

AI Summer School

September 8-12, 2025



VLM-Inspector

Early detection, smarter decisions
on rare events that matter

Team



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Rare events challenge

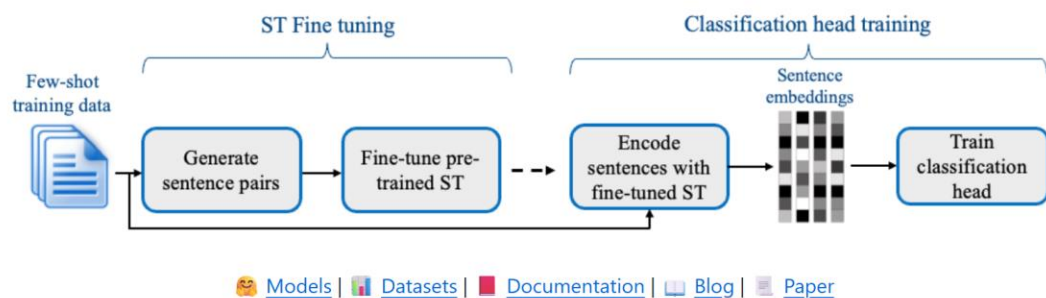
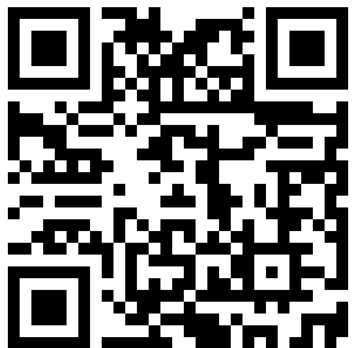
Critical rare events face the challenge of *data scarcity*, which in the context of AI makes it difficult to train accurate models



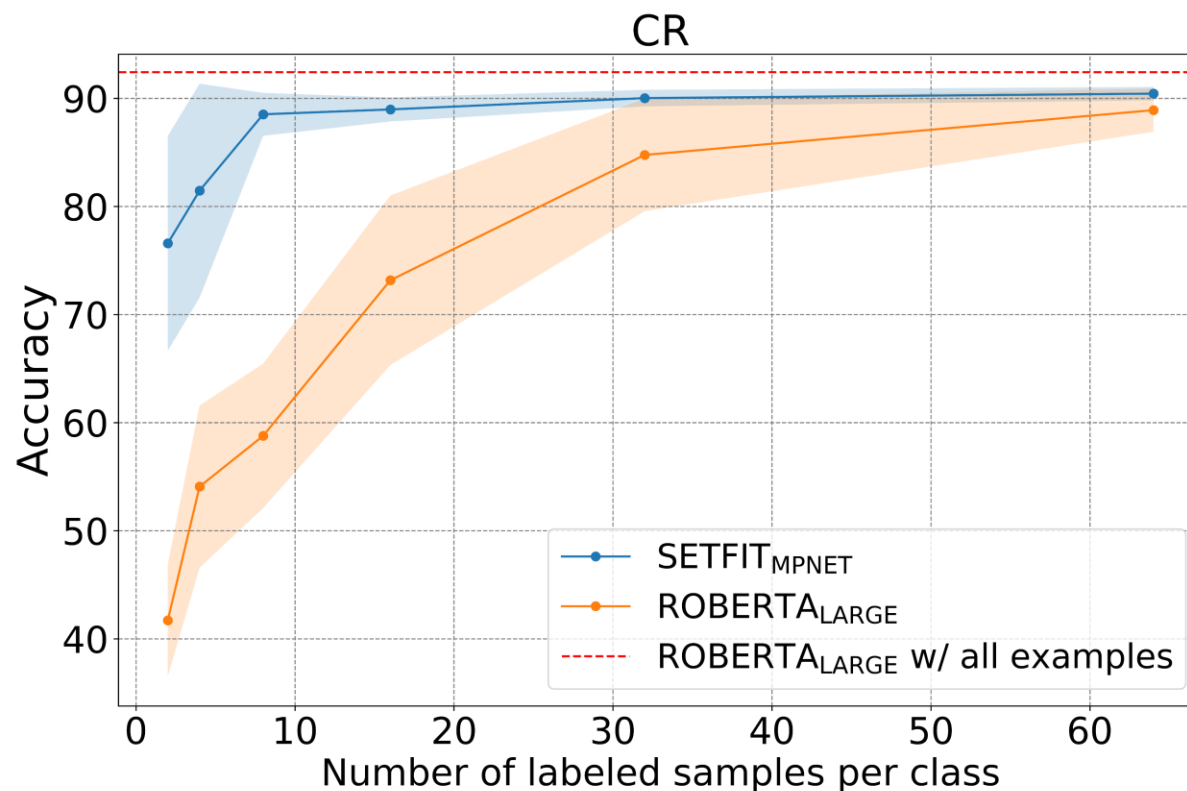
**Multimodal Foundation
models and Generative AI**



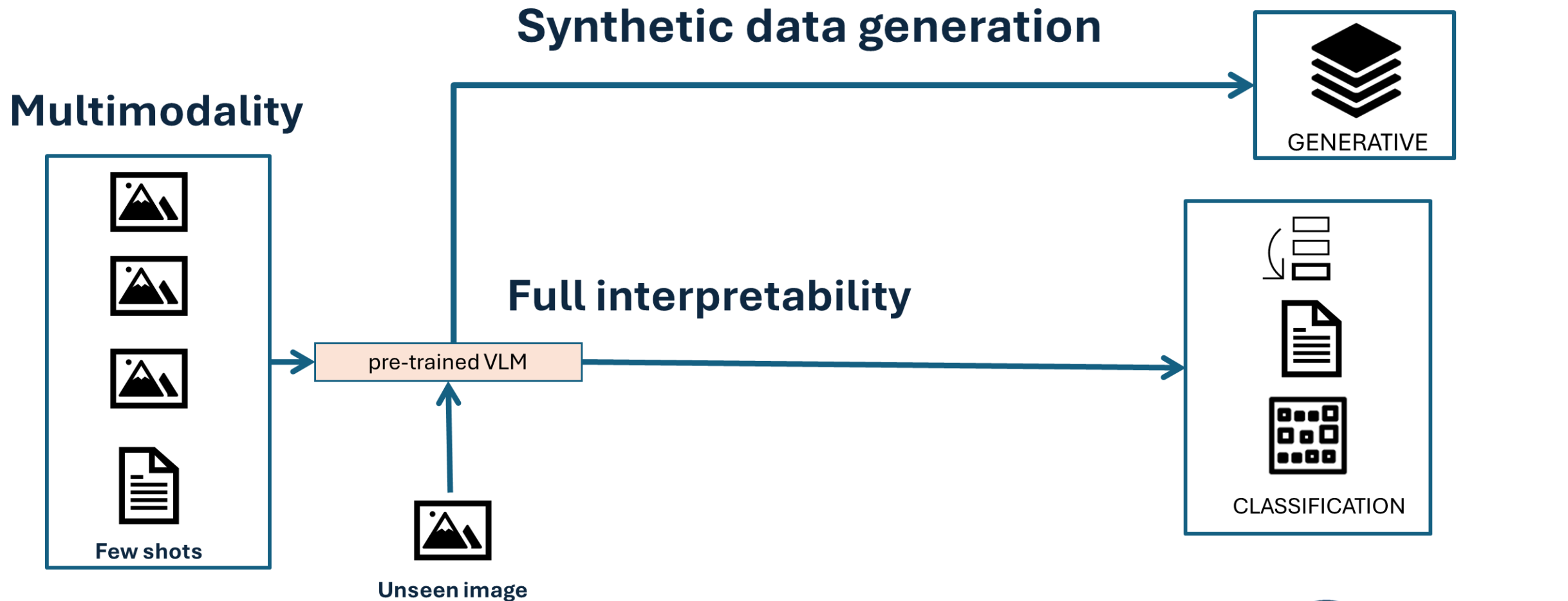
Few-shot learning with pretrained language models has emerged as a promising solution to every data scientist's nightmare: dealing with data that has few to no labels 🤖

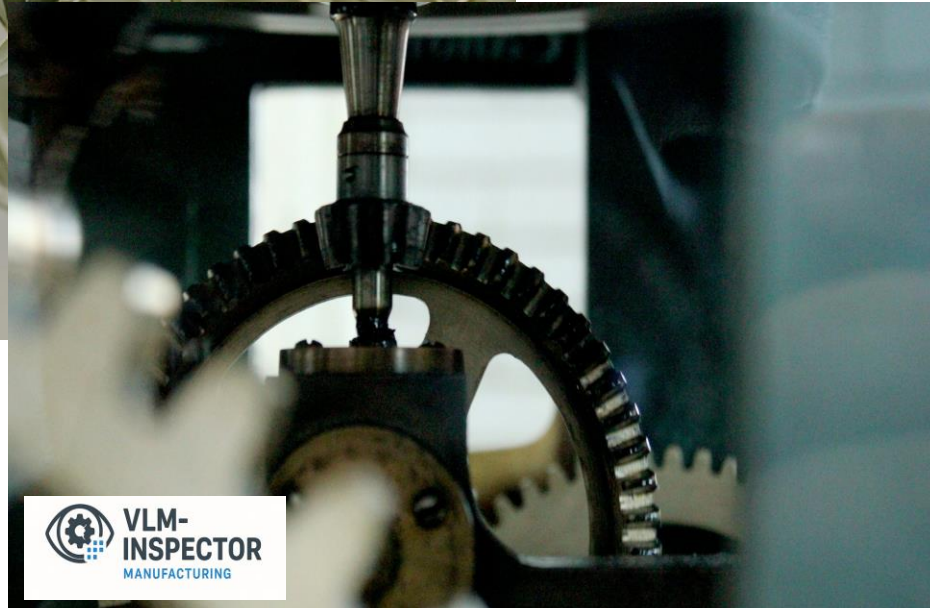


SetFit - Efficient Few-shot Learning with Sentence Transformers



The proposed approach





The UI

Few-shot

Few shot examples



Description

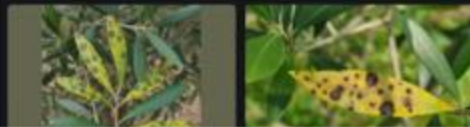
Description

Train Model (few-shot)

Status: trained

Generate new samples

Generate Image(s)



The UI

Few-shot

Few shot examples



Description



Description



Description

Train Model (few-shot)

Status: trained

Generate new samples

Generate Image(s)



Classify a new image

Upload image

Drag and drop file here

Limit: 20MB per file (JPG, PNG, GIF)

Browse files

The UI

Few-shot

Few shot examples



Description



Description



Description

Train Model (few-shot)

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Classify

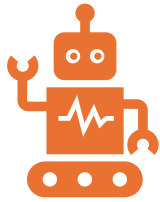
Result:



Status: Classified

Reason: The lesion has a shiny, red, raised center with a central core with margins of distinctive growth (like a large bump). The surrounding surface appears and appears with indistinct, raised, further signal patterns on the damaged skin. This pattern is characteristic of a basal cell carcinoma-type lesion, though only an early-stage one can be.

Ethics and Inclusive Design



Responsible AI

Controlled generation of synthetic images for data augmentation, ensuring privacy and licensing compliance according to Moroccan Law 09-08 on personal data protection and AI Act (eu)

Built-in explainability: output includes class, textual reasoning, and heatmap.



Bias Mitigation

Ensure **balanced** data within each domain (e.g. different skin colors).

Validate on diverse samples



Inclusive Design

Simple interface for **non-technical** domain experts.

Clear multimodal output: explanatory text, image, and defect heatmap.

Business Model



Value Proposition

Versatile AI tool for early detection of rare events in images, with natural-language explanations.



Adapts quickly to any dataset with few samples. Supports health, agriculture, and manufacturing and all rare critical events management.



Customers & Channels

Hospitals, NGOs, farmers, manufacturers. Delivered via SaaS, APIs, or partnerships.



Revenue

Subscriptions, API usage, customization services, grants for social-impact projects.



Partners

Hospitals, agritech groups, industrial firms, research labs.



Costs

Cloud computing, development, dataset curation, support & training.

Business Model

[1] <https://bit.ly/4mhF8S6>

[2] <https://bit.ly/4nxA2SN>

[3] <https://bit.ly/4nrbSsS>

The AI markets for precision medicine, agriculture, and industrial defect detection are all rapidly growing with strong future potential.



Precision medicine AI is valued at around **USD 3 billion** in 2025, with expected **CAGR of 25-35%** over the next decade, potentially reaching over USD 14-30 billion by early 2030s.



The AI agriculture market is projected to reach **USD 61 billion** by 2035, growing at about **25% CAGR** from 2025, driven by advanced crop and pest monitoring technologies.



The AI-powered defect detection market in manufacturing stands at **USD 2.6-3.6 billion** in 2024, with a **15-20% CAGR** expected over 5-10 years.

We can realistically target annual revenue growth of 20-35% in initial scaling phases, fueled by adoption, scaling, and strong market demand for AI-driven early detection and precision analytics.