

	uomam	conversion (mAP)		ark for			
ImageNet-R (Pho)							
Pic2Word	5 <sup>th</sup>	The community evaluates with queries					
CompoDiff	4 <sup>th</sup>	only from the photo (Pho) domain					
WeiCom SEARLE	2						
MagicLens	3						
				Before			
): Which is the s	state-of-the-a	ith our testbed of fou rt? -ull) MiniDomainNe					
): Which is the s Im	state-of-the-a	nrt?					
): Which is the s	state-of-the-a	ull) MiniDomainNe	t NICO++	LTLL			
2: Which is the s Im Pic2Word <sup>[1]</sup>	state-of-the-a	ull) MiniDomainNe	t NICO++ 5 <sup>th</sup>	LTLL 5 <sup>th</sup>			
2: Which is the s Im Pic2Word <sup>[1]</sup> CompoDiff <sup>[2]</sup>	state-of-the-a	ull) MiniDomainNe 4 <sup>th</sup>	t NICO++ 5 <sup>th</sup>	LTLL 5 <sup>th</sup>			

[3] Bill Psomas et. al. Composed image retrieval for remote sensing. In IGARSS, 2024

[4] Alberto Baldrati et. al. Zero-shot composed image retrieval with textual inversion. In ICCV, 2023

[5] Kai Zhang et. al.. MagicLens: Self-supervised image retrieval with open-ended instructions. In ICML, 2024

## **Our Contribution -**

Propose a strong testbed for domain conversion

 Extend ImageNet-R by using images from every domain as image queries

• Repurpose three popular computer vision datasets for the domain conversion task

• Propose FreeDom, a training-free domain conversion method that is the **new state-of-the-art** in all four domain conversion datasets.

# **Composed Image Retrieval for Training-Free Domain Conversion**

Nikos Efthymiadis, Bill Psomas, Zakaria Laskar, Konstantinos Karantzalos,

# TL;DR: A testbed of four datasets for domain conversion and a state-of-the-art method.

# **Task: Domain Conversion**

## 4 datasets - 16 unique query domains - 2 levels of granularity - 2 domain definitions

(a) image: category domain: style

(b) image: category domain: context

(c) image: instance domain: style

After



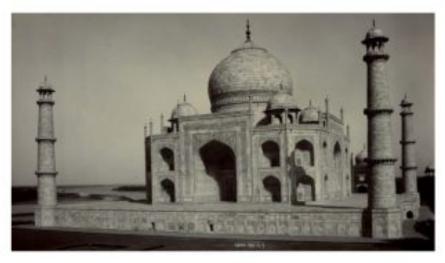
image query

image query

text query: "cartoon"



text query: "autumn"



text query: "archive"



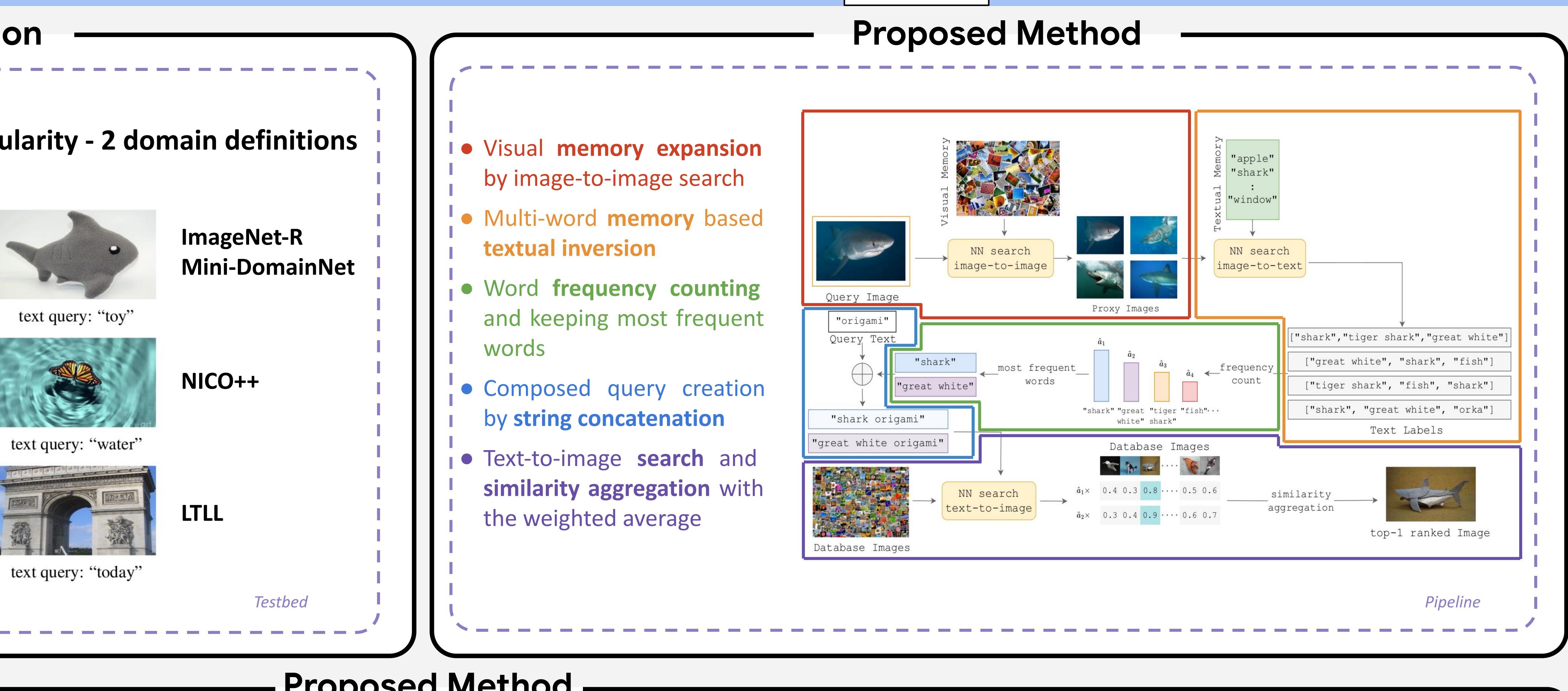
text query: "sculpture"

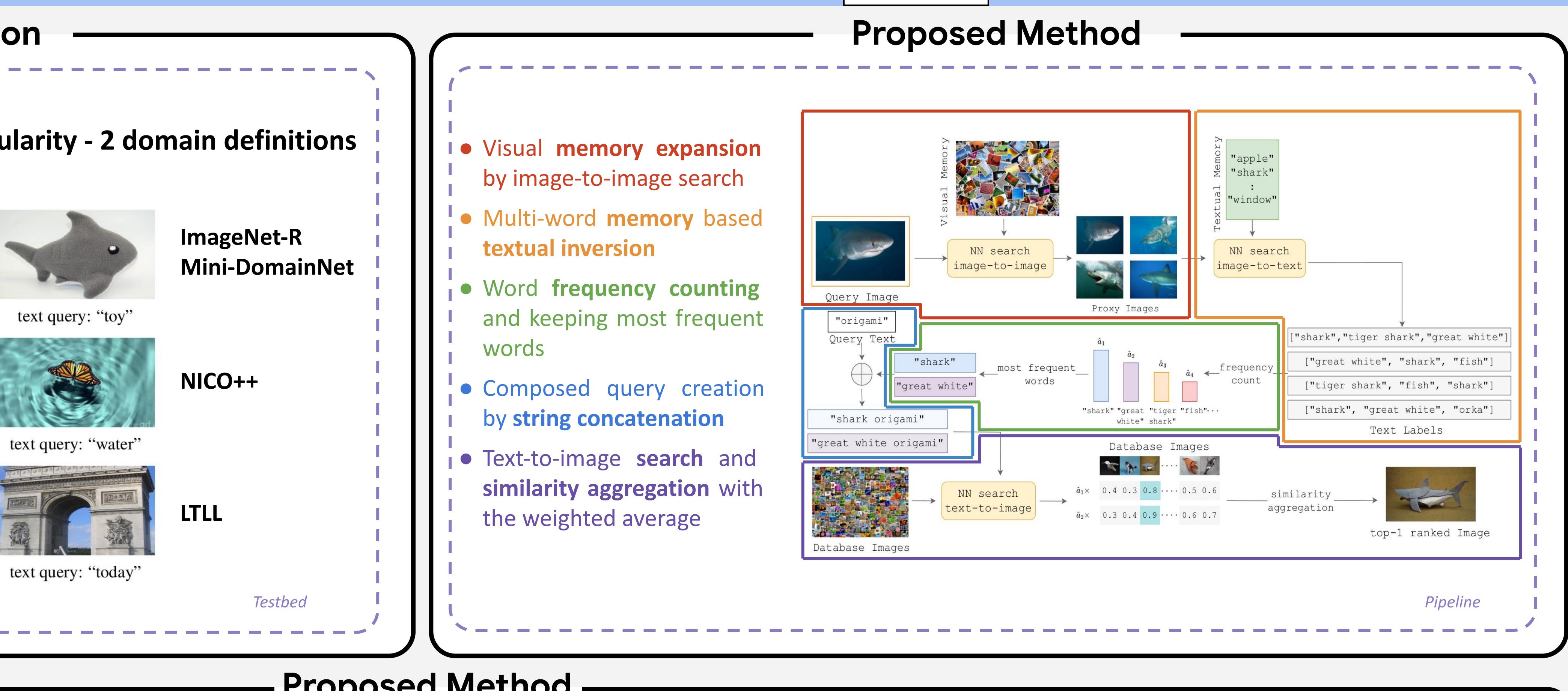


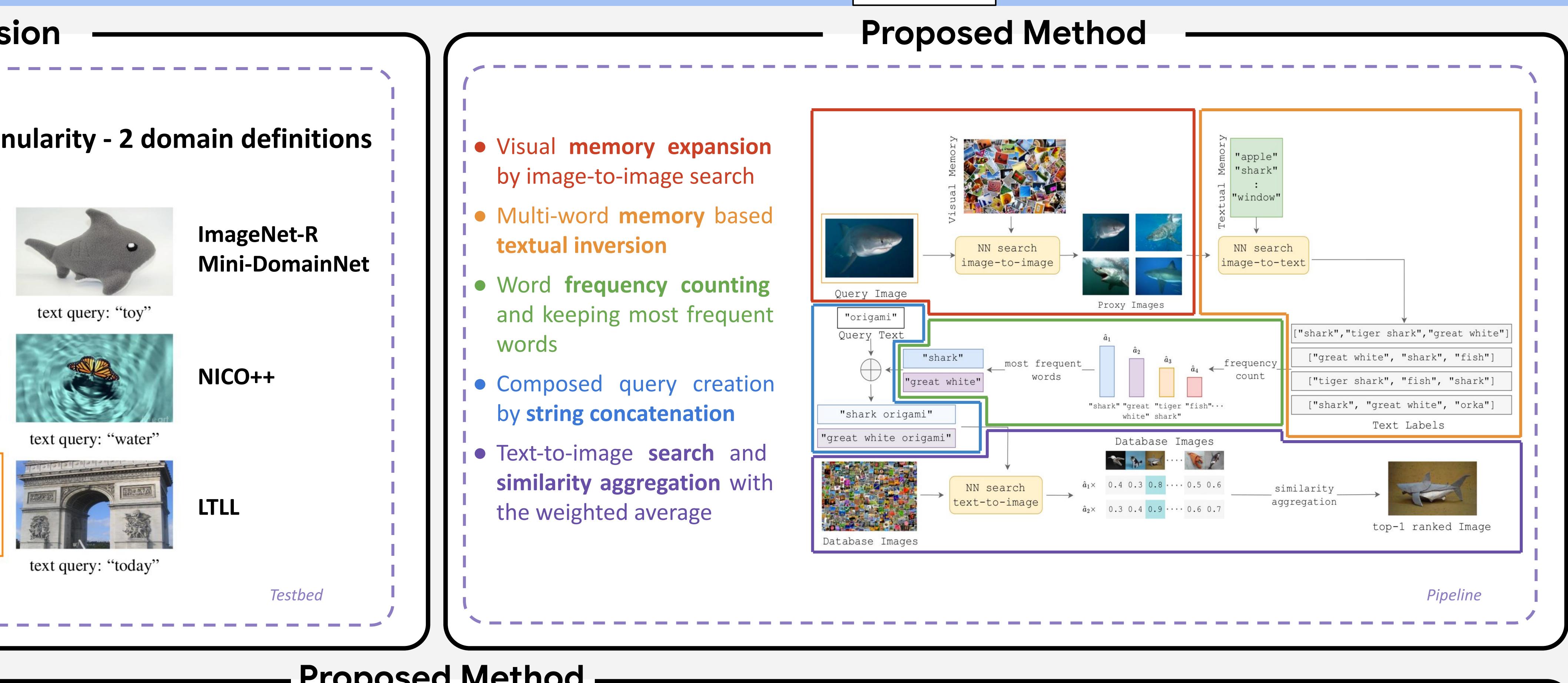
text query: "grass"



image query





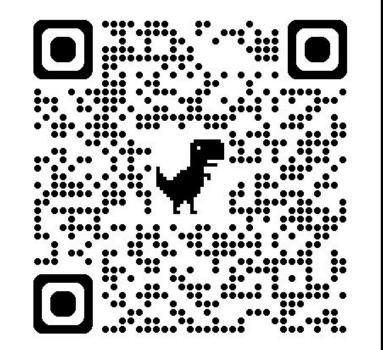


Query image	NN-1	NN-2	NN-3	NN-4	NN-5	NN-6	NN-7
	Snow leopard 1.00	Big cats 0.80	Himalayan 0.60	<i>Clouded leopard</i> 0.45	Big cat 0.35	Snowball 0.25	Artic 0.25
	Gothic architecture 1.00	Unesco world heritage site 1.00	<i>Cathedral</i> 1.00	Medieval architecture 0.95	Classical architecture 0.90	<i>Holy places</i> 0.90	<i>Gothic</i> 0.30
	<i>Steam engine</i> 1.00	<i>Locomotive</i> 0.95	<i>Train</i> 0.90	<i>Steam</i> 0.75	Railway 0.35	Railroad engineer 0.35	British rail class 81 0.35
	Cross-country cycling 1.00	Endurance riding 0.85	<i>Bicycles–Equipment</i> and supplies 0.70	<i>Road cycling</i> 0.70	<i>Bicycle racing</i> 0.65	Road bicycle racing 0.55	<i>Endurance sports</i> 0.35
	Soccer 1.00	<i>Street football</i> 0.93	Freestyle football 0.93	<i>Soccer kick</i> 0.64	<i>Soccer ball</i> 0.57	Kick (Sports) 0.50	Street sports 0.43
							Under the hood

#### Yannis Avrithis, Ondřej Chum, Giorgos Tolias

Pro	posed	Met	hod





Code

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