


Biometrics in Surveillance Videos: Synthetic Faces



Brian Lovell

The University of Queensland

Roadmap of Talk

<p>Recent Work on Face Biometrics in the UK</p> <ul style="list-style-type: none">• Engineers like to build new things that are based on good ideas and address real problems.• It is more likely if these things are deployed in public and testbeds.	<p>How did we get here?</p>	<p>Systems must work even better!</p> <p>The Face Detection Bottleneck</p>	<p>The Face Recognition Challenge</p>	<p>Ethical Issues in AI</p>
<p>Ethical Face Recognition</p>	<p>Performance Evaluation</p>	<p>Intro to Face and Image Synthesis</p>	<p>Unexpected Real World Face Recognition Challenges</p>	<p>Human Face Recognition: Prosopagnosia and Super-Recognizers for Policing</p>
<p>Mobile and AR Face Recognition Face Recognition Challenge</p>	<p>Conclusions</p> <ul style="list-style-type: none">• There are still many unsolved challenges for uncontrolled face recognition<ul style="list-style-type: none">• Mask Recognition• Controlled Face Spoofs• Ethical Face Datasets• GDPR and Privacy Challenges• Combinations with Other Modalities (Lidar, Mobile phone detection)	<p>Q&A Session</p> 		

Recent Work on Face Biometrics in the UK

- Engineers like to build new things that are based on good science and address real problems.

- It is even better if these things are deployed in pubs and bottleshops

Recognition to Deter Low Level Retail Crime

- Stop Crime
- Before it happens
- Why is this important to retailers?

Privacy Policy Like 16.6M Monday, Jan 25th 2021 10AM 27°C 1PM 28°C 5-Day Forecast


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Meat, nappies, razor blades and deodorant top the list of Britain's most shoplifted items, reveals the company behind a facial recognition camera system used to spot criminals

Meat, nappies, razor blades and deodorant are Britain's most shoplifted items. Facewatch operates in some Southern Co-op stores, Budgens, garden centres. System sends alert to staff when someone on watchlist walks through the door.

By SEAN POULTER CONSUMER AFFAIRS EDITOR FOR THE DAILY MAIL
PUBLISHED: 12:46 AEDT, 9 January 2021 | UPDATED: 13:00 AEDT, 9 January 2021

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Meat, nappies, razor blades and deodorant are Britain's most shoplifted items, a company behind a controversial facial recognition camera system to spot criminals has revealed.

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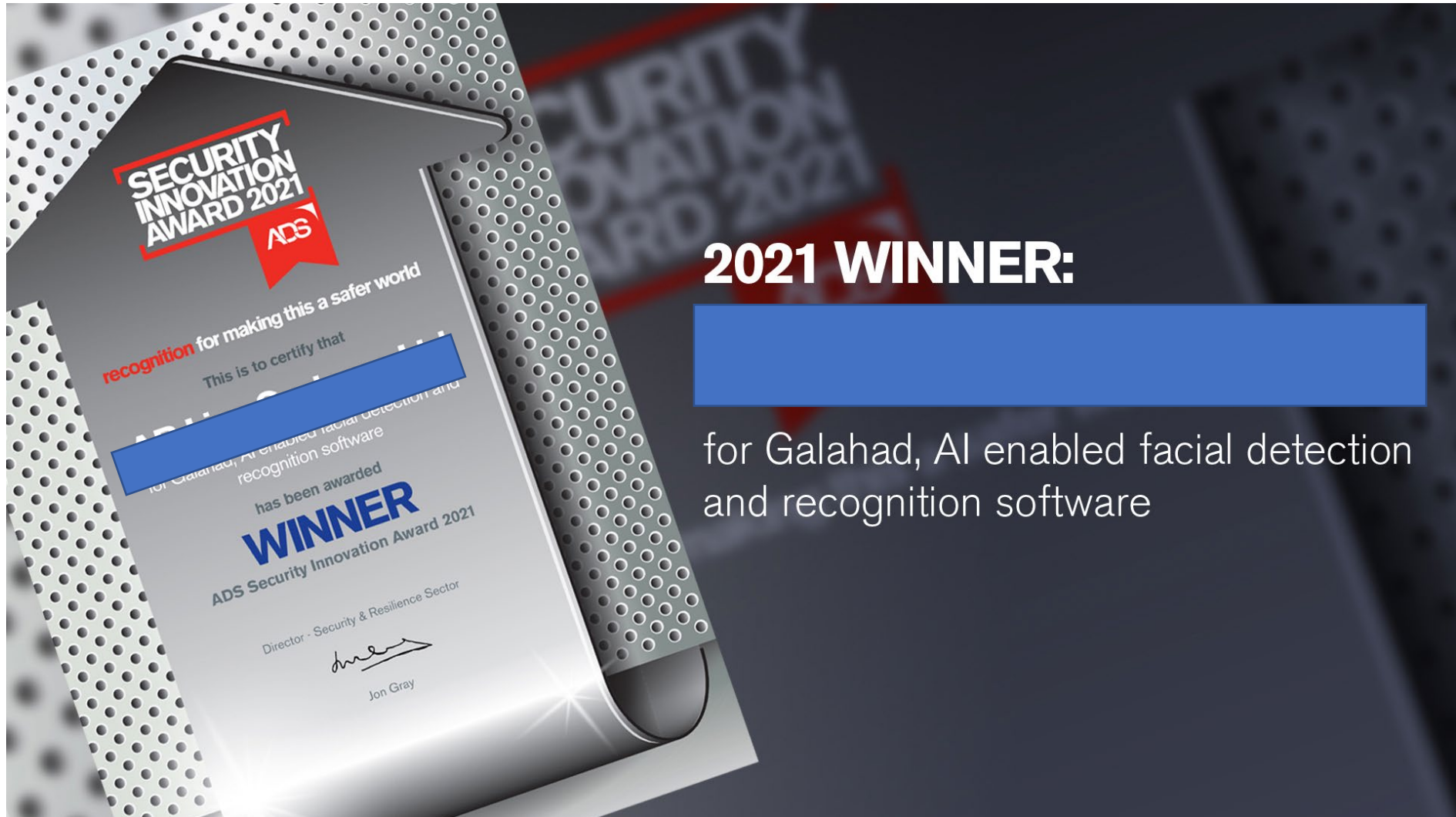
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Application
of our Face
Recognition
in the UK



2021 UK Home Office Award



2021 WINNER:

[Redacted Name]

for Galahad, AI enabled facial detection and recognition software

How did we get here?

2011: Person Identification at a Chokepoint (Using Bag of Words not Deep Learning)





Mr Dori Schmetterling, iOmniscient's Manager for European Operations receiving the award at IFSEC.

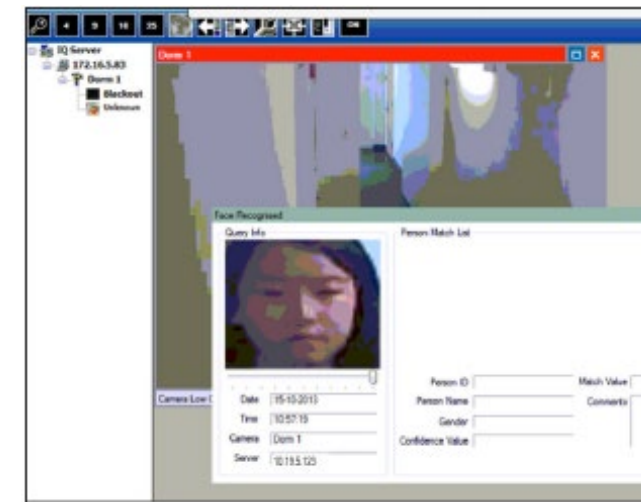
2011: IFSEC2011 Award

- IFSEC is the World's largest security show
- It is held in Birmingham each year
- 25,000 visitors
- 700 companies
- 700 guests at award dinners
- We won the Major Category of **CCTV System of the Year for Face Recognition in a crowd** via partner



2011 System Deployed at USF

The screenshot shows the homepage of **BIOMETRIC UPDATE.COM**. At the top left is a search bar. The main navigation menu includes: BIOMETRIC NEWS, RESEARCH, REPORTS, BLOG, WHITE PAPERS, EXPLAINERS, COMPANIES, SOLUTIONS, and EVENTS. Below the menu is a list of categories: Access Control, Behavioral, Biometric R&D, Biometric Research, Border Security, Civil ID, Commercial Applications, Consumer Devices, Editorials, Elections, Facial Recognition, Financial Services, Fingerprint Recognition, Government Purchasing, Healthcare Biometrics, Interviews, Iris / Eye, Law Enforcement, Military Applications, Mobile Biometrics, Schools, Surveillance, Trade Notes, Voice Biometrics, Wearables, and Workforce Management. The main content area features three columns: **BIOMETRIC NEWS** with a headline "MorphoTrust discusses patent trolls, biometrics"; **BIOMETRIC'S FEATURES** with a "BORDERPOL" logo and headline "BORDERPOL International Security Meeting: Q&A interview with Janice Kephart"; and **BIOMETRIC'S RESEARCH** with a headline "Special Report: Biometrics and Banking". To the right is a "DOWNLOAD OUR MONTHLY RESEARCH REPORTS" button with a "CLICK HERE" link. Below the news items are "Previous" and "Next" navigation buttons. A large article preview is titled "iOmniscient and CISCO provide facial recognition solution to University Of San Francisco". On the right side, there are social media icons for Facebook, Twitter, LinkedIn, and RSS, and a banner for "SRI International Simplify Security".



Systems must work even
better!

The Face Detection
Bottleneck

Detection Challenge: Faces in a Milling Crowd

- The problem with CCTV face recognition in many common situations is that people simply do not look at the camera, but we would still like to identify them.
- The chokepoint scenario addresses this issue because people tend to look straight ahead when walking in a crowd
- This assumption applies to aerobridges, borders, concierge situations, but not to cocktail parties, conferences, shopping centres, check in areas.
- We would like to have much better performance under common non-cooperative conditions where people do not look at the camera.

Milling Crowd Problem In a Nutshell

Due to huge video computational requirements, face recognition from surveillance video, up to 2016 we mainly used the Viola-Jones Cascade Face Detector on the Front End

If we wanted to recognize faces in video at extreme angles (up to 90 degrees), we must use CNN based detectors (e.g., MTCNN, RetinaFace) which were much slower in 2016 and cannot easily handle the huge camera resolutions (5Mp or more) and multiple streams

For architectural reasons, all video decoding and detection must take place in the GPU not the CPU! If we miss a detection or drop frames, face harvesting is greatly affected.

In 2022, we can now do face detection with CNNs at 500 fps on small edge devices using an Nvidia jetson nano.

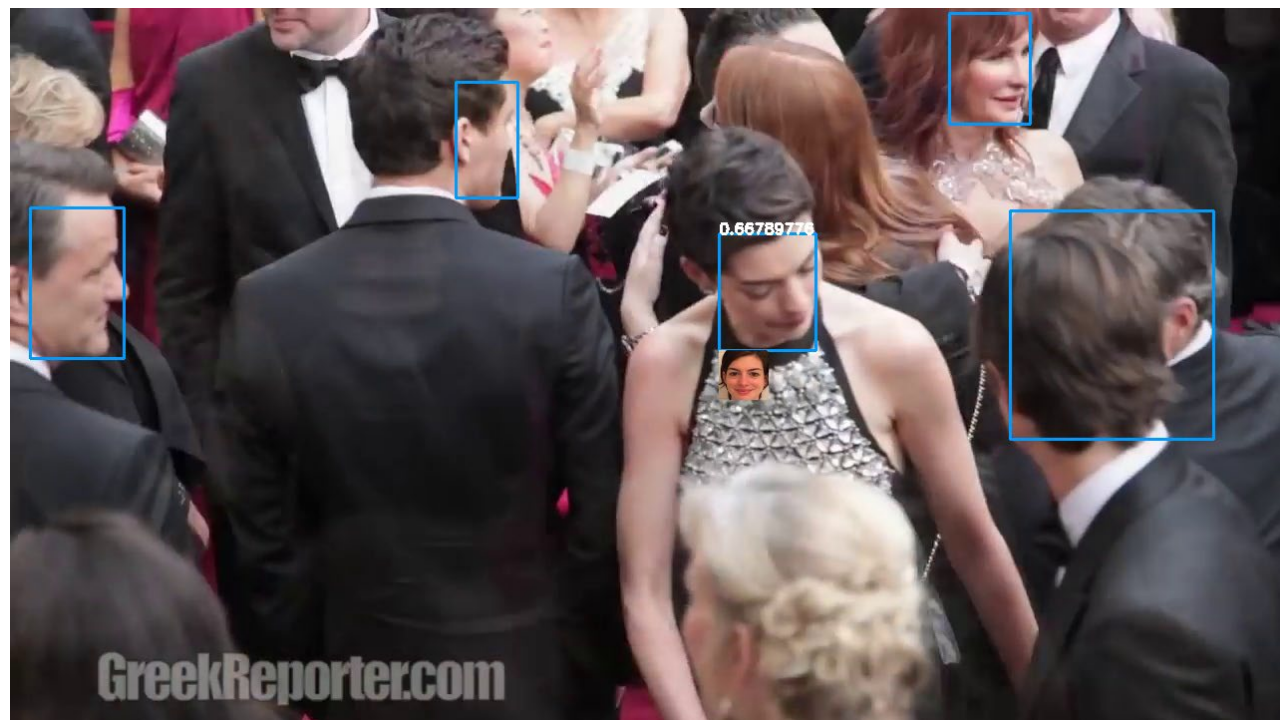
As far as we know, we are the only team performing face recognition on the edge at very low cost with cheap embedded systems


Face Detection at the Edge in UK

- Embedded System based on NVIDIA Nano
- 600 FPS Face Detection
- Conversion to 512d feature vector
- Recognition performed on Secure Server
- Currently being deployed in the UK through AR Live Systems/Facewatch
- Only system of its type in the world
- Other systems use PCs and GPUs
- No setup, no hardware compatibility issues
- Deployed in hundreds of retailers









The Face Recognition Challenge

State of the ART Face Models

Backbone	Dataset	Method	Mask	Children	African	Caucasian	South Asian	East Asian	MR-All	size(mb)	infer(n)
R100	Casia	ArcFace	26.623	30.359	39.666	53.933	47.807	21.572	42.735	248.904	7.073
R100	MS1MV2	ArcFace	65.767	60.496	79.117	87.176	85.501	55.807	80.725	248.904	7.028
R18	MS1MV3	ArcFace	47.853	41.047	62.613	75.125	70.213	43.859	68.326	91.658	1.856
R34	MS1MV3	ArcFace	58.723	55.834	71.644	83.291	80.084	53.712	77.365	130.245	3.054
R50	MS1MV3	ArcFace	63.850	60.457	75.488	86.115	84.305	57.352	80.533	166.305	4.262
R100	MS1MV3	ArcFace	69.091	66.864	81.083	89.040	88.082	62.193	84.312	248.590	7.031
R18	Glint360K	ArcFace	53.317	48.113	68.230	80.575	75.852	47.831	72.074	91.658	2.013
R34	Glint360K	ArcFace	65.106	65.454	79.907	88.620	86.815	60.604	83.015	130.245	3.044
R50	Glint360K	ArcFace	70.233	69.952	85.272	91.617	90.541	66.813	87.077	166.305	4.340
R100	Glint360K	ArcFace	75.567	75.202	89.488	94.285	93.434	72.528	90.659	248.590	7.038
-	<i>Private</i>	insightface-000 of frvt	97.760	93.358	98.850	99.372	99.058	87.694	97.481	-	-

Training Set has huge impact. Open sourced ArcFace is still competitive.

Ethical Issues in AI

Ethics in AI (Australian Perspective)

The screenshot shows the NHMRC website header with the logo and tagline "BUILDING A HEALTHY AUSTRALIA". Navigation links include "Funding", "Health advice", "Research policy", and "About Us". The main content area features a blue banner with the title "National Statement on Ethical Conduct in Human Research (2007) - Updated 2018". Below this is a 3D rendering of the document cover, which includes logos for the Australian Government, National Health and Medical Research Council, and Australian Research Council, along with the title and year "2007 (Updated 2018)". To the right of the cover, a text block explains that the statement consists of guidelines made in accordance with the National Health and Medical Research Council Act 1992. Below this is a section titled "Public consultation on National Statement content" with a sub-header "Public consultation on National Statement content". The text states that the public consultation on the revised draft Section 4 and Section 5 of the National Statement is now open, with a closing date of Friday 30 October 2020. Further information is available from NHMRC's Online Services portal. Below the text is a "Publication Data" section with the reference number E72, ISBN 1864962755, and two buttons labeled "2018" and "Current". A "Go to downloads" button with a downward arrow is also present.

NHMRC
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National Statement on Ethical Conduct in Human Research (2007) - Updated 2018

The *National Statement on Ethical Conduct in Human Research (2007)* (National Statement (2007)) consists of a series of guidelines made in accordance with the *National Health and Medical Research Council Act 1992*.

Public consultation on National Statement content

The public consultation on the revised draft Section 4 and Section 5 of the National Statement is now open. The closing date for submissions is Friday 30 October 2020.

Further information is available from [NHMRC's Online Services portal](#).

Publication Data

Reference number: E72
ISBN: 1864962755

2018 Current

[Go to downloads ↓](#)


National Statement - In a Nutshell

- All databases collected off the internet require ethical approval
 - No ability to use datasets that do not have ethical approval
 - All datasets of faces must have fully informed consent of persons concerned to use for face recognition research
 - No usage of international datasets that do not comply
-
- **So how do we continue to research and test face recognition systems?**
 - **Need to find a way to create databases with full consent or no requirement for consent**
 - **How do we even photograph people during COVID or similar pandemics?**
 - **Note that we need hundreds of thousands/millions of images to be competitive.**

Ethical Face Recognition

Idea 1: Development of EDITH Database

- Ethical Database of Interactive Training Heads
 - Edith Head was a famous Hollywood Costume Designer
- Idea – Capture 3D Heads instead of Images
- Generate thousands of images from each head
- Add masks glasses etc
- Greatly reduces burden of obtaining consent
- Only release projected images and not heads themselves
- Generate photos to order




Edith Head (1897–1981)
SEE RANK
Costume Designer | Costume and Wardrobe Department | Actress

Edith Head was born on October 28, 1897 in San Bernardino, California, USA as Edith Claire Posener. She is known for her work on [All About Eve](#) (1950), [Sabrina](#) (1954) and [Roman Holiday](#) (1953). She was married to [Wiard Ihnen](#) and [Charles Head](#). She died on October 24, 1981 in Los Angeles, California. [See full bio](#) »

Born: October 28, 1897 in San Bernardino, California, USA
Died: October 24, 1981 (age 83) in Los Angeles, California, USA


Won 8 Oscars. Another 4 wins & 28 nominations. [See more awards](#) »

Photos



23 photos »

Known For



All About Eve
Sabrina
Roman Holiday
The Sting

3D Head Database including Masked Faces



Idea 2: Generate Synthetic Faces

Faces à la Carte: Text-to-Face Generation via Attribute Disentanglement



Tianren Wang, Teng Zhang, Brian Lovell
The University of Queensland

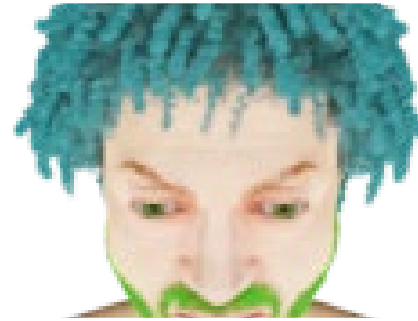
Idea 2: Generate Synthetic Faces

Current Work

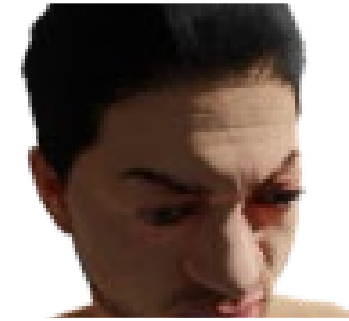
Use 3D models to render large number of Synthetic Faces

Advantages:

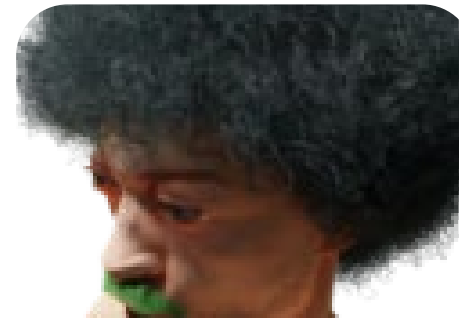
1. We know the person identity is consistent despite radical changes to appearance
2. Can change hair, glasses, facial hair, colour while maintaining identity
3. Large numbers of these sorts of faces cannot be collected using photography
4. Can simulate surveillance images
5. High diversity possible
6. Testing on NIST currently



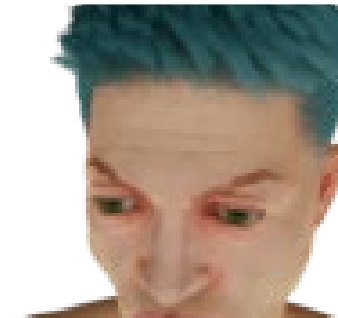
Person 1



Person 1



Person 1



Person 1

FRCSyn Challenge at WACV and CVPR

FRCSyn: Face Recognition Challenge in the Era of Synthetic Data



Welcome to FRCSyn, the Face Recognition Challenge in the Era of Synthetic Data.



FRCSyn 1st Edition WACV On-Going



FRCSyn 2nd Edition CVPR

[Website](#)

[CodeLab](#)

[Website](#)

[CodeLab](#)



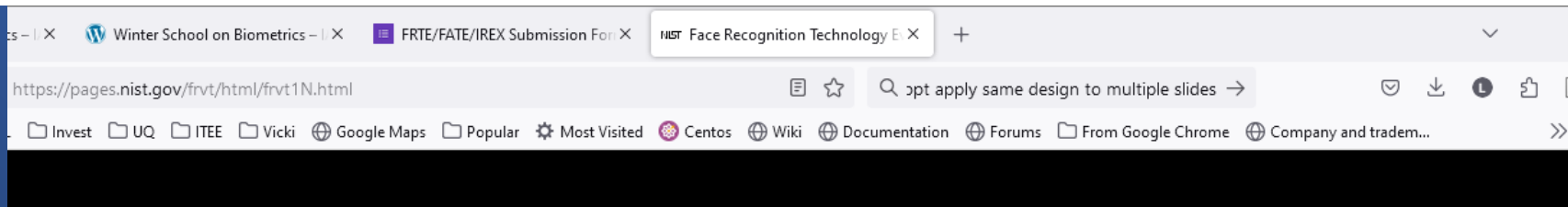
Performance Evaluation



Recognition from Synthetic Face Databases

- Using synthetic faces, we can train systems that are much more like surveillance video than traditional photographic databases
- Surveillance video is often taken from above and suffers from motion blur and H265 artefacts
- We need to test our systems to make sure they are performing well
- Traditional Test for Vendors is NIST (National Institute of Standards)
- Cannot sell to US Government agencies unless NIST testing is performed.

Face Recognition Technology Evaluation (FRTE)



Face Recognition Technology Evaluation (FRTE) 1:N Identification

[Latest Report](#) | [Participation Agreement](#) | [API](#) | [Validation](#) | [Encryption](#) | [Submit](#)

▼ Status

- [2023-08-18] FRVT was split and renamed to [FRTE](#) and [FATE](#).
- [2023_09_29] A new FRTE 1:N report has been published. Prior editions of the 1:N report are [here](#).
- [2023-07-03] All algorithms, participation agreements, and GPG keys should be submitted using the [FRTE Submission Form](#).

► FRTE Participation Statistics

▼ Performance

[last updated: 2023-12-15]

Identification (T>0) by Developer	Investigation (R=1, T=0) by Developer	Identification (T>0) by Algorithm	Investigation (R=1, T=0) by Algorithm	Resources by Algorithm
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Identification Performance

The table below shows False Negative Identification Rates (FNIR) for the case where a threshold is set to limit to the False Positive Identification Rate (FPIR) to 0.003. FNIR is the proportion of mated searches failing to return the mate above threshold. FPIR is the proportion of non-mated searches producing one or more candidates above threshold. The threshold is set for each algorithm and each column separately. The use of thresholding supports use of face recognition in making mostly automated decisions e.g. for access into facility. The first row in the header shows the type of image enrolled in the gallery; the second row shows the search image type; the third row shows the number of persons in the gallery. The images are described in the section 2 of the report. In all cases, each person is enrolled with one image only.

The values in [blue](#) correspond to a change in the FRTE API on 2022-02-14 that allows the algorithm to detect and produce templates from multiple faces in one image, which occurs in approximately 3% of border images and 7% of kiosk images. The handling and accuracy consequences of this are detailed on [this slide](#).

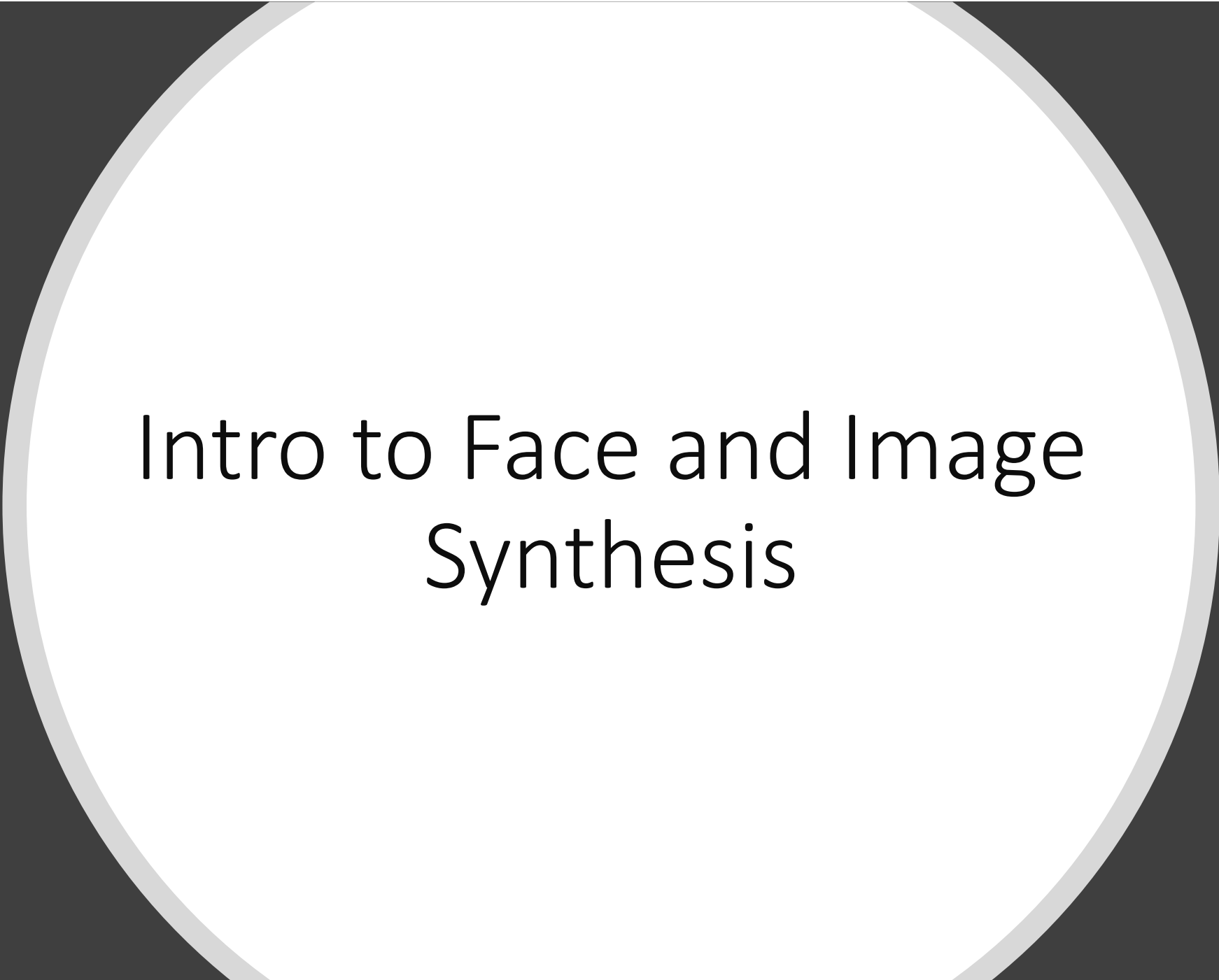
Show entries Search:

Gallery	Mugshot	Mugshot	Mugshot	Mugshot	Visa	Visa	Border	Mugshot
							Border $\Delta T \geq$	Mugshot ΔT

Face Recognition Technology Evaluation (FRTE)

- Need to sign Participation Agreement and send your GPG Public Key Signature
- Use GPG Encryption for emails
- Clone the repository
<https://github.com/usnistgov/frvt>
- Build code inside repository
- Validate on clean Ubuntu 20.03 Distribution (Docker)
- Make sure code is single threaded
- 1:1 and 1:N testing





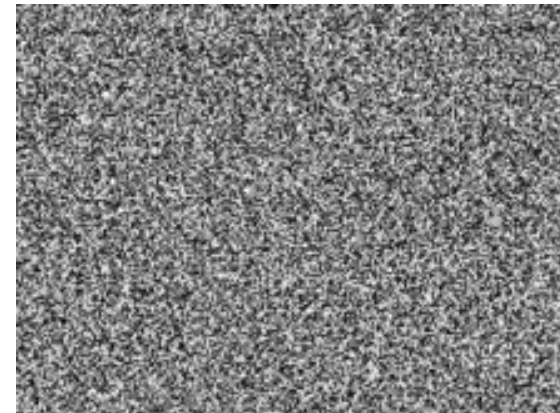
Intro to Face and Image Synthesis

How do we synthesise an image?

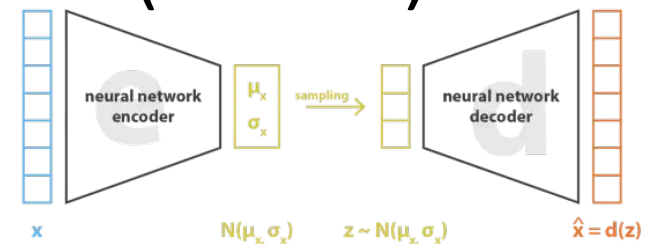


For a 256x256 colour image we have a vector space with $256 \times 256 \times 256 \times 3 = 50$ million possible values

This space is too large, and most outputs will be meaningless noise. Very rarely synthesise a meaningful image. We need to find a compact space, such that all random inputs generate sensible images.

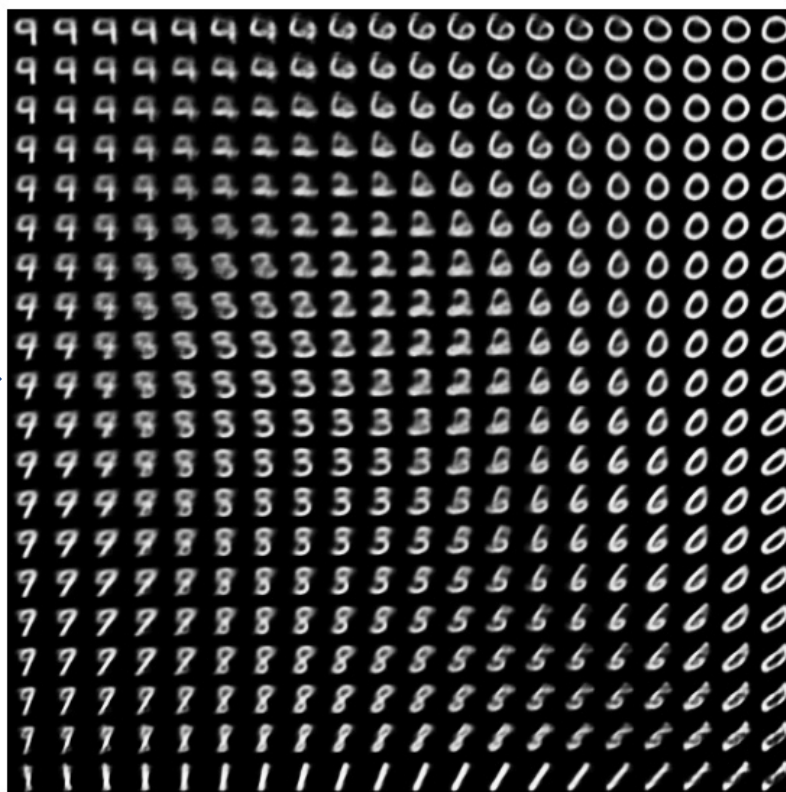


Variational Auto Encoder for MNIST (2013)



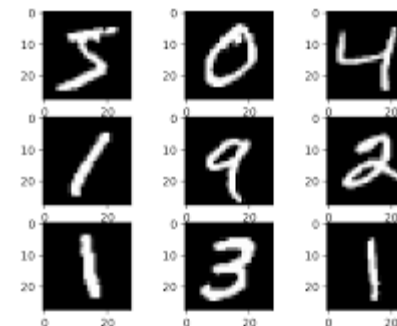
$$\text{loss} = \|x - \hat{x}\|^2 + \text{KL}[N(\mu_x, \sigma_x), N(0, I)] = \|x - d(z)\|^2 + \text{KL}[N(\mu_x, \sigma_x), N(0, I)]$$

Random (x,y)

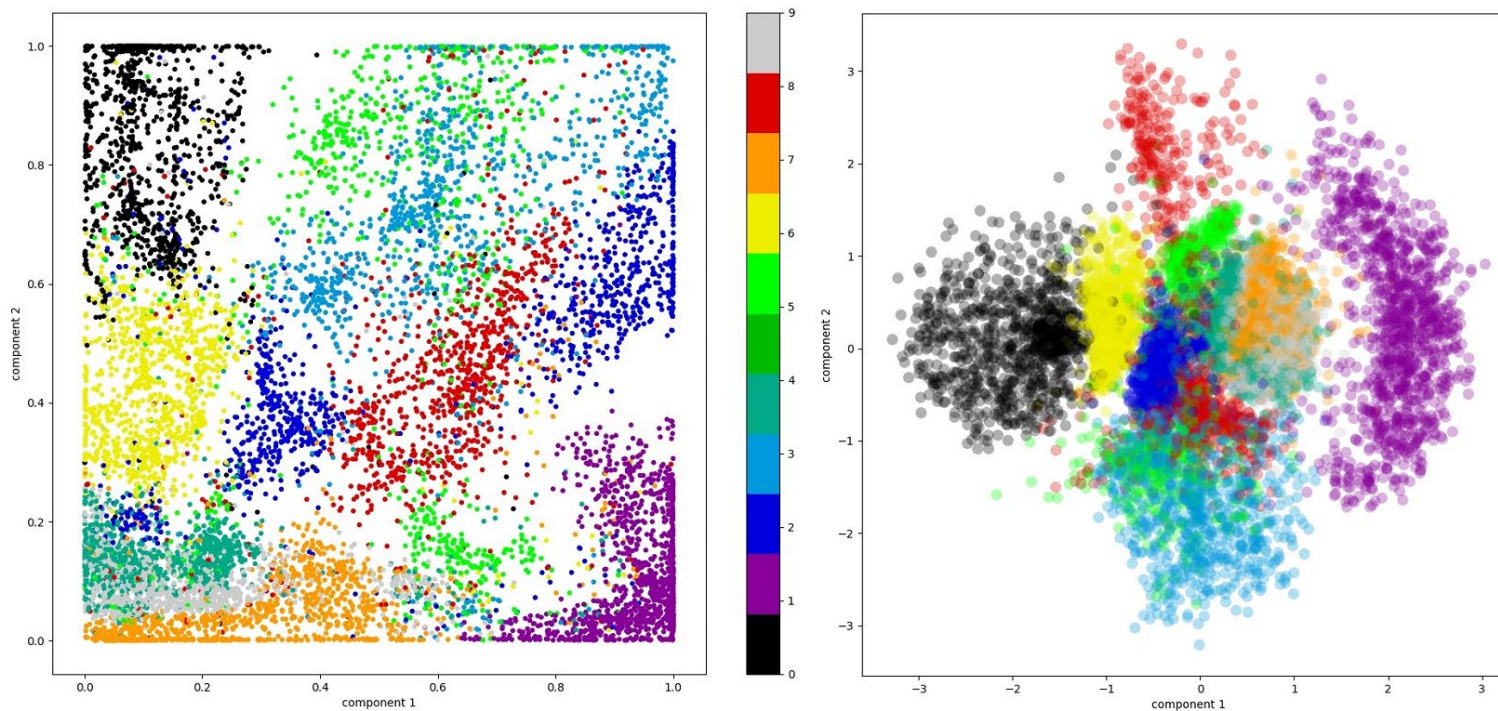


MNIST 28x28x255 = 200k

Compact 2D Latent Space



VAE vs AE: Latent Space is Compact and Continuous (no holes)



This makes it suitable for image generation. Limited to small images.

Need to
Extend
Synthesis to
HD Colour
images

Huge Advance in face synthesis with
StyleGAN and StyleGAN2 (DEC2018)



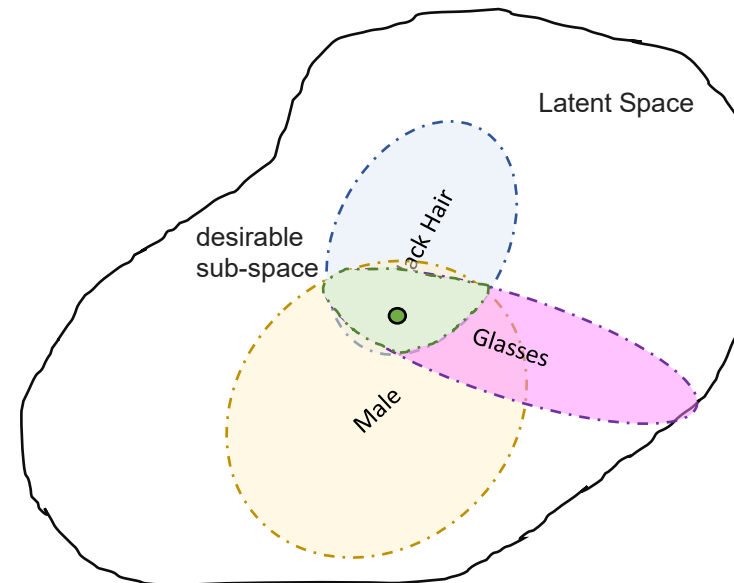
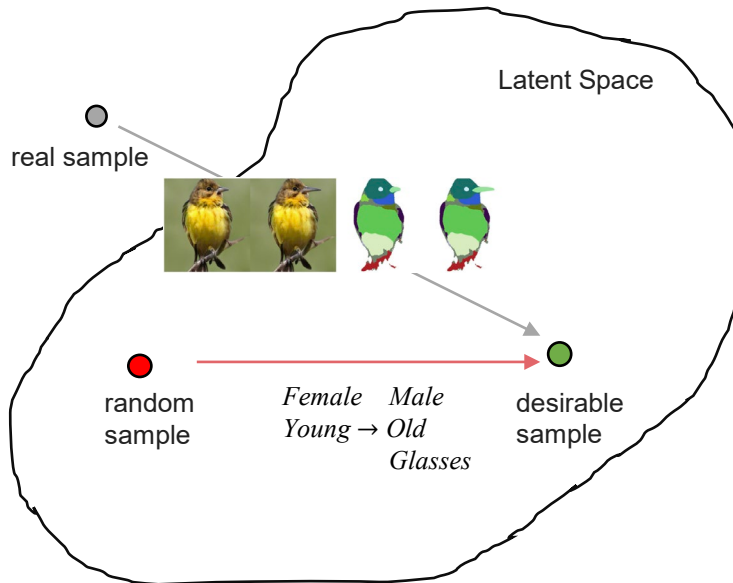
My student Tianren Wang has been
working on this topic to produce synthetic
face databases for face recognition

Recent Work based on EditGAN (2022)

get samples with desired features:

Edit real images or pre-generated images.

- Directly generate from target labels.



Contributions

We propose to generate images from the target attributes directly, rather than editing the randomly generated images with generalized attribute factors.

Our contributions of our work are summarised as follows:

We propose to generate images directly from the target attributes to **improve the attribute accuracy** of resulting images.

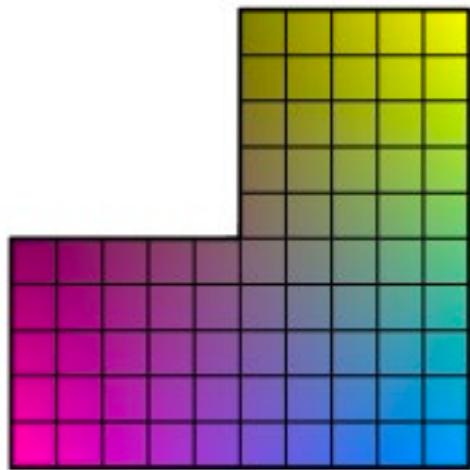
We propose to further project the style vectors of the intermediate latent space to a combination of **scaling factors** in a PCA hyper-coordinate system.

We achieve greater **image diversity** compared to previous methods.

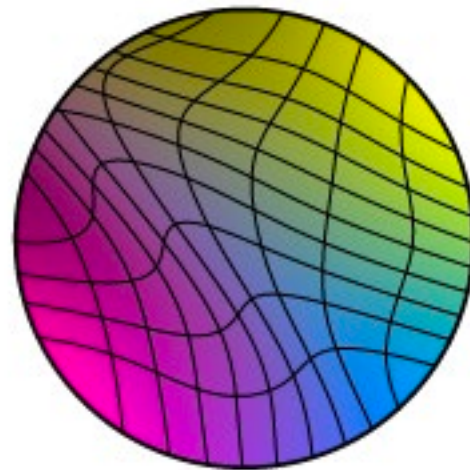
The **efficiency** of image generation is much higher than other methods with only low GPU computational needs. (i.e., majority of images match our target attributes)

Introduction

Latent Space of original image space and
StyleGAN



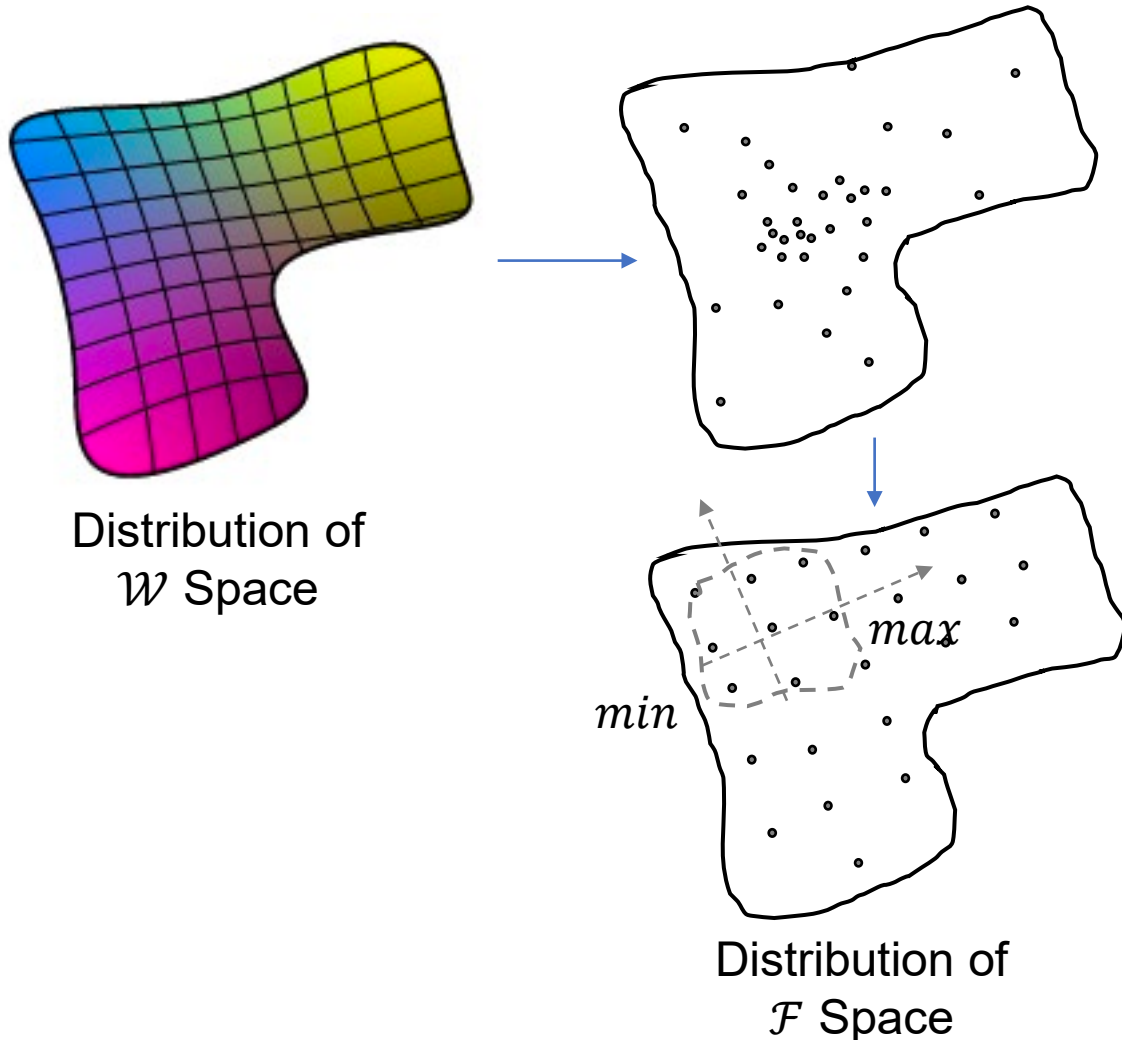
Distribution of
real data



Distribution of Z
Space



Distribution of
 W Space

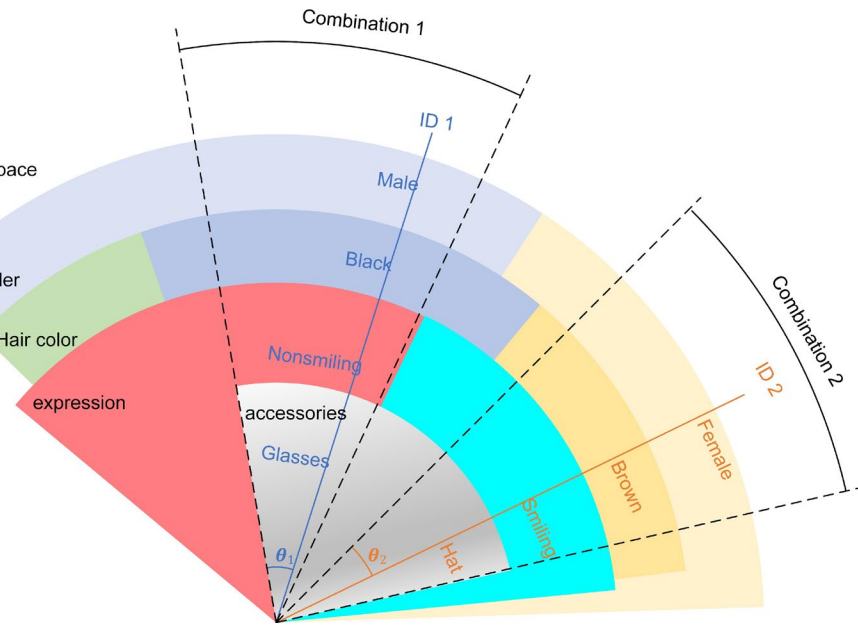


A possible representation distribution in the latent space of StyleGAN

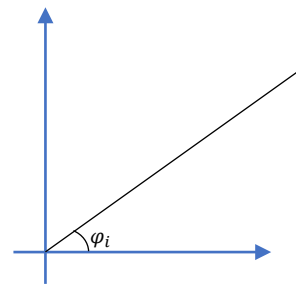
- PCA is applied to find the principal components in the latent space.
- Upon the coordinates based the components, resample the representations uniformly to enhance the diversity of the image results.

Method

Representation resampling in the latent space



In the proposed space, each attribute has its own region wherein the corresponding images have the attribute. To obtain a combination of the desired attributions, a corresponding region is fixed in the space (dash lines). Then, the identification information is defined with the angle vectors theta.



$$\text{Channel-wise: } \frac{\varphi_i}{\Omega} = \frac{\theta_i}{\Omega_{sub}}$$

Experimental results: Text to Image

“Young”
”Male”
”Blonde hair”



“Wavy hair”
“Black hair”
”Makeup”



“Glasses”
“Hat”



“Bangs”
“Moustache”
“Non-smiling”



“Arched eyebrows”
“Big lips”
“Pointy nose”



TABLE I: Evaluation on LPIPS Metrics

Method	Male	Smiling	Young	Brown hair	Bushy eyebrows	Eyeglasses	Makeup	Hat
Ours	0.8139	0.8000	0.8124	0.7696	0.8007	0.7843	0.7623	0.8048
StyleGAN [3]	0.5737	0.5163	0.5760	0.5067	0.5530	0.5780	0.4698	0.5938

TABLE II: User Study on Attribute Accuracy

Method	Male	Smiling	Young	Brown hair	Bushy eyebrows	Eyeglasses	Makeup	Hat
Ours	90%	91%	95%	37.5%	55%	85%	62%	51%
TediGAN [16]	26%	98%	91%	30%	71%	19%	18%	9%

TABLE III: Time & Computing Power between Methods

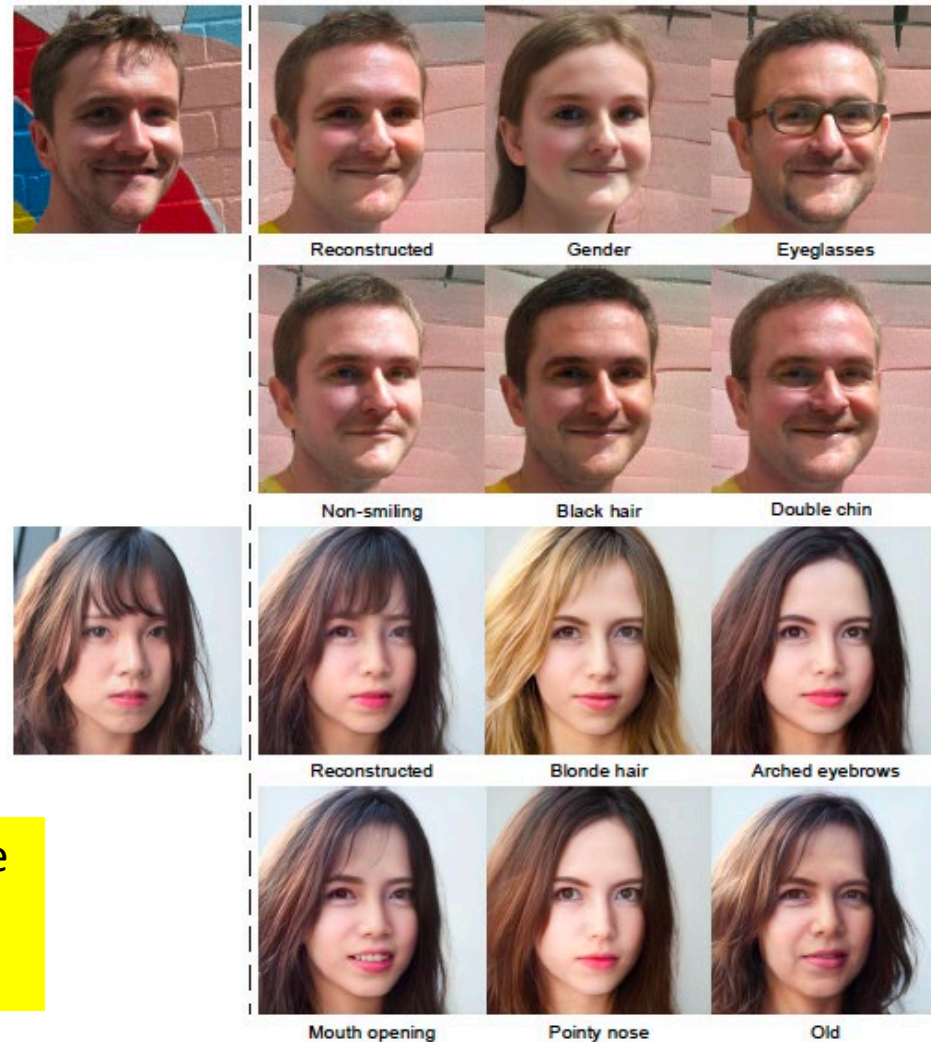
Methods	Time	Computing Power
Ours	0.45 s/image	1.189 GB
TediGAN [16]	35.68 s/image	5.567 GB

Synthesis in Different Latent Spaces



	Quality	Diversity	Attribute Accuracy
\mathcal{F}	✓	✓	✓
\mathcal{W}	✗	✗	✓
\mathcal{Z}	✓	✗	✗

Real Image Editing



Can we generate a person's face
At any age from their DNA?
Phenotype from Genotype?

How do we know we are synthesizing
the same person? ARCFACE

Recent work

Synthesizing Faces from different angles: Ethical Exemption

[23.424, 23.5692, 23.6371, 23.7186, 23.9123, 24.0218, 24.1397, 24.2664, 24.556, 24.7311, 24.7468, 24.7542, 24.8008771, 25.3792, 25.765, 25.7709, 25.8023, 26.4255, 26.575]



Synthetic Faces can help with Ethical Face Recognition

can produce 1 million faces per day

Also helpful for making synthetic movies with digital actors

Recent work (last week)

Synthesizing Hairstyles while preserving identity



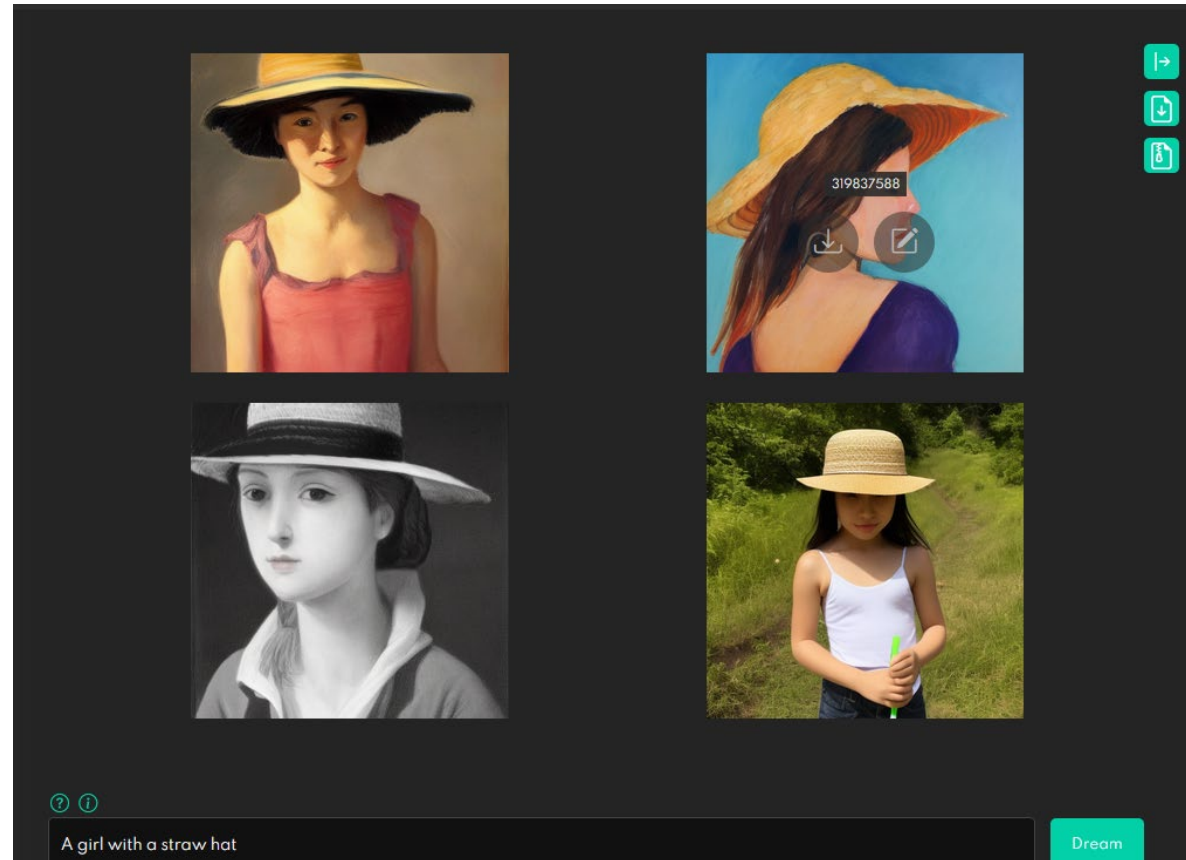
Stable Diffusion: August 2022

- Possibly the greatest Advance in Deep Learning Image Synthesis since StyleGAN
- Code is Open Sourced
- Already Commercial Via Jasper AI, Canva, and other companies.
- Looking into this area in 2023/2024



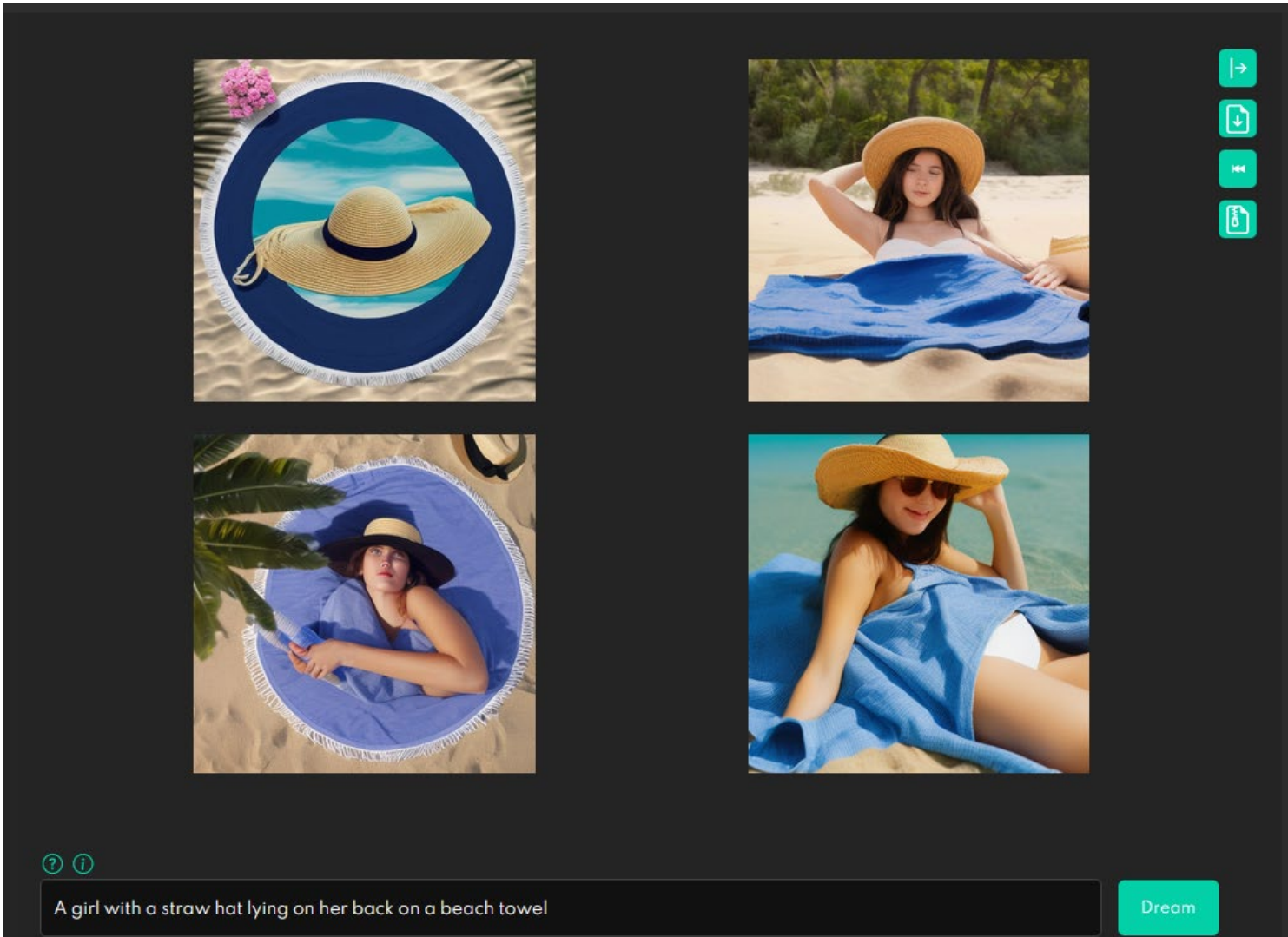
Stable Diffusion, August 2022, Text to Image

Prompt: A girl with a straw hat



Stable Diffusion, August 2022, Text to Image

Prompt: A girl with a straw hat
lying on her back on a beach
towel



The screenshot displays the Dream by Stable Diffusion web interface. At the top, there are four generated images arranged in a 2x2 grid. The top-left image is a circular frame containing a straw hat on a beach towel. The top-right image shows a girl with a straw hat lying on a blue beach towel on a sandy beach. The bottom-left image is a top-down view of a girl with a straw hat lying on a blue beach towel. The bottom-right image shows a girl with a straw hat and sunglasses lying on a blue beach towel. On the right side of the interface, there are four icons: a share icon, a download icon, a refresh icon, and a copy icon. At the bottom, there is a text input field containing the prompt "A girl with a straw hat lying on her back on a beach towel" and a "Dream" button.

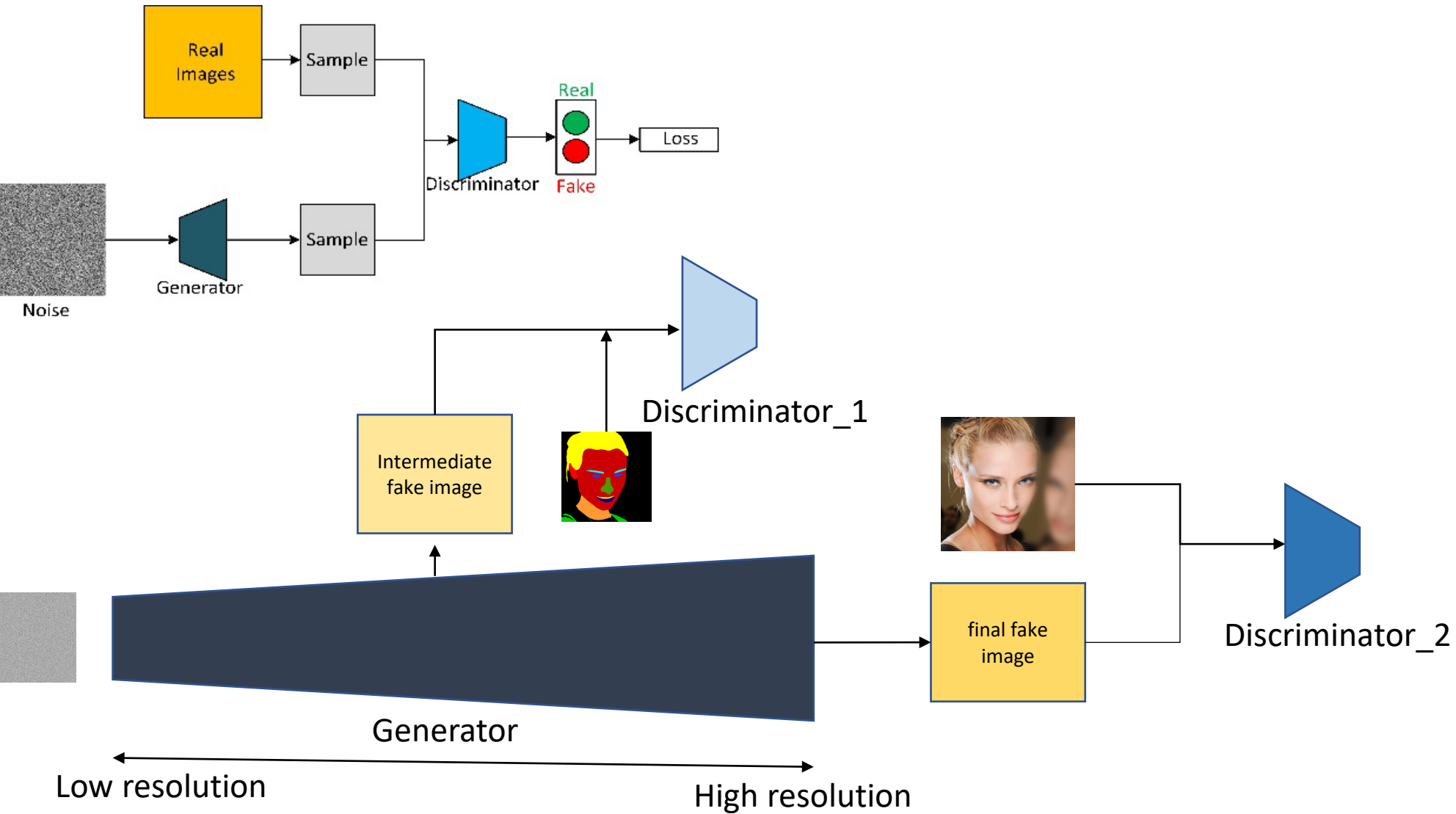
?

i

A girl with a straw hat lying on her back on a beach towel

Dream

Getting More Control in StyleGAN2





Unexpected Real World
Face Recognition
Challenges

Well, this puts us in the doghouse!

A dog gets detected by RetinaFace and matches an SOI

	Property ID	SOI Ref.	Similarity	Created	Soi Image	Just Seen Image	Actions
0748	240 Convenience Store (Nisa Blackpool) 01253 352605	FW002031 TF	96% (96)	22/09/2021 20:25:12		 (No Buffer)	<input type="button" value="Match"/> <input type="button" value="No Match"/> <input type="button" value="Send to Customer"/>

Comments

When I started in face recognition in 2000, I would be pleasantly surprised when we got a face recognition match from surveillance

In 2011 we won several prizes for FRT

Now in 2024, I am very surprised when face recognition is wrong even under terrible viewing conditions. It has simply advanced so far.


However even the best of systems will sometimes make egregious errors like mistaking a dog for a person.

Just a few results like this completely undermines human faith in the system.

How do we address these outlier events?

Out of Domain Testing? Domain Generalization?





Human Face
Recognition:
Prosopagnosia and
Super-Recognizers for
Policing



A screenshot of the IMDb profile page for Barry B. Sandrew. The page header includes the IMDb logo and navigation options like 'Find Movies, TV shows, Celebrities and more...'. The profile name 'Barry B. Sandrew' is prominently displayed, along with his roles: 'Visual Effects', 'Miscellaneous Crew', and 'Producer'. A bio section describes him as an internationally recognized entrepreneur and visual effects pioneer. Below the bio, there's a 'Known For' section with four movie posters: 'The Green Hornet', 'Transformers: Dark of the Moon', 'Pirates of the Caribbean: On Stranger Tides', and 'Ghost Rider: Spirit of Vengeance'. The 'Filmography' section is also visible, listing his work on visual effects for the same four movies. On the right side, there are 'Quick Links' for Biography and Filmography, and a news snippet about Richard Madden's 'Bodyguard' reunion.



Dr Barry Sandrew (Prosopagnosiac)

Prosopagnosia

Prosopagnosia (*prosopon* = face, *agnosia* = unknowing) — also known as *face blindness* — is a medically recognized neuro-cognitive disorder that can be extremely debilitating in social situations. An estimated 2.5 percent of the population — some 8.2 million people in the United States alone — is affected. While many people with a mild case of face blindness may simply conclude they, “are not good with faces,” in reality, they might very well fall within the prosopagnosia spectrum.

Notable People

- A number of notable people, including the actor, **Brad Pitt**; famed primatologist, **Jane Goodall**; and co-founder of Apple, **Steve Wozniak** suffer to some degree from clinically relevant face blindness
- The social interchange and friendly banter that average people manage innately throughout the day become a huge challenge for those with facial blindness

Brad Pitt

"I swear to God, I took one year where I just said, 'This year, I'm just going to cop to it and say to people, 'Okay, where did we meet?' But it just got worse. People were *more* offended," said the 49-year-old of the zombie movie *World War Z*. "Every now and then, someone will give me context, and I'll say, 'Thank you for helping me.' But I piss more people off. You get something like, 'You're being egotistical. You're being conceited.' But it's a mystery to me, man. I can't grasp context and yet I come from such a design/aesthetic point of view."

JAN 11, 12:44 AM EST


Medical Daily VITALITY UNDER THE HOOD INNOVATION THE HILL THE

DELL SAVE UP TO 20%* XPS 13 (9670)

CONDITIONS

Brad Pitt Says He Has Face Blindness; Prosopagnosia More Common Than Thought

May 23, 2013 06:31 PM By Evan Winchester



People with face blindness are often misjudged as lazy or uncaring. For Pitt, his condition has led to staying at home more frequently, he said. Michael Buckner/Getty Images

Share Tweet Share E-mail

Brad Pitt has face blindness, he said in a recent interview.

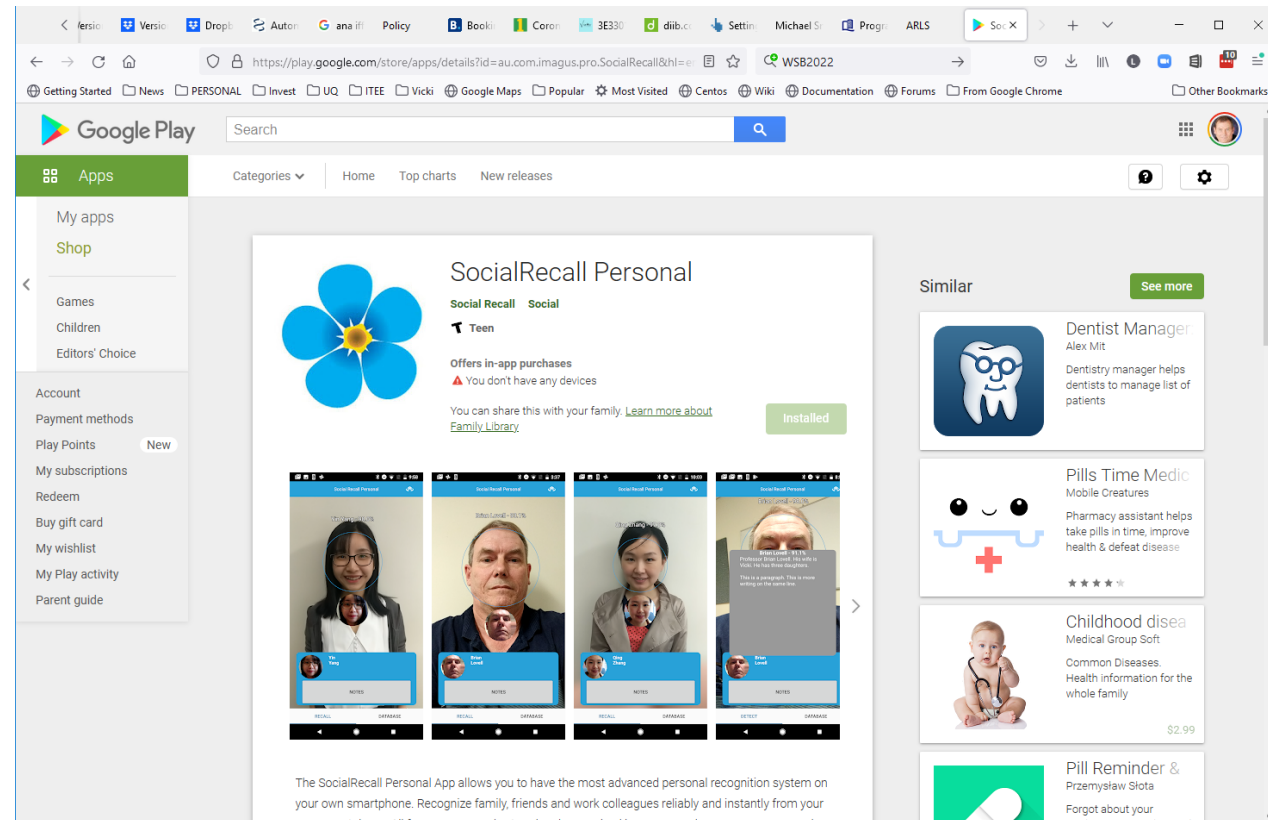
"So many people hate me because they think I'm disrespecting them," he said. The interview was for the June/July issue of *Esquire*. "I am going to get it tested," Pitt added.

Review of Our Social Recall App from the Play store

C. C.

1 March 2021

Wow! This is a wonderful tool for people with disabilities. Primarily, during COVID, I'm using this to watch and understand movies. I have face blindness, which makes watching movies difficult because anyone who is about the same height, has similar hair and eye color are often indistinguishable to me. For example, I can't tell the difference between Christian Bale and Matthew McConaughey. They both are white, have light eyes and light brown hair, and a pointy nose. You might as well throw Tom Cruise and Ryan Reynolds in there, I really couldn't tell. I was watching a movie, and got frustrated with not knowing who was who, so I found this app and took a screenshot of a character, then a couple more screenshots of their "lookalikes" and BOOM! It matched the characters from the previous part of the movie their correct characters that were now wearing different clothing and had changed or grew mustaches. It matched a guy who looked much younger in the beginning of the movie to his same character who had aged and grew new facial hair. Hooray! I know there are privacy concerns about F.R. software, I understand. But for those of us with sight disabilities this is a godsend. I no longer have to rely on anyone else or stop to do research in order to simply enjoy a movie.



Super-Recognisers

- While prosopagnosia has been recognised for some time, it was thought that it was an on-off condition – either you have it or you don't
- Recent studies have shown that face recognition ability is on a continuum and ability varies between individuals
- Testing has demonstrated this and research shows that face recognition is an innate skill that you are born with
 - Does not appear to improve with training or experience
- Scotland Yard (London Met) have tested many people and have assembled a team of super-recognizers with extraordinary ability.
- Mick Neville's Team recognized and prosecuted 300 people from London Riots in 2011.

UNSW Super Recogniser Test

UNSW Face Test

Are you a super-recogniser? Take our challenging test to find out if you are one of a small proportion of people with exceptional abilities in identifying faces.

Note: This test is **not** mobile compatible. You will need to complete it on a desktop or laptop computer.

[Click here to begin the test](#)

[Start Test](#)

- <https://facetest.psy.unsw.edu.au/>

My Score 😞

On the UNSW Face Memory Test you scored 22 out of 40.

On the UNSW Face Sorting Test you scored 44 out of 80.

Your overall score on the UNSW Face Test was 55%.

For your information, based on the first 6300 participants on the UNSW Face Test:

Top 5% scored 72% and above

Top 10% scored 69% and above

Top 25% scored 65% and above

Top 50% scored 61% and above

Think about placement of cameras.



How do We Recognise a Person Now?


People are moving, blurred, wearing balaclavas and masks

They do not look at the camera

For such challenging videos, super recognizers can make reliable matches

Super recognisers are often assisted by computer databases to narrow the search space – usually just text based queries

While computer face searching is fast, a super recogniser is still the best.



Mobile and AR Face
Recognition
Face Recognition
Challenge

Conference App



- First tested at the International Conference on Biometrics on the Gold Coast where I was General Co-Chair



Why Conferences?

- I run lots of conferences 😊
- I have trouble recognising friends at conferences as I only see them every few years – embarrassing and awkward
- Wanted to give back to the scientific community
- Needed to solve the wicked problem of DIY mobile distributed face enrolment
- Needed to address consent and privacy issues
- Similar to prosopagnosia for normal people – I can't recognise my friends and it is a source of embarrassment

ICB Welcome Function



IAPR Newsletter July 2018



General Chairs:

Brian Lovell, University of Queensland (Australia)
Miguel A. Ferrer, Universidad de Las Palmas de Gran Canaria (Spain)
Vutipong Areekul, Kasetsart University (Thailand)

World First for IAPR - Face Tags for ICB2018!

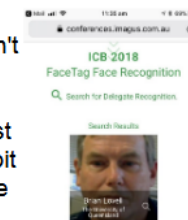
As our scientific community wishes to promote and popularize biometrics and demonstrate its applications, we developed a World First Application of mobile face recognition just for ICB2018.

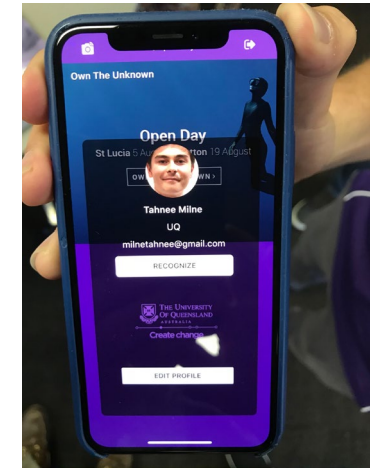
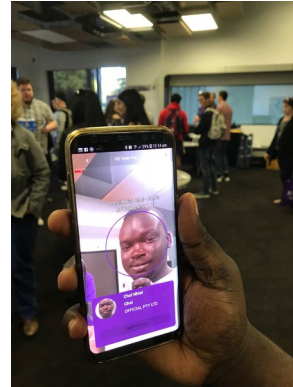
Participation was purely voluntary, but it was fun for the delegates, especially at the Welcome Reception.

"Highlights of the 11th IAPR International Conference on Biometrics" prepared by the General Co-Chairs on behalf of the ICB2018 Organising Committee

Delegates self-enrolled one or more photos on the ICB2018 website www.icb2018.org before the event and then they could be recognized at the conference. Photo recognition worked on all devices using the


feel intimidated by face technology — the conference organizers weren't being Big Brother, everyone was Big Brother. Also delegates could not search for faces unless they first uploaded their own face. This is a bit like the strongly enforced social rule that you have to be nude to visit a





 Create change


UQ Open Day Social Recall App

 Cheers! Welcome to a place where everyone know your name.

Try out the most advanced deep learning facial recognition on your own phone

Just enter this URL or scan the QR code below to be guided through the process and download the app.

inferences.imagus.com.au/uq_openday



UQ Open Day, 05-08-18



Magnify World, August 2018



Conclusions

- There are still many unsolved challenges for unconstrained face recognition
 - Mask Recognition
 - Controlled Face Synthesis
 - Ethical Face Datasets
 - GDPR and Privacy Challenges
 - Combinations with Other Modalities (Lidar, Mobile phone detection)

Q&A Session

