ANOMAVISION VS ANOMALIB

A Comprehensive Performance Analysis: Benchmarking on MVTec and Visa Datasets

AnomaVision vs *Anomalib*

KEY PERFORMANCE METRICS
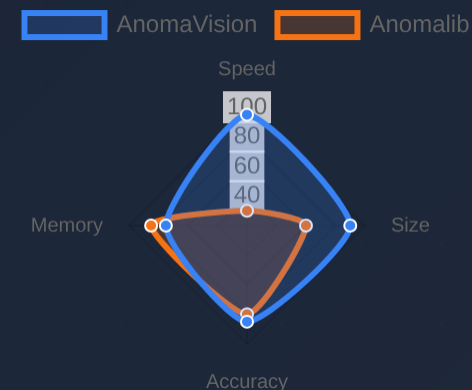
Speed
3x Faster

Model Size
25% Smaller

Accuracy
Competitive

Datasets
MVTec & Visa

AnomaVision — Anomalib

Speed
100
80
60
40
Memory — Size
Accuracy

INTRODUCTION TO ANOMALY DETECTION
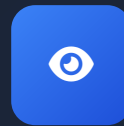
📈 CORE CONCEPTS

🔍 What is Anomaly Detection?

Identification of **rare items**, **events** or **observations** which deviate significantly from normal behavior patterns.

⚖️ Why Compare Frameworks?

Framework selection impacts **accuracy**, **speed**, and **resource efficiency** in industrial applications.

🗂️ FRAMEWORKS OVERVIEW

👁️ AnomaVision (AV)

High-performance anomaly detection framework optimized for industrial applications.

- ⊙ Higher FPS (3x)
- ↘ Smaller model (30.5MB)
- ◎ Superior localization
- 🏭 Production-ready

Anomalib (AL)

Deep learning library with state-of-the-art anomaly detection algorithms.

- ⚙ Modular API & CLI
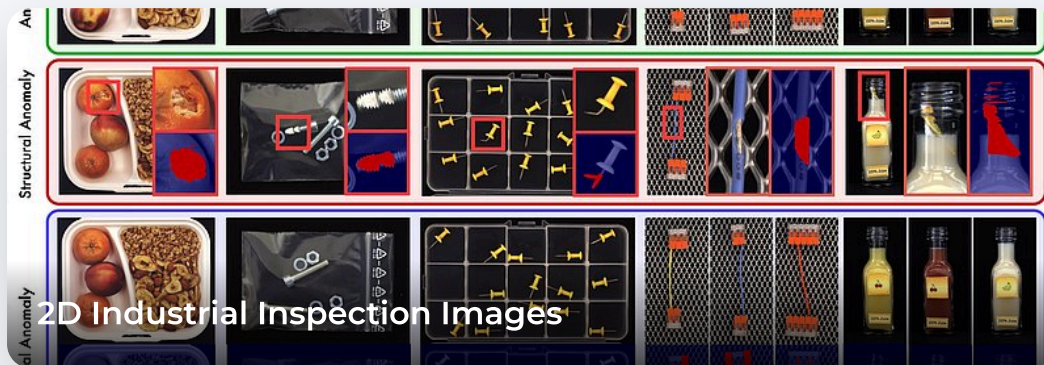- ⊞ Largest algorithm collection
- 🧩 High flexibility
- ⑂ Reproducible research

DATASETS OVERVIEW

MVTEC DATASET

2D Industrial Inspection Images

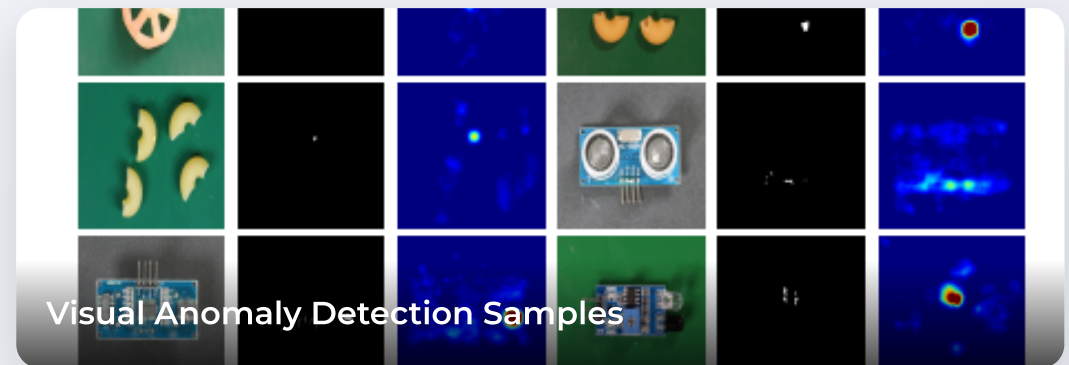| 15	5K+
CLASSES	IMAGES

⭐ Key Features

- 🏭 Industrial inspection focus
- ▦ Texture & object anomalies
- 🖼 High-resolution 2D images
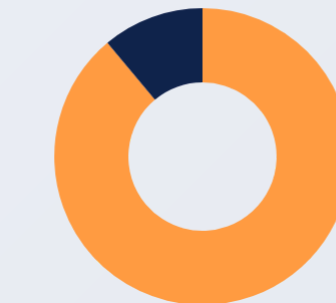

■ Normal ■ Anomaly

VISA (VISA) DATASET

Visual Anomaly Detection Samples

12	10.8K
CLASSES	TOTAL IMAGES

⭐ Key Features

- 👑 Largest anomaly dataset
- ⧉ 3 different domains
- ⚖ 9.6K normal, 1.2K anomaly

■ Normal ■ Anomaly

METHODOLOGY AND METRICS

Comprehensive evaluation across **five key metrics** to capture different aspects of anomaly detection effectiveness and efficiency.

Image AUROC
AREA UNDER ROC CURVE

Measures ability to distinguish between normal and anomalous images at the image level.

◎ Detection Accuracy

Pixel AUROC
AREA UNDER ROC CURVE

Evaluates ability to precisely localize anomalies within images at the pixel level.

◈ Localization Precision

FPS
FRAMES PER SECOND

Measures inference speed and real-time processing capability of the framework.

⏱ Processing Speed

Model Size
MEGABYTES

Storage footprint of the trained model, important for deployment on devices with limited storage.
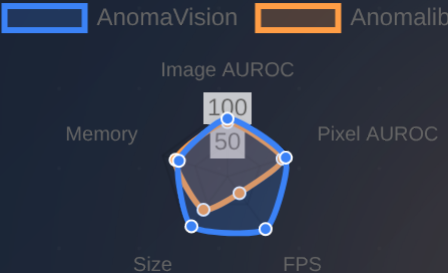
🗄 Storage Efficiency

Memory Usage
MEGABYTES

Runtime memory consumption, indicates resource requirements during inference.

▦ Resource Efficiency

VISA DATASET PERFORMANCE

Processing Speed
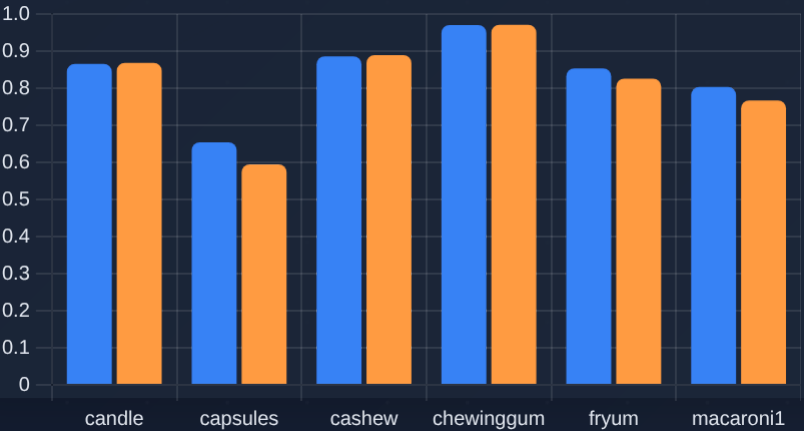
AnomaVision: **3x higher FPS**

Model Size

AnomaVision: **25% smaller**

Detection Accuracy

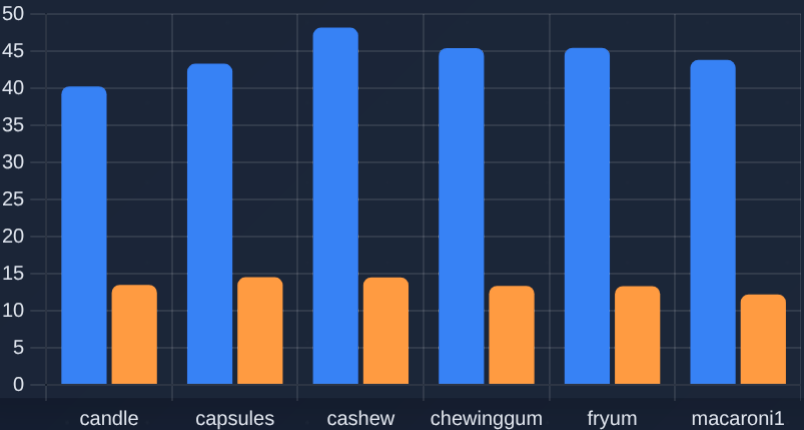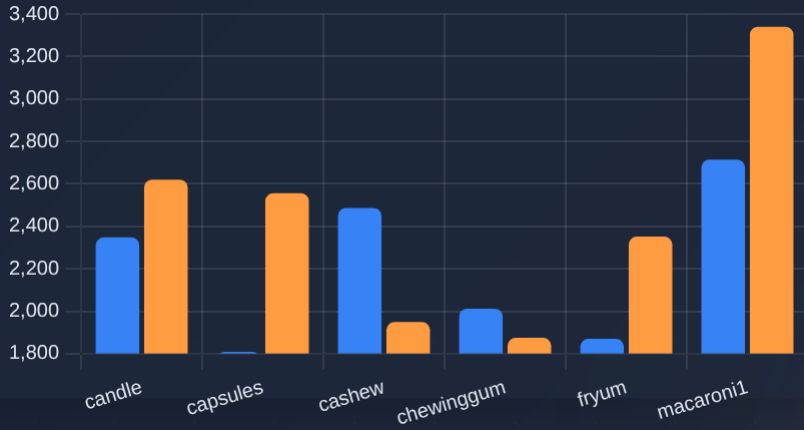Comparable performance by class

IMAGE AUROC

PIXEL AUROC

FPS

MEMORY USAGE (MB)

■ AnomaVision (AV) ■ Anomalib (AL)

MVTEC DATASET PERFORMANCE

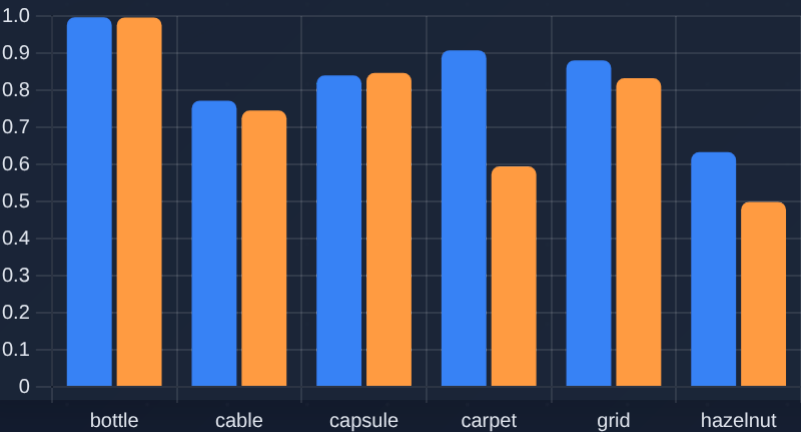## Processing Speed
AnomaVision: **3x higher FPS**

Detection Accuracy
Notable differences by class
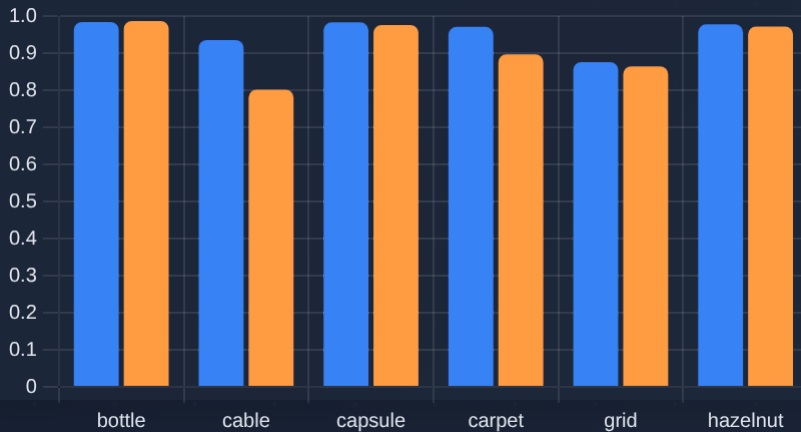
Resource Efficiency
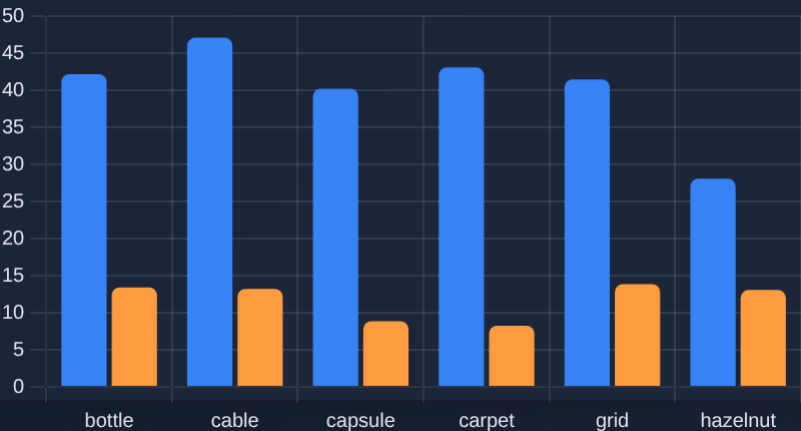**Consistent** memory usage

IMAGE AUROC — HIGHER IN 10/15 CLASSES

Bar chart — Image AUROC (0 to 1.0) for classes: bottle, cable, capsule, carpet, grid, hazelnut

PIXEL AUROC — HIGHER IN 11/15 CLASSES

Bar chart — Pixel AUROC (0 to 1.0) for classes: bottle, cable, capsule, carpet, grid, hazelnut

FPS — 3X FASTER

Bar chart — FPS (0 to 50) for classes: bottle, cable, capsule, carpet, grid, hazelnut

MEMORY USAGE (MB)

Bar chart — Memory Usage (1,100 to 1,900 MB) for classes: bottle, cable, capsule, carpet, grid, hazelnut
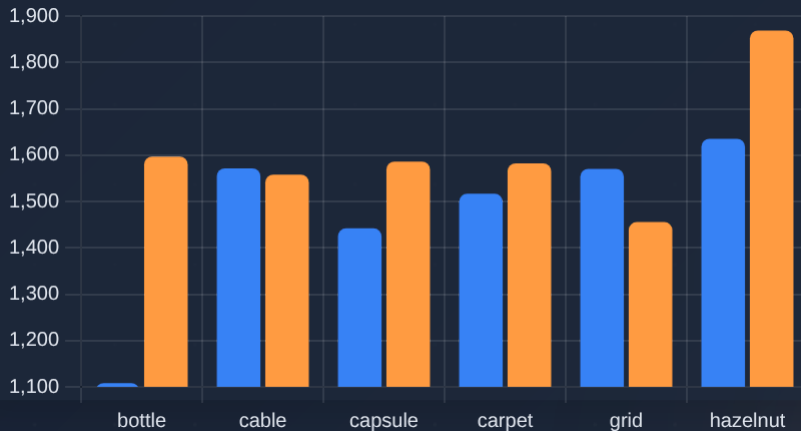
■ AnomaVision (AV)   ■ Anomalib (AL)

OVERALL COMPARISON

AnomaVision `FASTER`

METRIC	VISA	MVTEC
Image AUROC	0.809	0.855
Pixel AUROC	0.962	0.949
FPS	**44.7**	**42.8**
Size (MB)	**30.5**	**30.5**
Memory (MB)	2528	1659

⭐ KEY STRENGTHS

🕐 3x faster FPS	↙ 25% smaller model
⊕ Superior localization	📈 Consistent performance

Anomalib `FLEXIBLE`

METRIC	VISA	MVTEC
Image AUROC	0.782	0.814
Pixel AUROC	0.949	0.938
FPS	13.6	12.7
Size (MB)	40.5	40.5
Memory (MB)	2674	1693

⭐ KEY STRENGTHS

⚙ Modular API & CLI	▦ Largest algorithm collection
🧩 Greater flexibility	▥ Better memory efficiency

FRAMEWORK PERFORMANCE COMPARISON

AnomaVision Anomalib
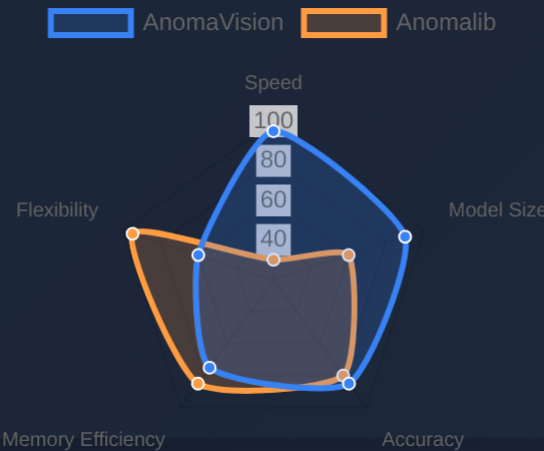
CONCLUSION

📈 KEY FINDINGS

👁 AnomaVision   `PERFORMANCE`

🕐 3x faster FPS	↙ 25% smaller model
🎯 Superior localization	📈 Consistent performance

🔗 Anomalib   `FLEXIBILITY`

⚙ Modular API & CLI	▦ Largest algorithm collection
🧩 Greater flexibility	🔲 Better memory efficiency

🚀 Choose AnomaVision When

⚡ Speed is critical	💾 Limited storage
◎ Precise localization	🏭 Production environments

⚗ Choose Anomalib When

🎚 Algorithm flexibility	🔬 R&D projects
🛠 Extensive customization	🔀 Multiple approaches