on how AI may benefit biodiversity.
- 2018: **Best paper award** for his work on creative fashion generation at **ECCV workshop** from Tamara Berg of UNC chapel hill and sponsored by IBM Research and JD AI Research.
- 2018: The Creative Fashion generation work got also featured at the **New Scientist Magazine**
- 2018: presentation at the **Facebook F8** annual conference with Camille Couarie.
- 2017: creative art generation was featured by the **New Scientist magazine and MIT technology review, HBO Silicon Valley TV Series (season 5 episode 3) in 2018.**
- 2017-2018: Invitations to the **Best of AI meeting 2017 at Disney (6000+ audience), Facebook's booth** at NeurIPS 2017, and **the official FAIR video** in June 2018.
- 2018: His work on life-long learning was covered at the MIT technology review.
- 2016: **Doctoral Consortium award** at **CVPR 2016** and
- 2014: **NSF Fellowship** for his **Write-a-Classifier** project.

What is KAUST?



What is KAUST?

9,600

Publications

(as of August 2017)



Ranked #1 in (3 years in a row)

- Citations Per Faculty
- Percentage of International Students
- Percentage of international Faculty

nature.com

Ranked #2

- Fastest rising universities for high quality research





جامعة الملك عبد الله
للعلوم والتكنولوجيا
King Abdullah University of
Science and Technology

New Nature Index Ranks KAUST Among World Leaders

Normalized Rankings for output of
top-quality research place KAUST

1st
in Saudi
Arabia

18th
in the
World