Real-Time Computer Vision Algorithms Training Course

25 – 29 July 2027
Johannesburg

AGILE LEADERS
Training Center

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Ref: 1665_223043 **Date:** 25 – 29 July 2027 **Location:** Johannesburg **Fees:** 4500 Euro

Overview

Real-Time Computer Vision Algorithms Training Course is a one-week course for vision engineers, software engineers, data scientists, embedded systems engineers and technical leads, who leave with a Real-Time Vision Pipeline Validation Pack. The course connects image acquisition, preprocessing, feature extraction, object detection, object tracking, edge AI deployment, inference optimization and pipeline monitoring. Participants balance accuracy, latency and throughput across live image and video workloads. Agile Leaders Training Center develops practical real-time computer vision skills.

Who Should Attend

- Teams responsible for image and video analytics pipelines
- Teams responsible for vision model development and validation
- Teams responsible for embedded and edge AI deployment
- Teams responsible for application integration and runtime performance
- Teams responsible for technical delivery and production monitoring

The course assumes participants work with software, data or imaging systems and leaves out advanced model research and vendor certification preparation.

Departments and Industries

The course supports departments and industries that use cameras and visual data for operational decisions.

- Software engineering, data science and AI operations
- Manufacturing inspection and quality control
- Mobility, logistics and transport analytics
- Retail operations and facility monitoring
- Energy, utilities and technical services

Learning Objectives

By the end of this course, participants will be able to:

- Build image acquisition and preprocessing workflows
- Compare classical and deep-learning vision methods
- Apply object detection and object tracking pipelines
- Analyze accuracy, latency and throughput measurements
- Evaluate inference optimization and edge deployment choices

- Build testing and pipeline monitoring controls

Course Agenda

Day 1: Image Pipeline Foundations

- Image Acquisition and Frame Sampling Plan
- Color Space and Pixel Format Conversion Method
- Resize Normalize and Denoise Preprocessing Pipeline
- Region of Interest and Annotation Schema
- Dataset Split and Visual Quality Checklist

Day 2: Vision Algorithms and Features

- Edge Corner and Keypoint Extraction Method
- Feature Descriptor and Matching Evaluation Matrix
- Segmentation Threshold and Morphology Workflow
- Convolutional Vision Model Pipeline Map
- Accuracy Precision Recall and Error Review Sheet

Day 3: Detection and Tracking

- Object Detection Input and Output Contract
- Confidence Threshold and Suppression Tuning Grid
- Object Tracking Association and Identity Method
- Occlusion Reentry and Track Lifecycle Rules
- Streaming Video Analytics Pipeline Design

Day 4: Real-Time Deployment and Control

- Latency Throughput and Resource Benchmark Plan
- Graph Optimization and Execution Provider Matrix
- Model Quantization and Accuracy Comparison Sheet
- Edge AI Deployment and Device Constraint Map
- Pipeline Monitoring and Runtime Exception Checklist

Day 5: Real-Time Vision Practice

- Exercise: Build an Image Preprocessing Pipeline
- Exercise: Configure Detection and Tracking Logic
- Exercise: Measure Latency Throughput and Accuracy
- Exercise: Test Edge Deployment and Monitoring Controls
- Capstone: Real-Time Vision Pipeline Validation Pack

Practical Exercises

Suggested activities use camera streams, inspection images, mobility scenes and operational video samples.

- Suggested activity: create a preprocessing chain with frame sampling, resizing, normalization and quality checks
- Suggested activity: configure object detection and object tracking thresholds and review failure cases
- Suggested activity: compare runtime configurations using accuracy, latency, throughput and resource measures
- Suggested activity: test an edge AI deployment plan with monitoring and exception controls

FAQs

Who should take real-time computer vision training, and what does it assume?

Real-time computer vision training suits technical teams that work with software, data, cameras or embedded systems and can interpret basic processing workflows.

How does real-time computer vision training differ from general machine learning training?

Real-time computer vision training focuses on image and video pipelines, detection, tracking, deployment and runtime measures; general machine learning training covers broader data and modeling tasks.

How are latency and throughput measured in a computer vision pipeline?

Latency measures the time required to process an input, while throughput measures processed frames or requests over a defined interval under stated resource conditions.

What makes object tracking reliable in streaming video analytics?

Reliable object tracking uses consistent detections, association rules, identity handling, occlusion controls, track lifecycle settings and review of missed or incorrect matches.

How does inference optimization affect edge AI deployment?

Inference optimization can reduce model size, execution cost or processing delay, but teams must compare performance gains with accuracy, compatibility and device resource limits.

Conclusion

Participants take back a Real-Time Vision Pipeline Validation Pack containing workflow maps, benchmark plans, tuning grids, deployment checks and monitoring controls. The pack makes computer vision design and performance decisions traceable. It helps teams test image and video pipelines before operational deployment and manage runtime exceptions after release.