

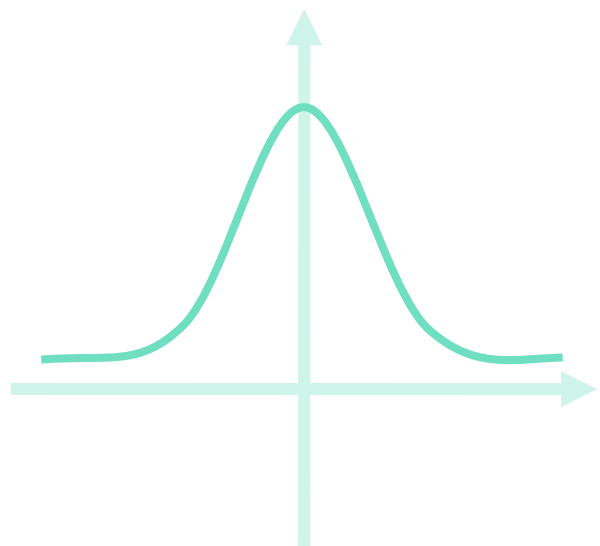
# Exploring and Exploiting Hubness Priors for High-Quality GAN Latent Sampling

Yuanbang Liang, Jing Wu, Yu-Kun Lai, Yipeng Qin

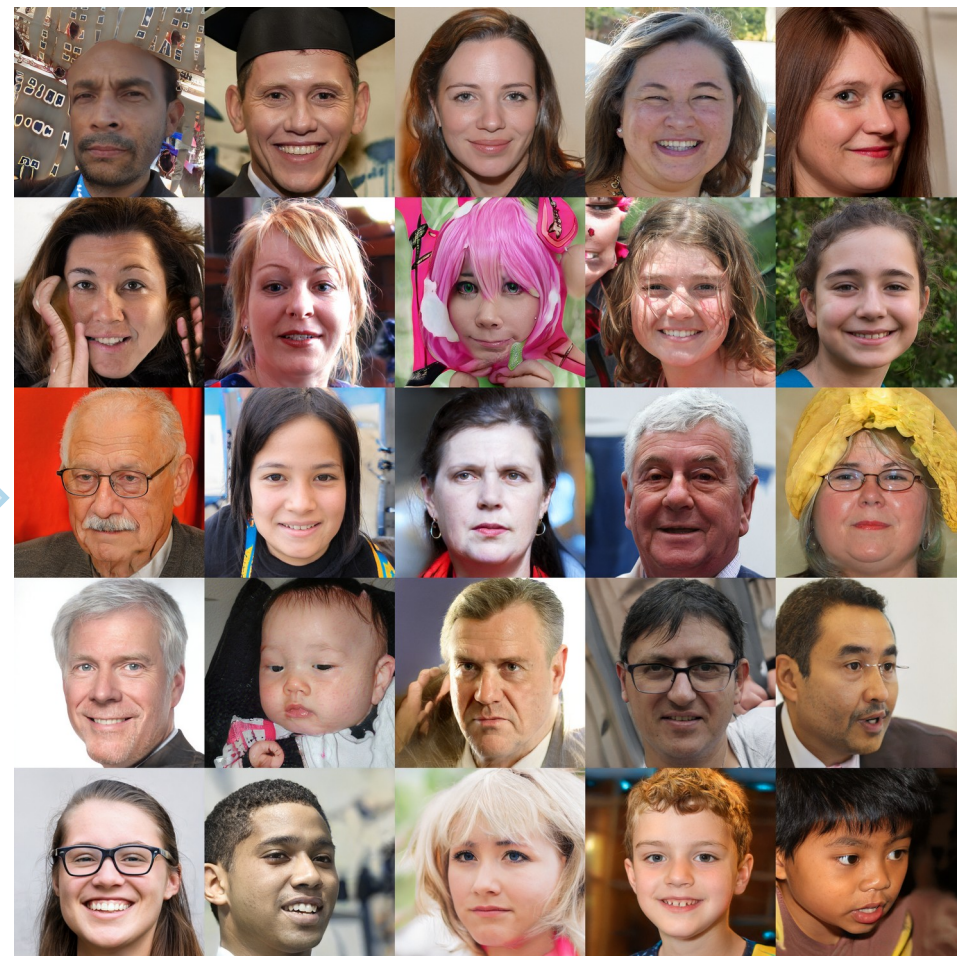
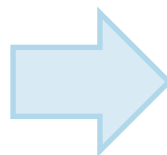
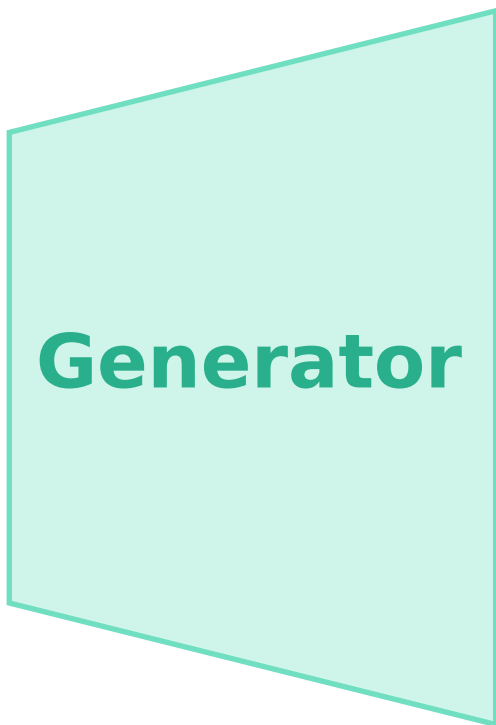
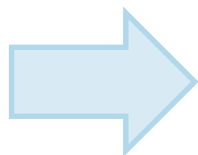


UK Research  
and Innovation

# Motivation

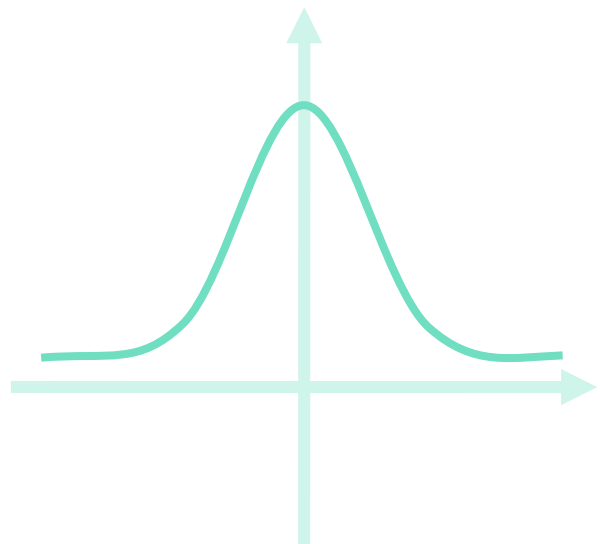


**Latent  
Distribution**

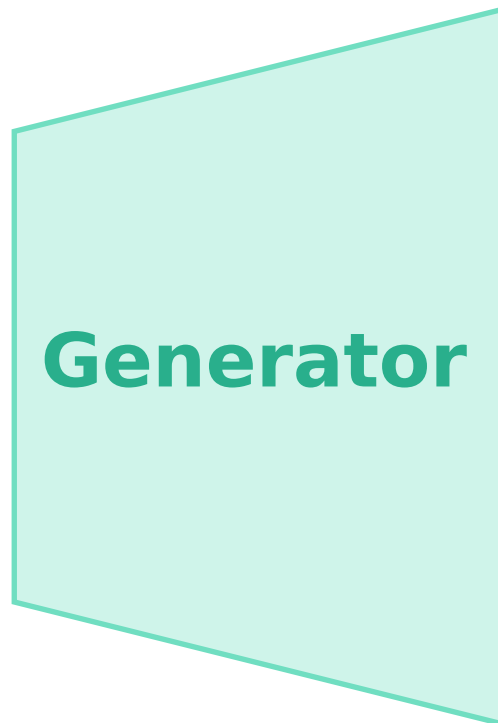
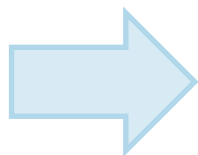


# Motivation

Random Sampling

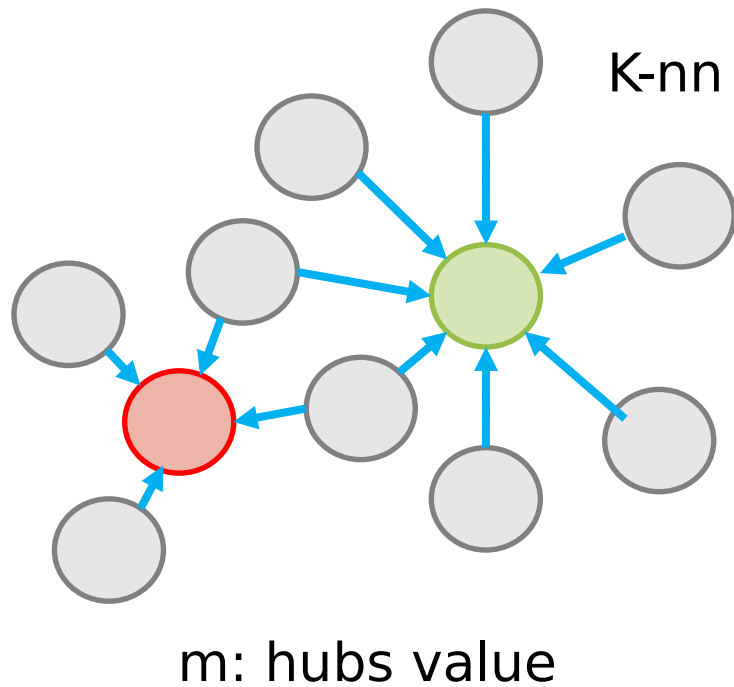


Latent  
Distribution

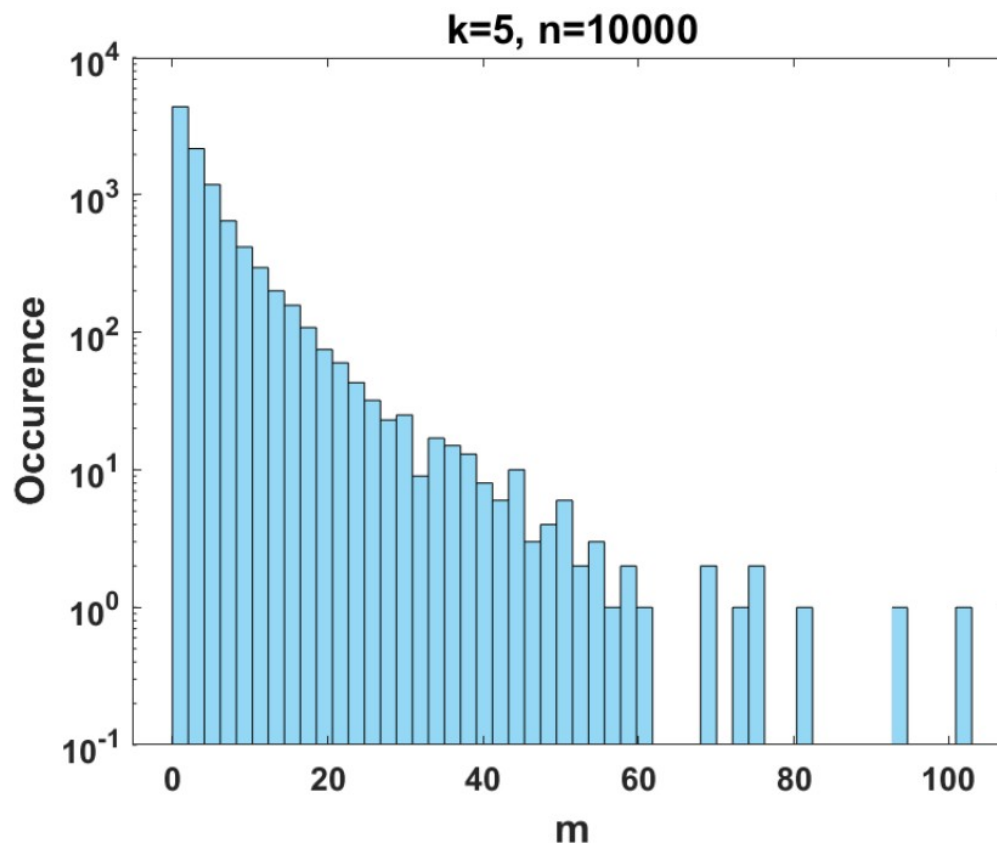


# Hubness Priors

Hubness phenomenon

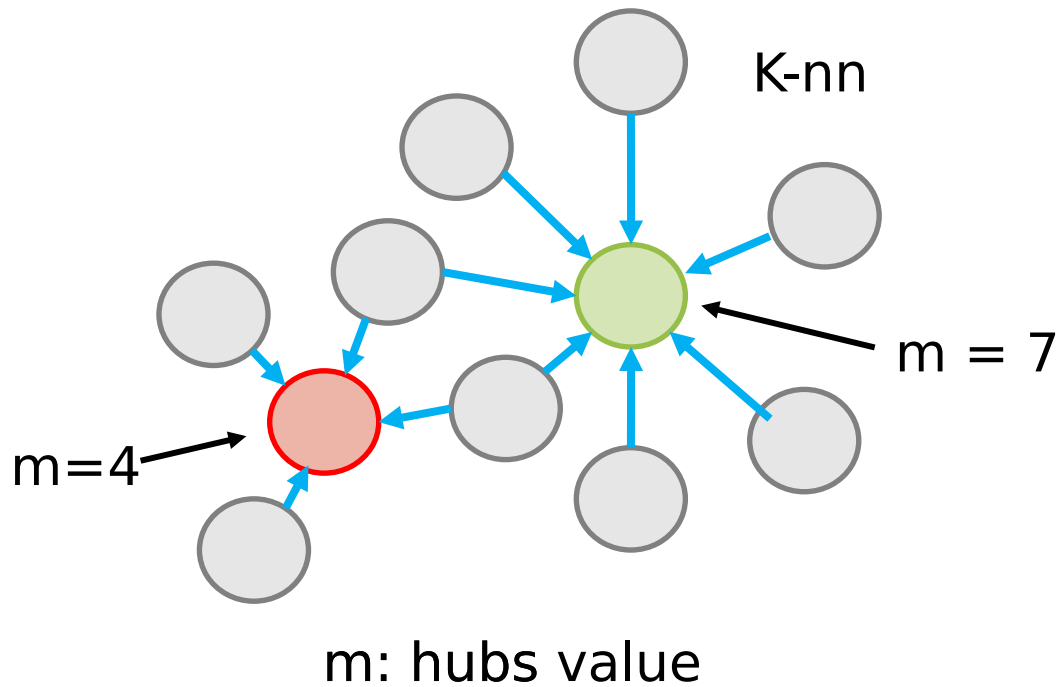


The distribution of the hub values

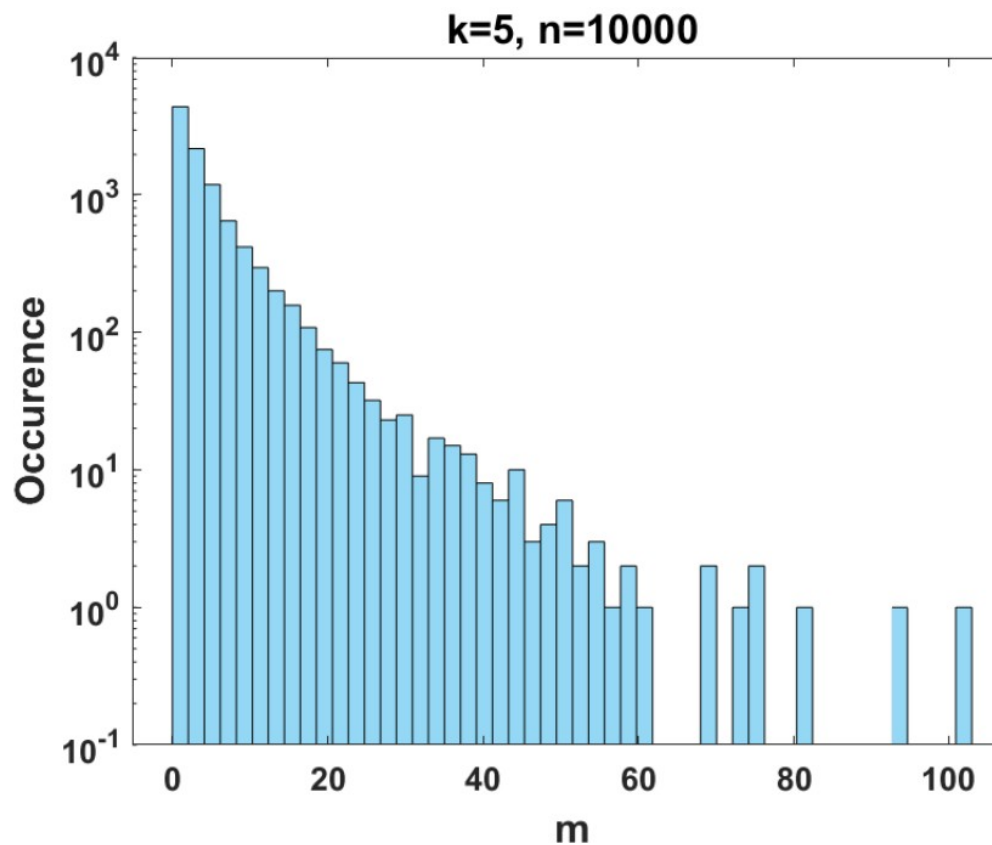


# Hubness Priors

Hubness phenomenon



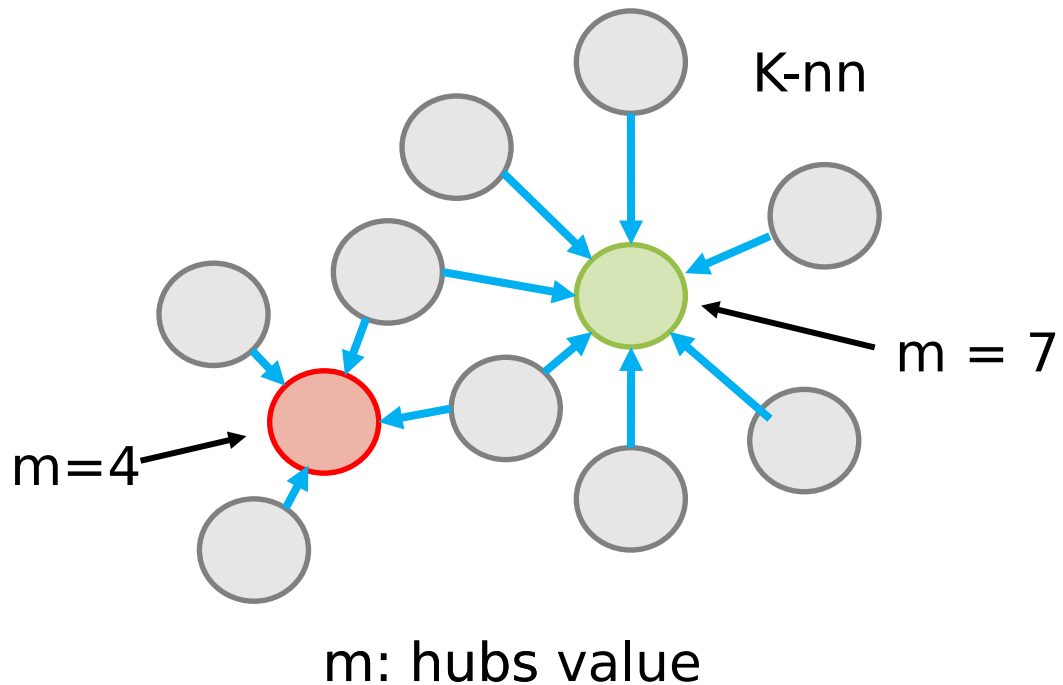
The distribution of the hub values



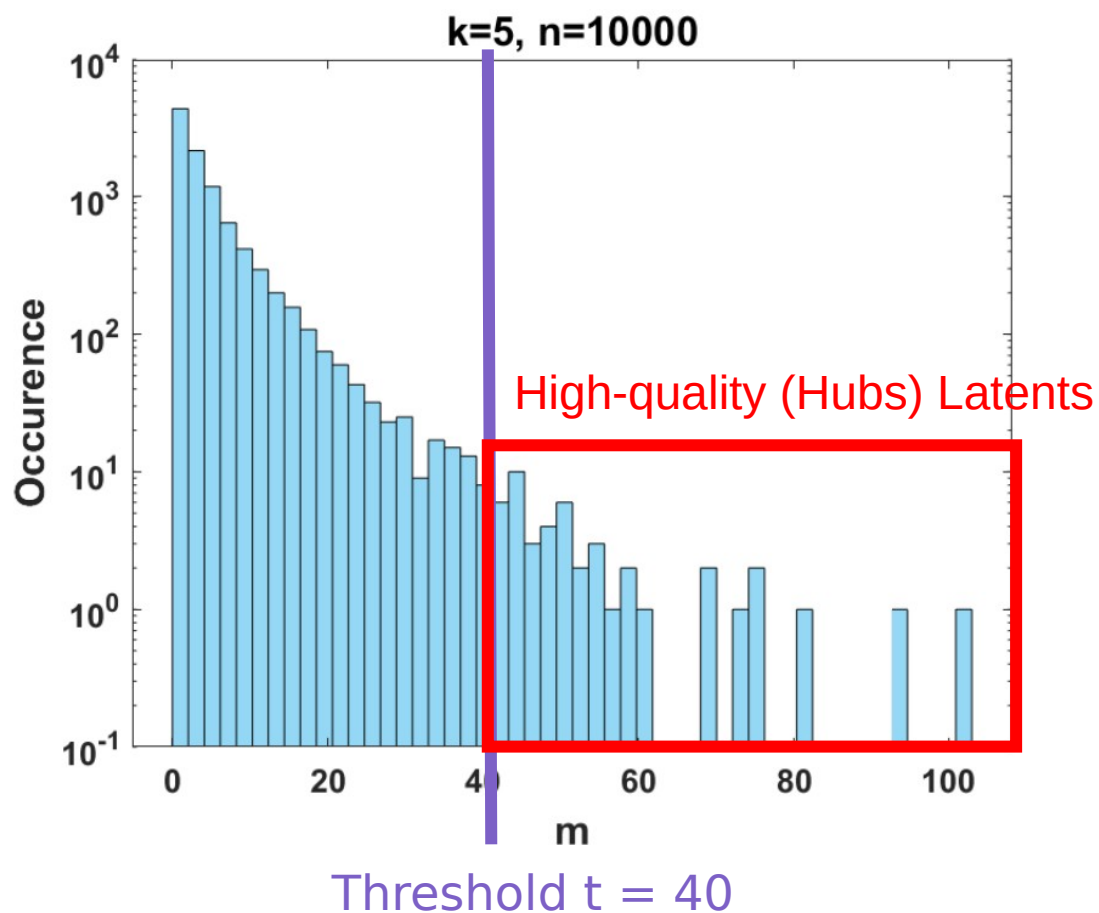


# Hubness Priors

Hubness phenomenon

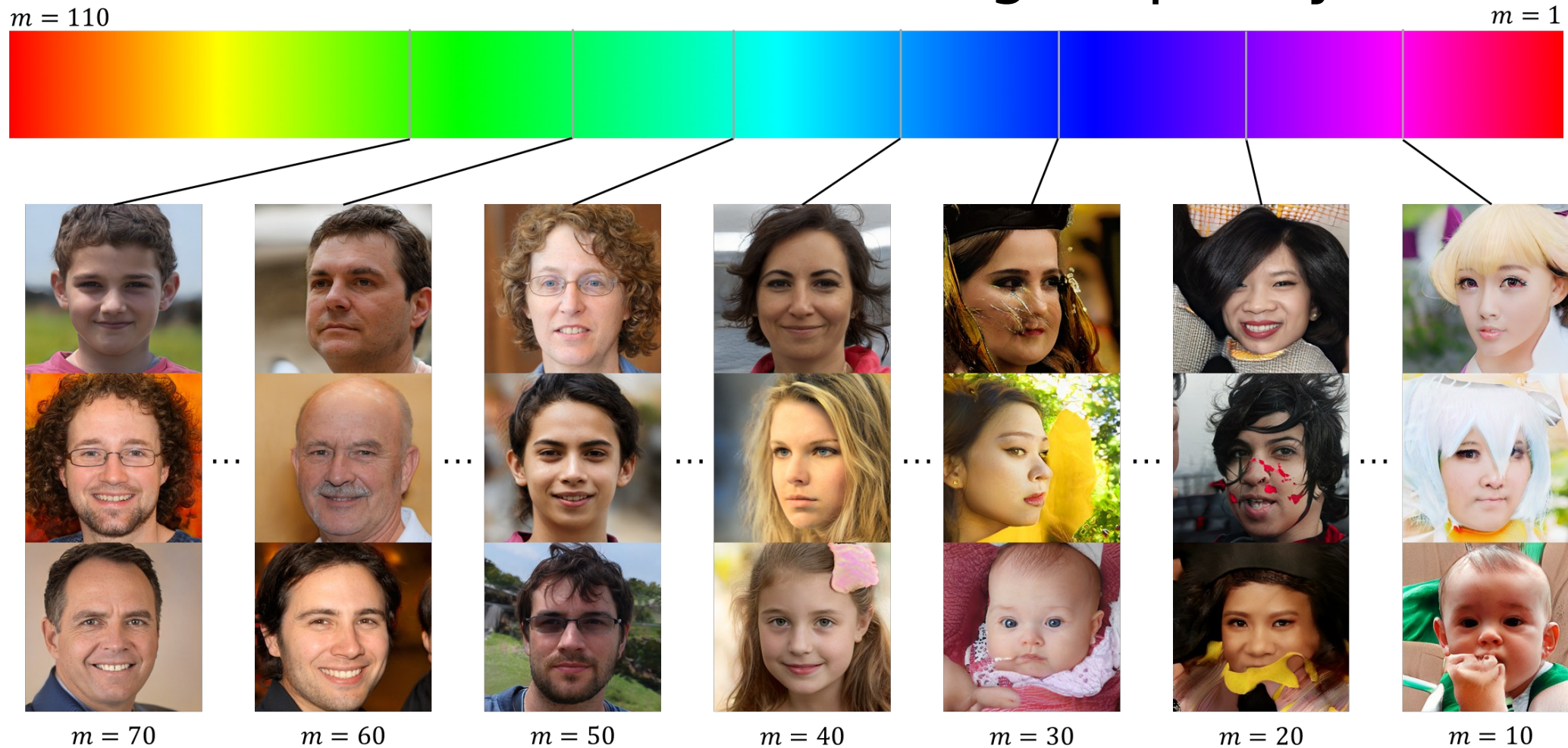


The distribution of the hub values



# Experimental Results

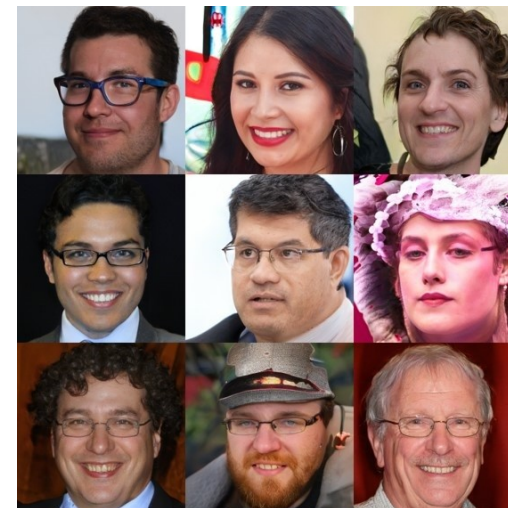
Hub values ( $m$ ) vs. images quality



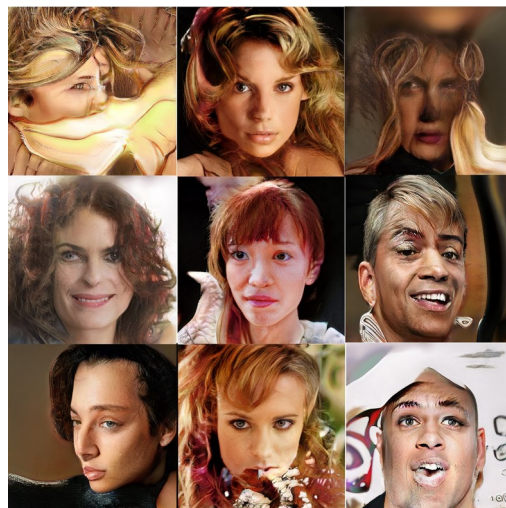


# Experimental Results

HQ



LQ



(a) BigGAN

(b) ProGAN

(c) StyleGAN3



# Experimental Results

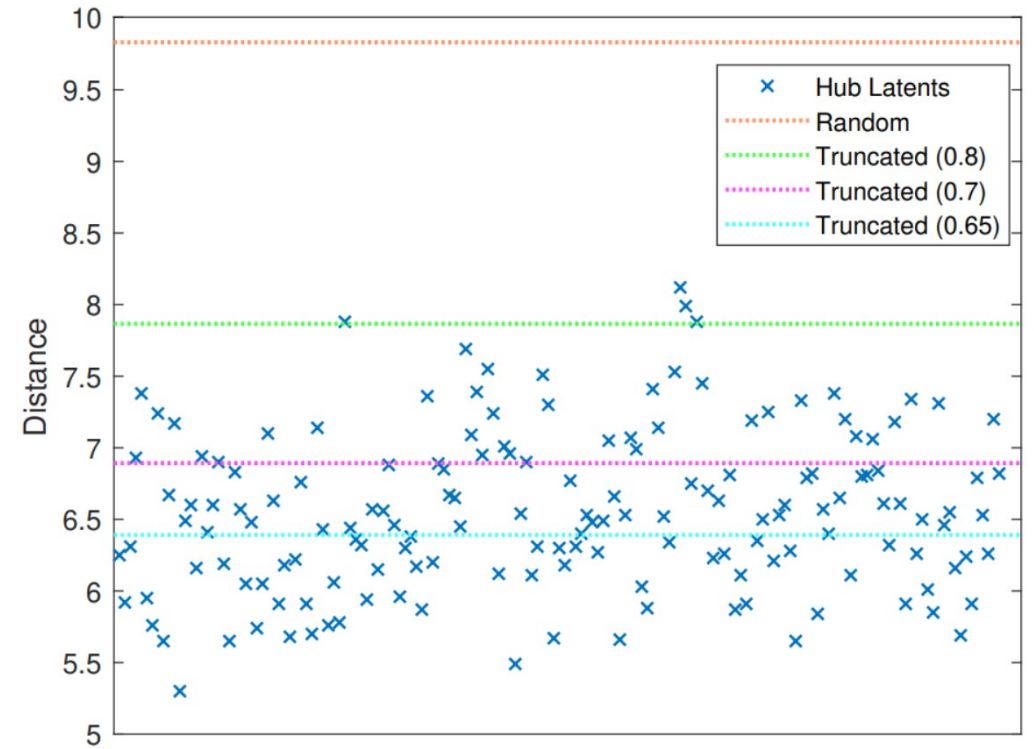
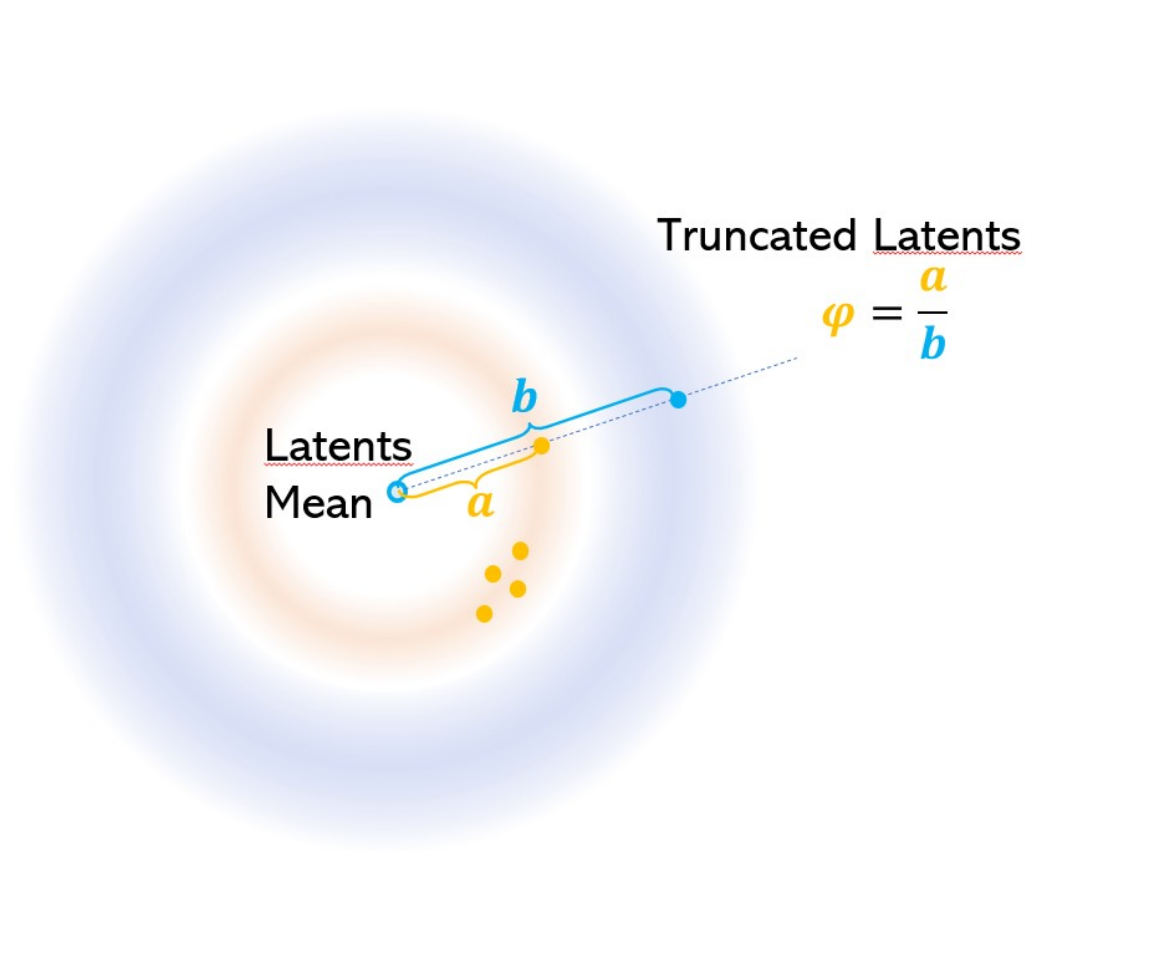
Methods	FID↓	
	FFHQ-1	FFHQ-2
FFHQ-2	16.505	—
Hubs (50)	21.955	23.609
Truncated (0.7)	25.097	25.127
Random	35.455	35.598

FID

Method	Precision↑	Recall↑
Hubs (50)	<u>0.890</u>	<u>0.324</u>
Truncated (0.3)	<b>0.892</b>	0.015
Truncated (0.7)	0.811	0.223
Random	0.720	<b>0.393</b>

Precision and Recall

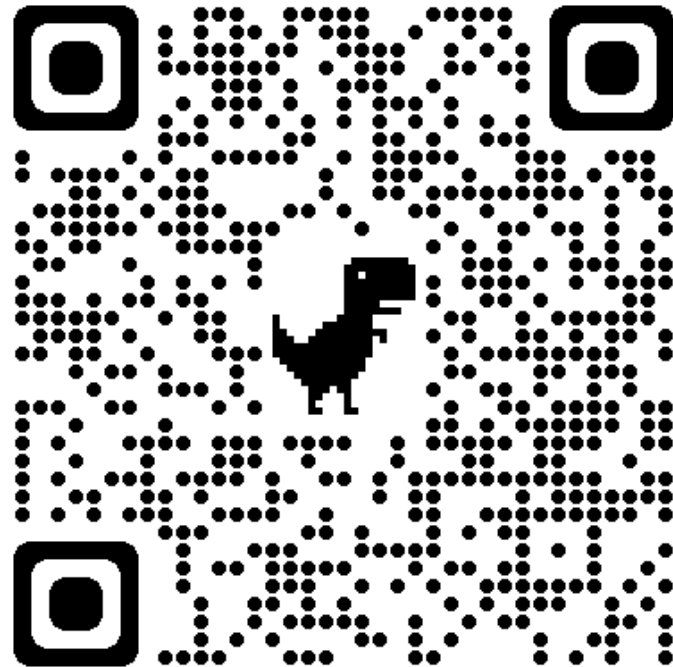
# Relationship with Truncation Trick



Distance to the mean of all sampled latents

See our paper and Github Repo for more details!

<https://github.com/Byronliang8/HubnessGANSampling>



Thank You for Watching !