



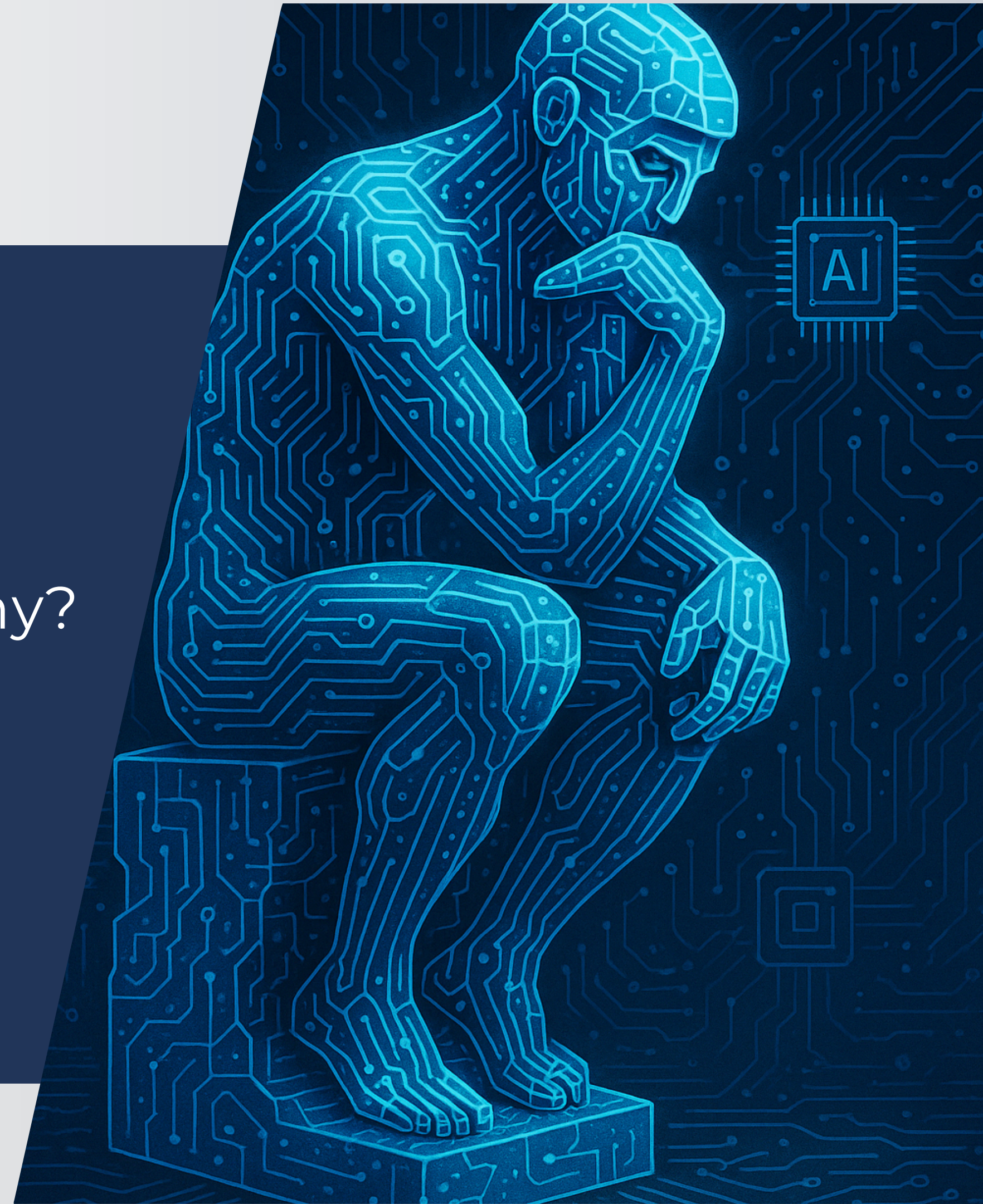
Politechnika
Śląska

PI-WEI CHEN



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- Where Did I Come From?
- What Captivates Me?
- What Are My Life Philosophy?
- My Research Footprints
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- My Role in TUIAI project



WHERE DID I COME FROM?

TAIWAN

Confucian Heritage



Spirit of Democracy

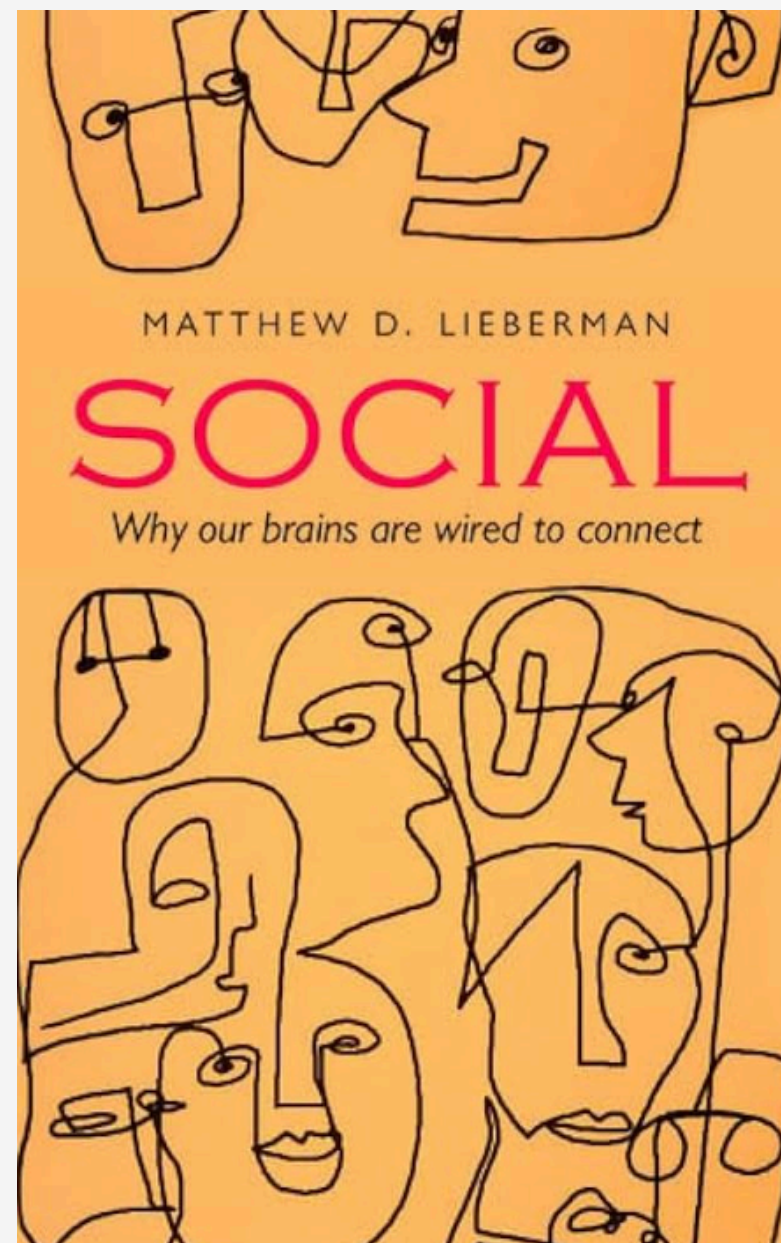


Rich Culinary Traditions

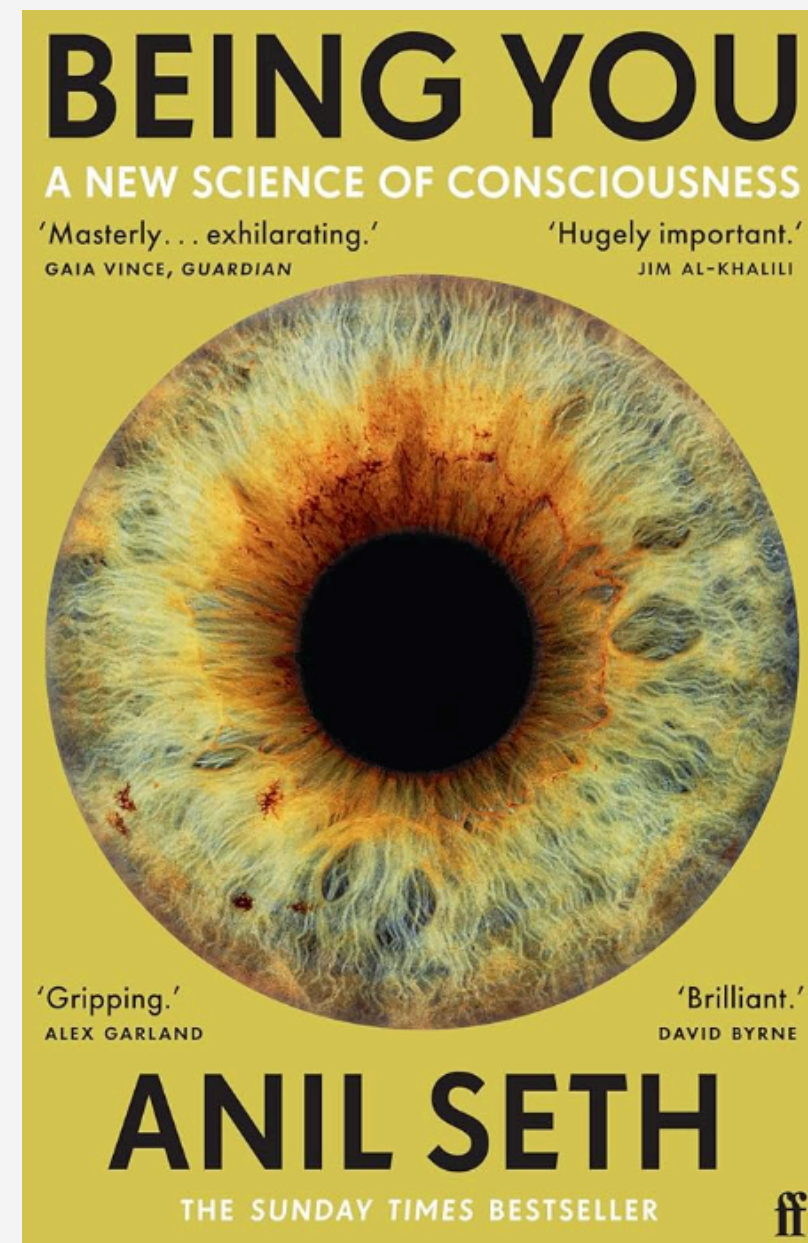


WHAT CAPTIVATES ME? *READING*

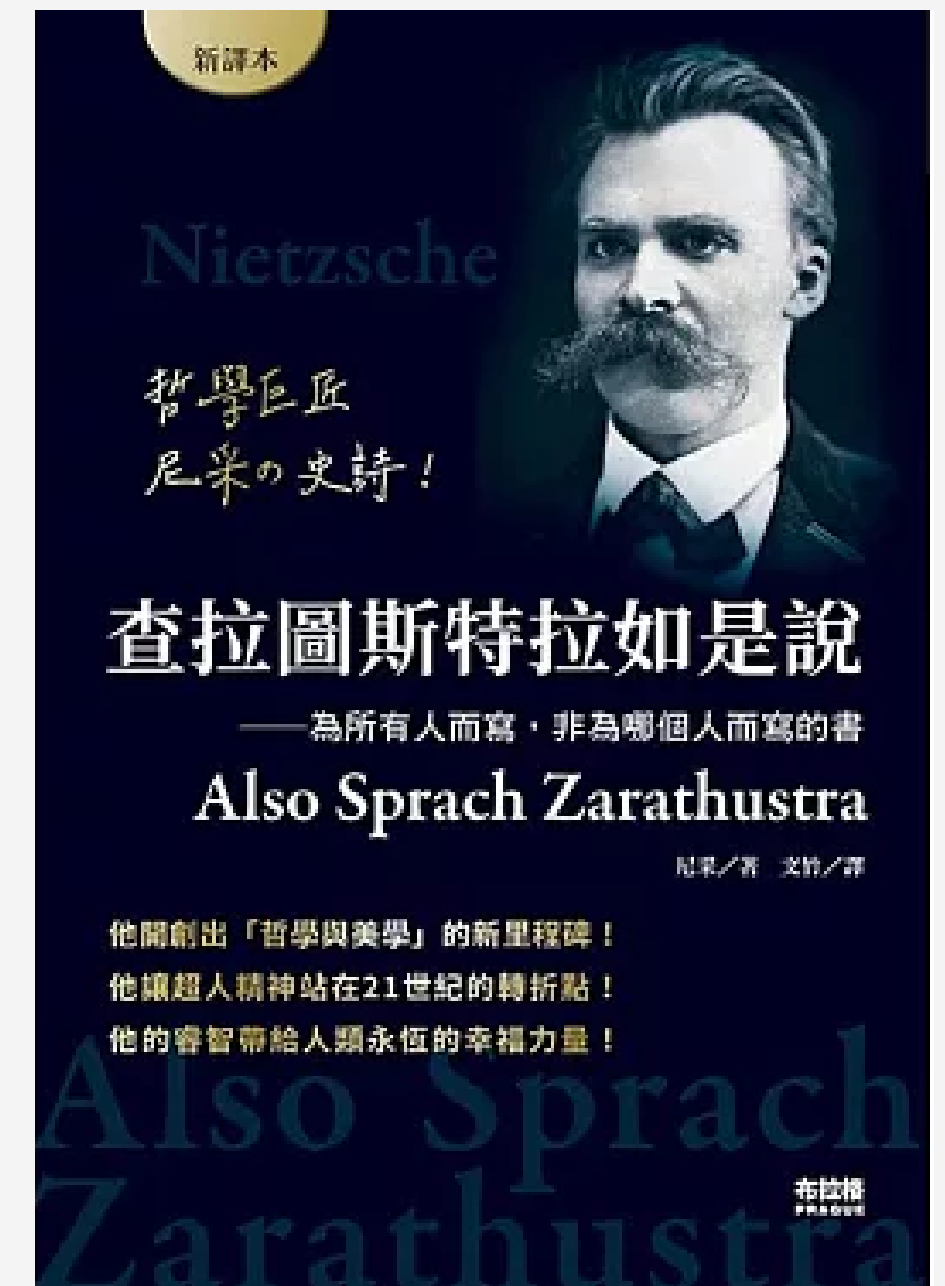
Social- why our brain
are wired to connect



Being You



Thus Spake Zarathustr



MY RESEARCH FOOTPRINT

FedCali: Mitigating Overgeneralization for Anomaly Detection in Distributed Sensor Environments

Publisher: IEEE

Cite This

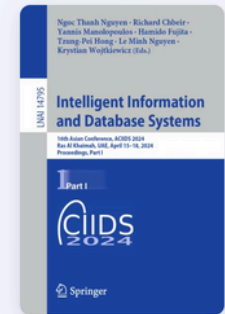


[Pi-Wei Chen](#) ; [Jerry Chun-Wei](#) ; [Rafał Cupek](#) ; [Chao-Chun Chen](#) [All Authors](#)

[Home](#) > [Intelligent Information and Database Systems](#) > [Conference paper](#)

RECALL: Towards Generalized Representations in Unsupervised Federated Learning Under Non-IID Conditions

Conference paper | First Online: 16 July 2024

pp 253–263 | [Cite this conference paper](#)

Intelligent Information and Database Systems

Pi-Wei Chen, Jerry Chun-Wei Lin, Feng-Hao Yeh, Rafał Cupek & Chao-Chun Chen



Feature Purified Transformer With Cross-level Feature Guiding Decoder For Multi-class OOD and Anomaly Detection

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International Conference on Computer Vision 2025

Your Submissions

Author Tasks

Beyond Human-prompting: Adaptive Prompt Tuning with Semantic Alignment for Anomaly Detection

PI-WEI Chen , Chao-Chun Chen , Jerry Chun-Wei Lin 
, Feng Hao Yeh , JIA JI , Zih-Ching Chen , Wei-Han
Chen 

ICCV 2025 Conference Submission

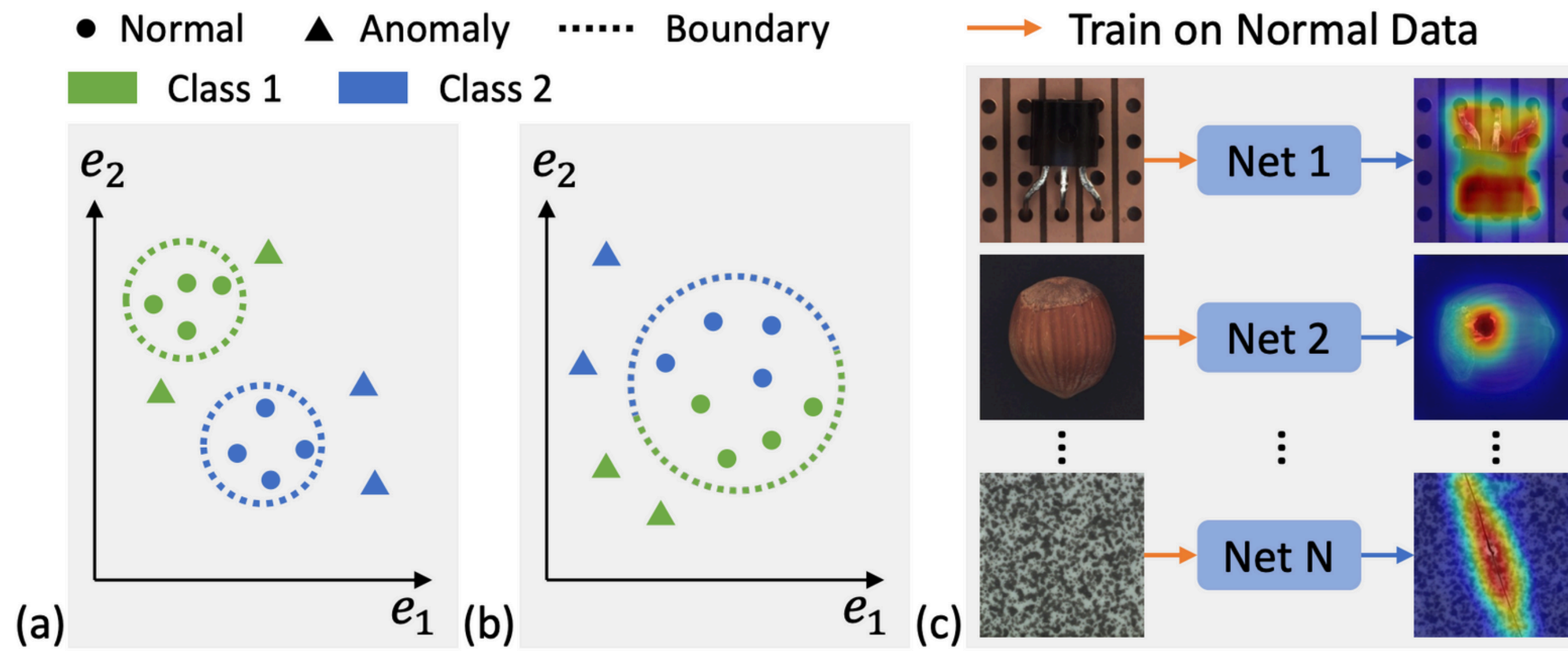
[Show details](#)

 **Reviewer sqmf:** Preliminary_recommendation: 3
[Read Official Review](#)

Average Preliminary Recommendation: 3.00 (Min: 2, Max: 4)

Average Confidence: N/A (Min: N/A, Max: N/A)

Feature Purified Transformer With Cross-level Feature Guiding Decoder For Multi-class OOD and Anomaly Detection

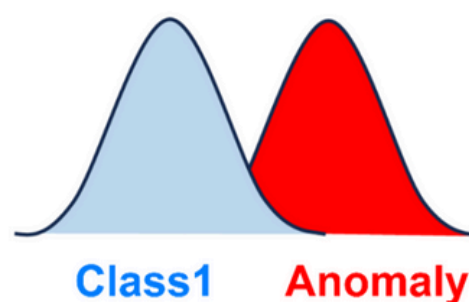


Feature Purified Transformer With Cross-level Feature Guiding Decoder For Multi-class OOD and Anomaly Detection

Training-stage (Trivial works)



(a) Single-class Data Distribution

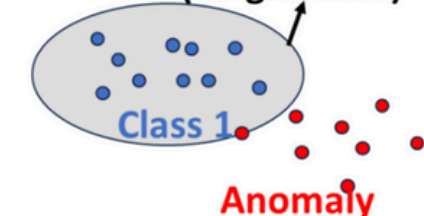


Model

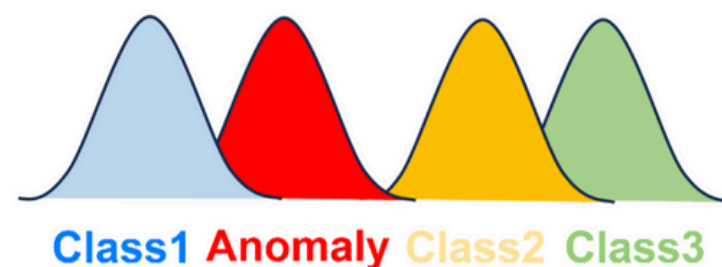


Latent Space

Model valid boundary (Single-class)



(b) Multi-class Data Distribution

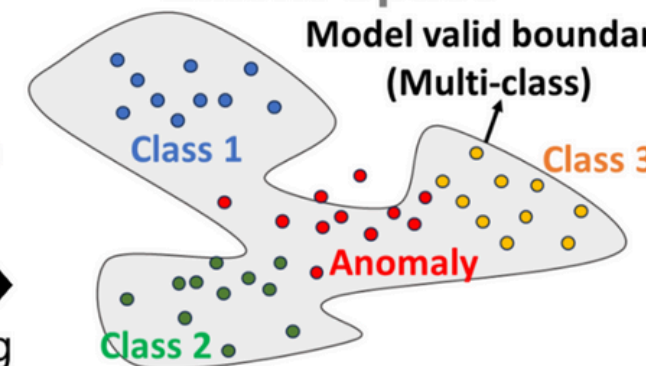


Model



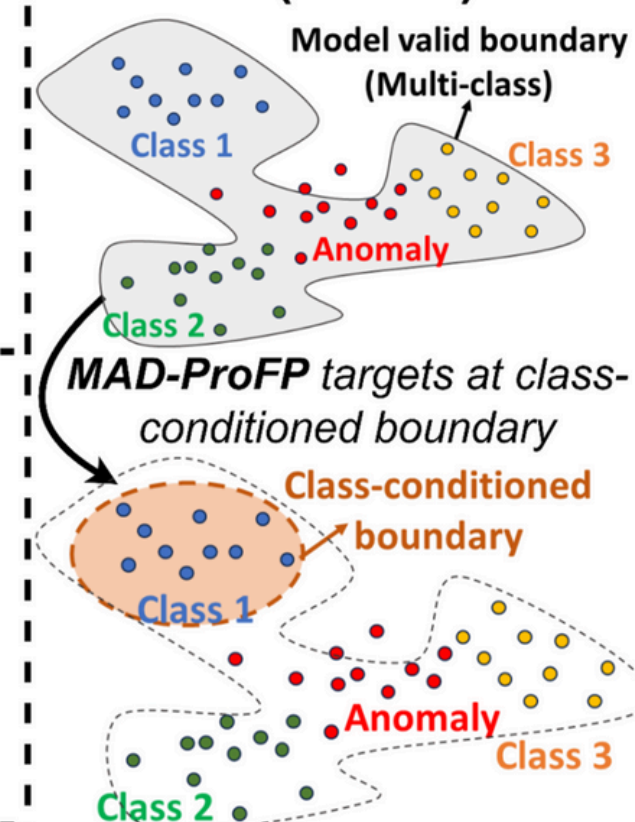
Latent Space

Model valid boundary (Multi-class)

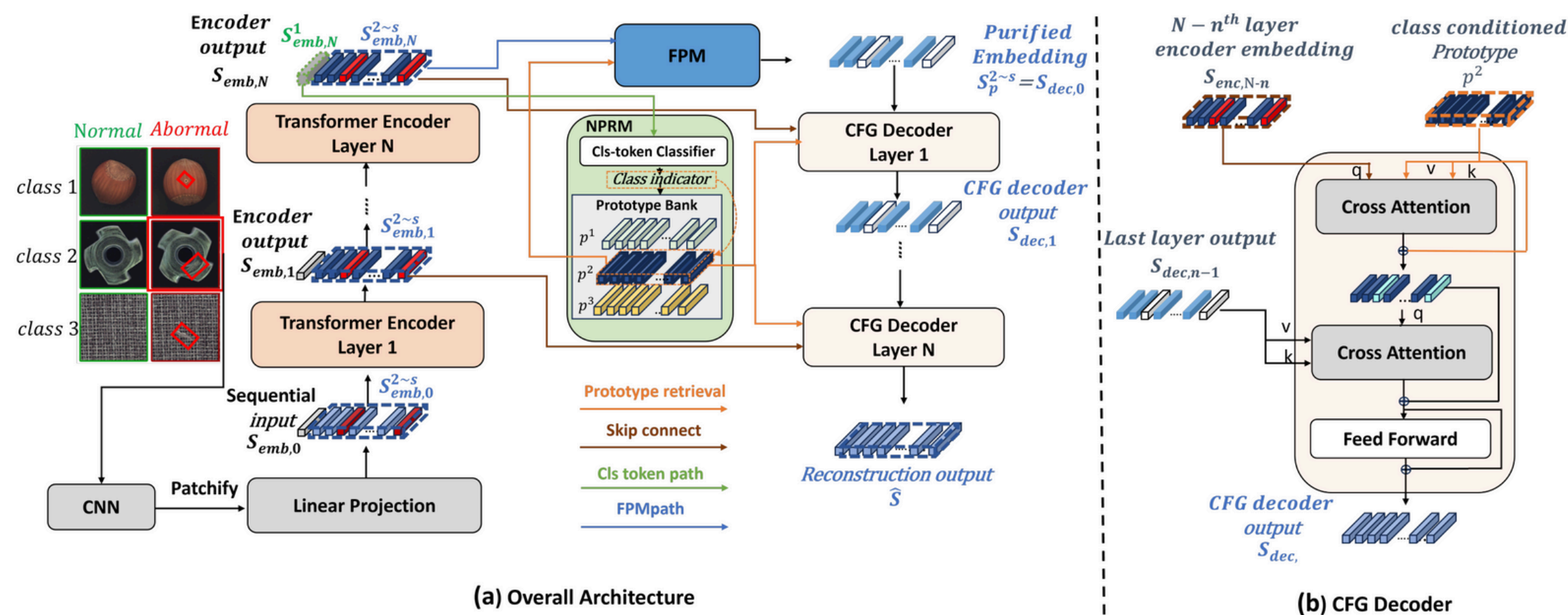
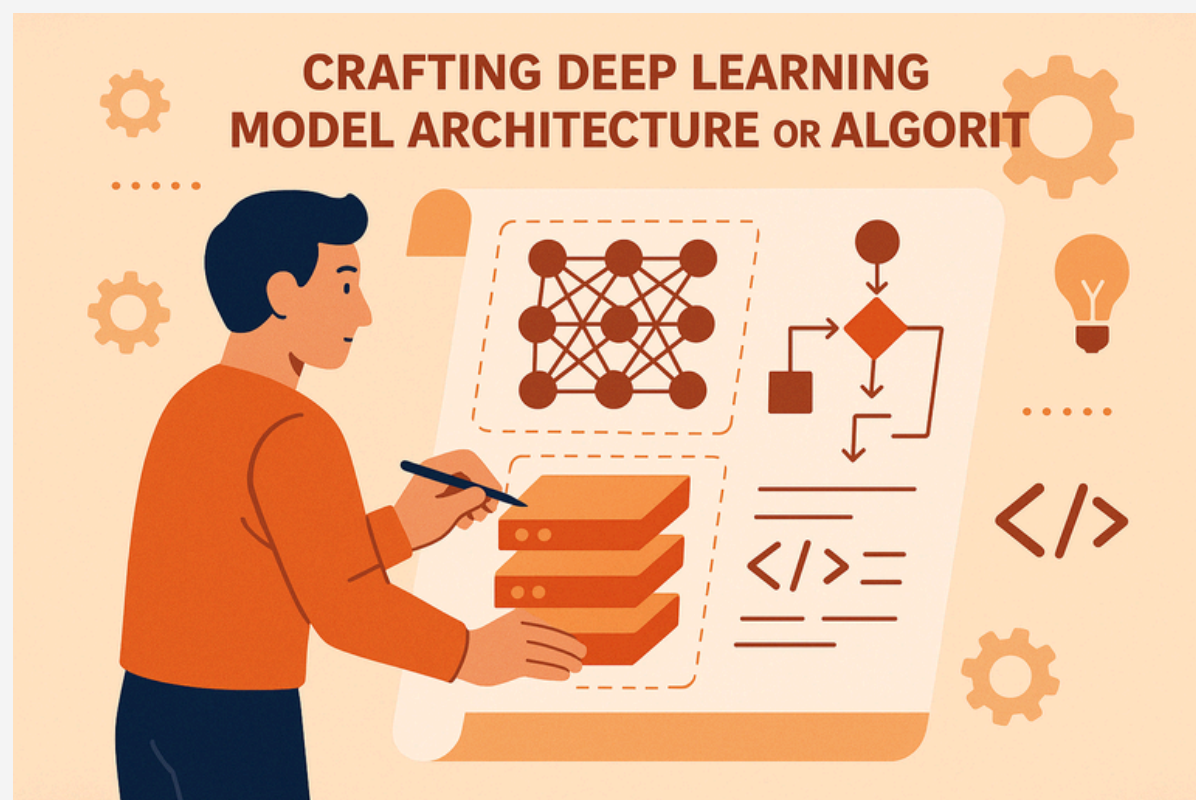


(c) Class-conditioned (class1)

Model valid boundary (Multi-class)



Feature Purified Transformer With Cross-level Feature Guiding Decoder For Multi-class OOD and Anomaly Detection

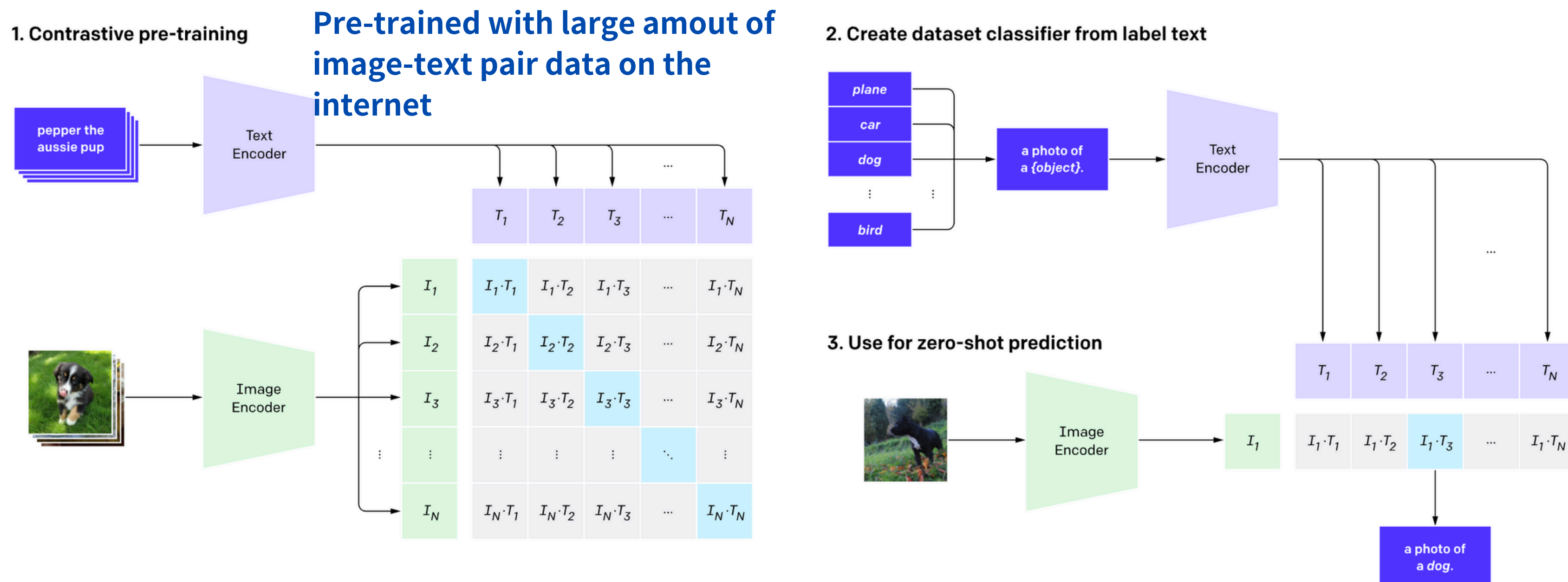


(a) Overall Architecture

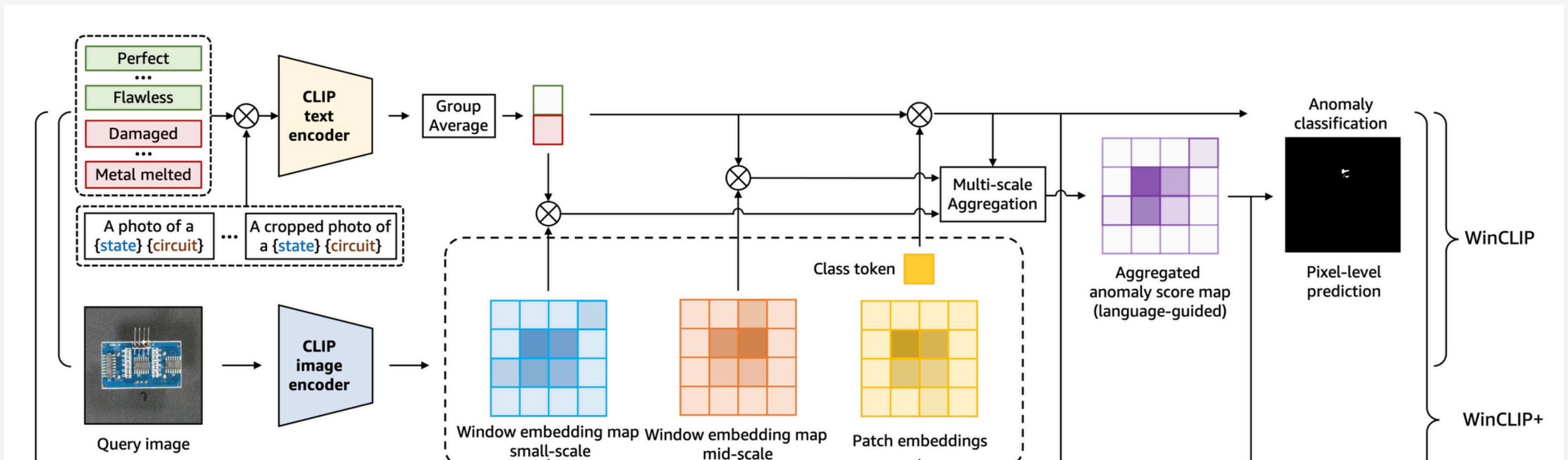
(b) CFG Decoder

Figure 2. The overall architecture of FUTUREG

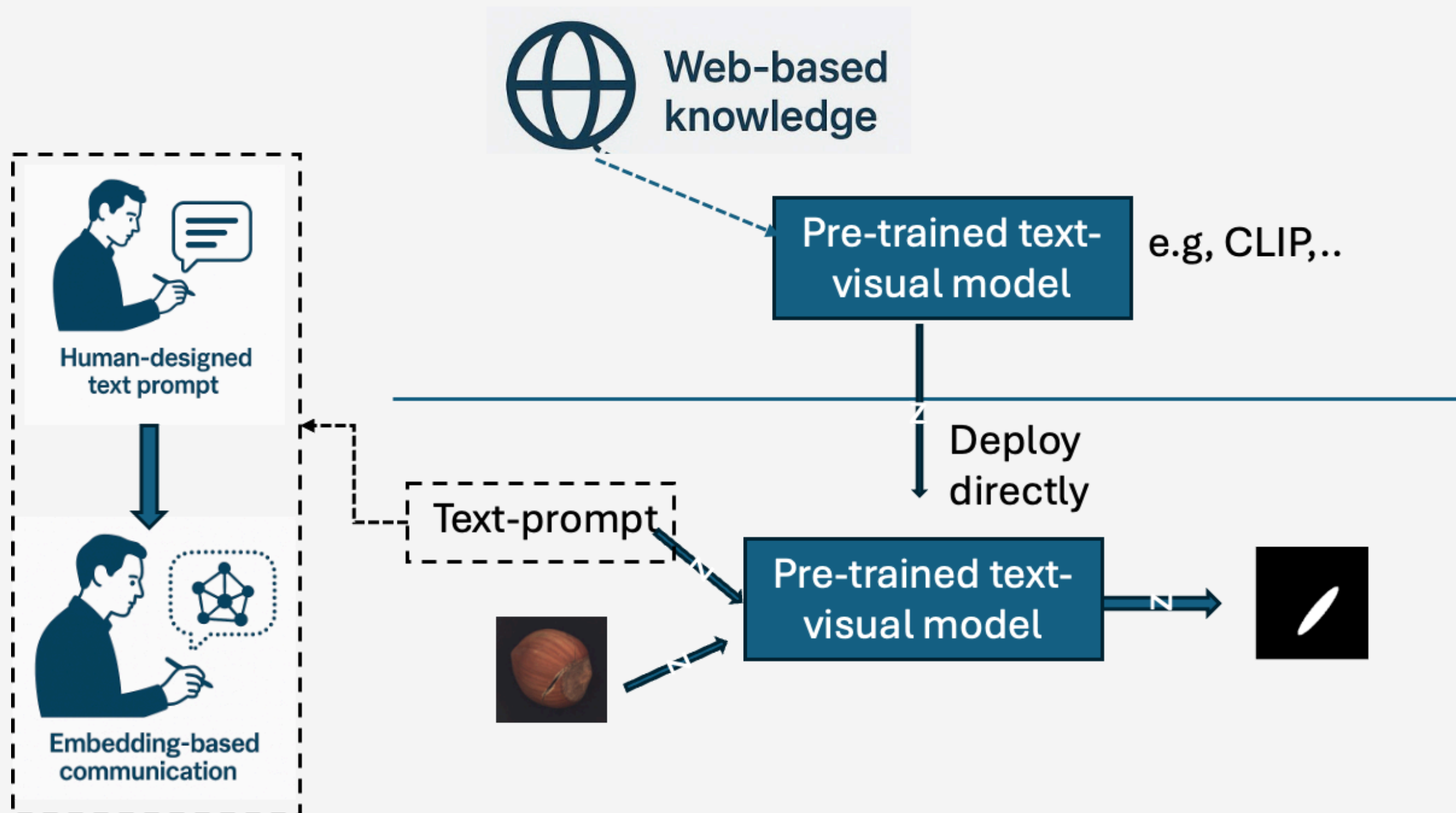
The 1'st Revolution from Pre-trained Visual-Language Model



Zero/few-shot Anomaly Detection via prompting



Beyond Human-prompting: Adaptive Prompt Tuning with Semantic Alignment for Anomaly Detection



Beyond Human-prompting: Adaptive Prompt Tuning with Semantic Alignment for Anomaly Detection

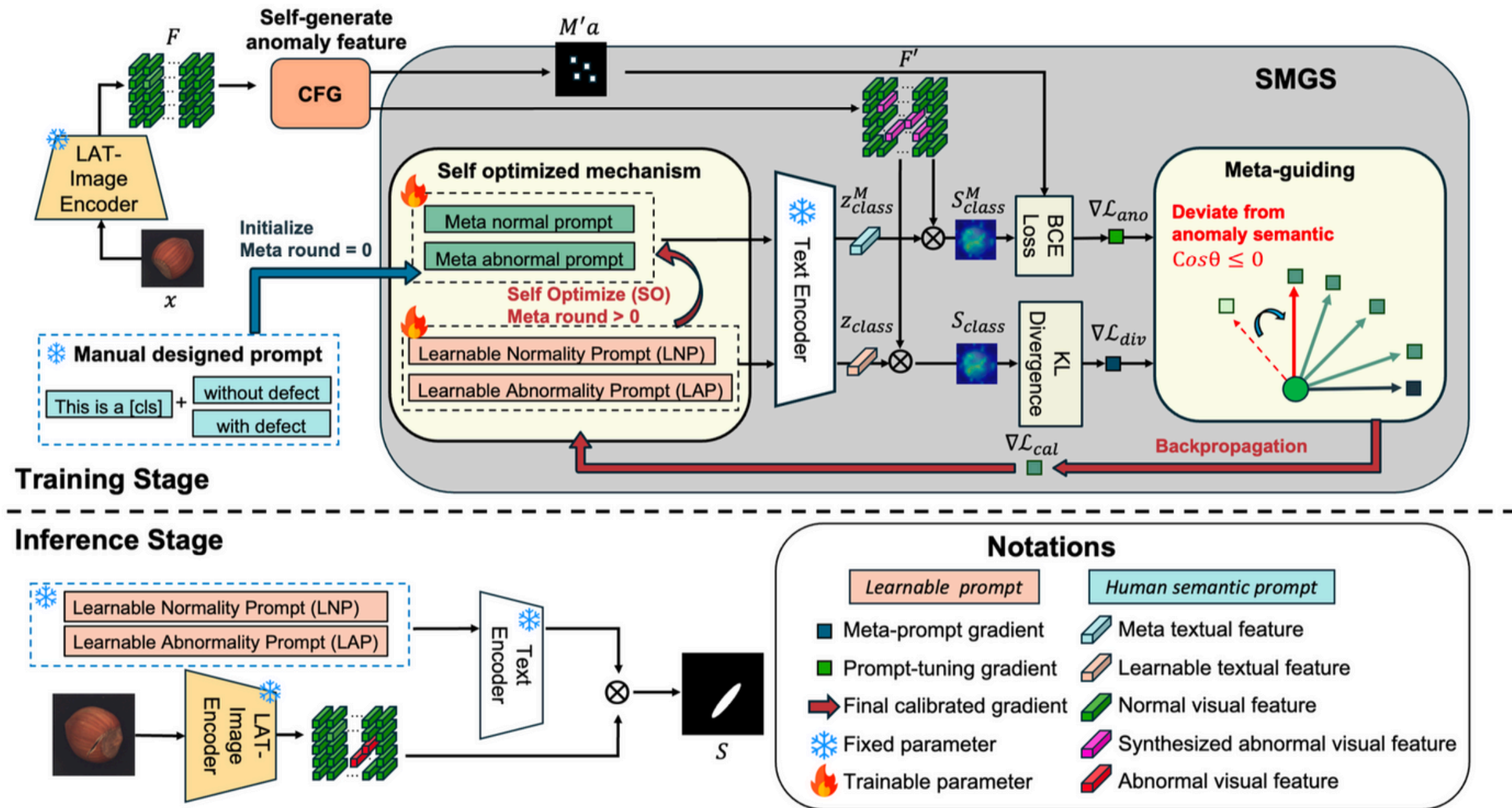


Figure 2. The overall architecture of the proposed Adaptive Prompt Tuning (APT) framework, featuring three main components: (1) Self-Optimizing Meta-Prompt Guiding Scheme (SMGS), which aligns learnable prompts with anomaly semantics through gradient calibration; (2) Contextual Feature Generation (CFG), which generates context-aware anomalies to enhance prompt adaptability; and (3) Locality-Aware Transformer (LAT), which focuses on locality-sensitive feature extraction. These components collaboratively optimize prompt alignment and improve anomaly detection robustness across diverse contexts.

Beyond Human-prompting: Adaptive Prompt Tuning with Semantic Alignment for Anomaly Detection

Pixel-wise Anomaly Detection Comparison Table

Method		MVTec		VisA		MPDD		SDD		CVC	
		w/o VG	w/ VG	w/o VG	w/ VG	w/o VG	w/ VG	w/o VG	w/ VG	w/o VG	w/ VG
1-shot	WinCLIP [12]	81.4	86.2	85.67	89.96	89.56	92.83	68.02	70.91	63.24	62.32
	AnomalyGPT [11]	-	95.3	-	96.20	-	-	-	-	-	-
	PromptAD [15]	91.32	95.0	92.34	96.12	94.77	95.53	92.01	93.4	62.46	54.43
	Ours	92.32	95.32	93.43	96.09	95.11	95.82	95.73	95.47	72.46	64.4
2-shot	WinCLIP [12]	81.4	89.65	85.67	90.26	89.56	92.78	68.02	70.02	-	-
	AnomalyGPT [11]	-	95.6	-	96.40	-	-	-	-	-	-
	PromptAD [15]	91.34	96.03	92.52	96.43	94.3	96.0	91.0	90.8	-	-
	Ours	92.12	97.0	93.61	96.89	95.28	96.32	96.68	92.43	-	-
4-shot	WinCLIP [12]	81.43	90.63	85.67	91.3	89.56	93.26	68.02	71.10	-	-
	AnomalyGPT [11]	-	96.25	-	96.70	-	-	-	-	-	-
	PromptAD [15]	91.63	96.34	92.33	96.90	93.53	96.52	90.64	94.23	-	-
	Ours	92.16	97.1	94.68	97.1	95.14	96.9	96.33	95.3	-	-

Limitation of Visual text model

Insensitive to environmental variation

Original Image (去背后)

The use_column_width parameter has been deprecated and will be removed in a future release. Please utilize the use_container_width parameter instead.



Detection Result

The use_column_width parameter has been deprecated and will be removed in a future release. Please utilize the use_container_width parameter instead.



Anomaly Score Map

Maximum anomaly score: 0.1885

The Mighty LLM?



provide detail decription of the image

The image shows a silver-blue Toyota Wish, a compact MPV (multi-purpose vehicle), captured from an elevated angle. The vehicle has a sleek design with a sunroof, tinted windows, and alloy wheels.

There are visible patches of paint damage and scratches on various parts of the car, particularly on the front bumper, side fenders, and rear doors. These areas appear to have been manually edited or marked, possibly indicating areas requiring repair.

The car is parked outdoors, reflecting buildings and trees on its glossy surface. The background has been removed, making the car appear isolated against a white or transparent backdrop. The lighting conditions suggest a natural daylight setting.

New Paradigm Shift



***What Role Can We Play in This
New Landscape?***

Potential LLM Research Area

RAG System Design

**Retrieval Robustness to
Distribution Shift**

**Knowledge-Graph
-Aware RAG**

Reinforcement learning

**Synthetic Preference
Bootstrapping**

**Multimodal RLHF for
Vision Tasks**

My Role in TUIAI project

TUIAI project- Collaborative Sensor Fusion System: Concept, Modelling and Applications

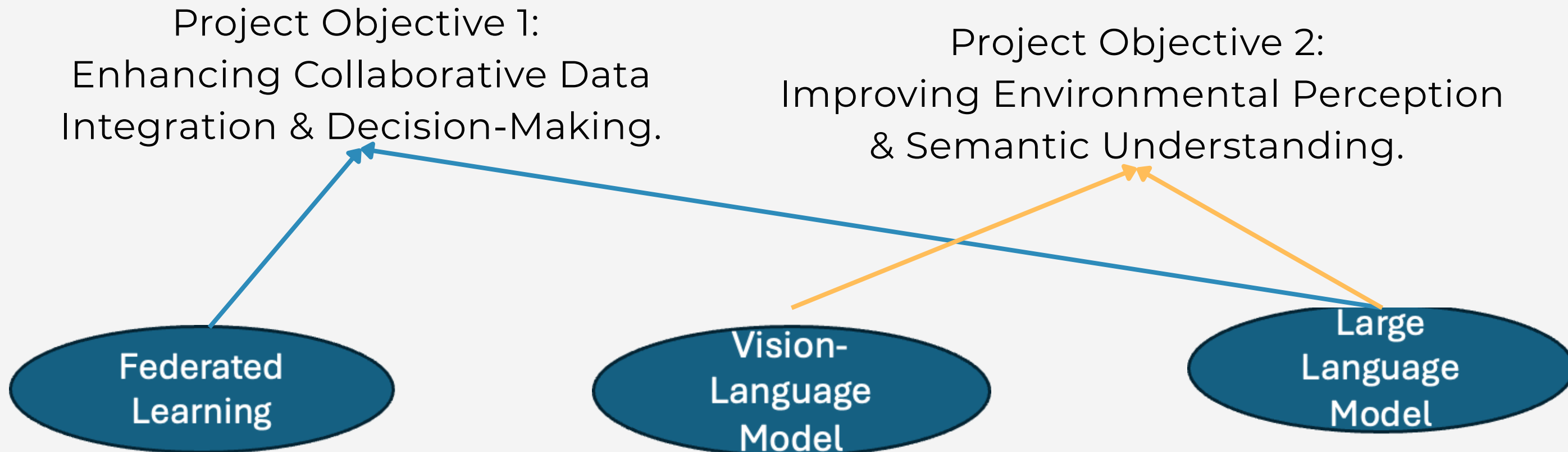
Project Objective 1:
Enhancing Collaborative Data
Integration & Decision-Making.

Federated
Learning

Project Objective 2:
Improving Environmental Perception
& Semantic Understanding.

Vision-
Language
Model

Large
Language
Model





THANK YOU



Email

