ITUPublications
Recommendations

International Telecommunication Union
Standardization Sector

Recommendation

ITU-T F.743.19 (12/2022)

SERIES F: Non-telephone telecommunication services

Multimedia services

Requirements for intelligent surveillance cameras in intelligent video surveillance systems

Documents
Document Sharing Hub

Full document details: ITU-T F.743.19 2022

ITU-T F-SERIES RECOMMENDATIONS

NON-TELEPHONE TELECOMMUNICATION SERVICES

TELEGRAPH SERVICE	
Operating methods for the international public telegram service	F.1–F.19
The gentex network	F.20–F.29
Message switching	F.30–F.39
The international telemessage service	F.40–F.58
The international telex service	F.59–F.89
Statistics and publications on international telegraph services	F.90–F.99
Scheduled and leased communication services	F.100–F.104
Phototelegraph service	F.105–F.109
MOBILE SERVICE	
Mobile services and multidestination satellite services	F.110–F.159
TELEMATIC SERVICES	
Public facsimile service	F.160–F.199
Teletex service	F.200–F.299
Videotex service	F.300–F.349
General provisions for telematic services	F.350–F.399
MESSAGE HANDLING SERVICES	F.400–F.499
DIRECTORY SERVICES	F.500–F.549
DOCUMENT COMMUNICATION	
Document communication	F.550–F.579
Programming communication interfaces	F.580–F.599
DATA TRANSMISSION SERVICES	F.600–F.699
MULTIMEDIA SERVICES	**F.700–F.799**
ISDN SERVICES	F.800–F.849
UNIVERSAL PERSONAL TELECOMMUNICATION	F.850–F.899
ACCESSIBILITY AND HUMAN FACTORS	F.900–F.999

For further details, please refer to the list of ITU-T Recommendations.

AVA Documents
Document Sharing Hub

Full document details: ITU-T F.743.19 2022

Recommendation ITU-T F.743.19

Requirements for intelligent surveillance cameras in intelligent video surveillance systems

Summary

Recommendation ITU-T F.743.19 specifies the classification of, and scenarios for intelligent analysis functions, in addition to intelligent analysis function and grading requirements for intelligent surveillance cameras (ISCs). The related intelligent analysis functions include video diagnosis, tampering detection, video enhancement, target detection and feature extraction, and object behaviour identification. The basic functions of a camera (see the premises unit specified in Recommendation ITU-T H.626), such as multimedia capturing, multimedia encoding, output alarm signal and parsing pan/tilt/zoom command, lie outside the scope of this Recommendation.

This Recommendation specifies the relevant intelligent analysis function and grading requirements for ISCs used in intelligent video surveillance.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T F.743.19	2022-12-14	16	11.1002/1000/15186

Keywords

Grading, intelligent surveillance camera, requirements.

* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

Documents
Document Sharing Hub

Full document details: ITU-T F.743.19 2022

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents/software copyrights, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the appropriate ITU-T databases available via the ITU-T website at http://www.itu.int/ITU-T/ipr/.

© ITU 2023

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

Documents
Document Sharing Hub

Full document details: ITU-T F.743.19 2022

Table of Contents

		Page
1	Scope	1
2	References	1
3	Definitions	2
	3.1 Terms defined elsewhere	2
	3.2 Terms defined in this Recommendation	2
4	Abbreviations and acronyms	3
5	Conventions	4
6	Overview of intelligent surveillance cameras in IVS	4
	6.1 Classification of intelligent surveillance cameras	4
	6.2 Intelligent analysis classification of ISC	4
	6.3 Intelligent level classification of ISC	5
7	Typical scenarios for intelligent surveillance cameras	5
	7.1 Intelligent perception and adaptability scenarios	5
	7.2 Vehicle analysis-related scenarios	7
	7.3 Human feature-related scenarios	8
	7.4 Behaviour analysis scenarios	9
8	Functional architecture of ISC	10
9	Requirements for consumer-level ISC	10
	9.1 Basic requirements	10
	9.2 Intelligent analysis requirements	11
10	Requirements for public-level ISC	12
	10.1 Basic requirements	12
	10.2 Intelligent analysis requirements	13
	10.3 Advanced requirements	16

Documents
Document Sharing Hub
Full document details: ITU-T F.743.19 2022

Documents
Document Sharing Hub

Full document details: ITU-T F.743.19 2022

Recommendation ITU-T F.743.19

Requirements for intelligent surveillance cameras in intelligent video surveillance systems

1 Scope

This Recommendation specifies the classification of, and scenarios for intelligent analysis function, in addition to the intelligent analysis function and grading requirements for intelligent surveillance cameras (ISCs). The basic functions of a camera (see the premises unit (PU) specified in [ITU-T H.626]) such as multimedia capturing, multimedia encoding, output alarm signal and parsing pan/tilt/zoom (PTZ) command, lie outside the scope of this Recommendation.

The scope of this Recommendation includes:

– overview of ISCs for intelligent video surveillance (IVS);

– typical scenarios for ISCs;

– intelligent analysis function and grading requirements for ISCs.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T F.743.1] Recommendation ITU-T F.743.1 (2015), *Requirements for intelligent visual surveillance*.

[ITU-T G.711] Recommendation ITU-T G.711 (1988), *Pulse code modulation (PCM) of voice frequencies*.

[ITU-T H.222.0] Recommendation ITU-T H.222.0V8 (2021), *Information technology – Generic coding of moving pictures and associated audio information: systems*.

[ITU-T H.264] Recommendation ITU-T H.264V14 (2021), *Advanced video coding for generic audiovisual services*.

[ITU-T H.265] Recommendation ITU-T H.265V8 (2021), *High efficiency video coding*.

[ITU-T H.626] Recommendation ITU-T H.626V2 (2019), *Architecture requirements for video surveillance system*.

[ITU-T H.626.5] Recommendation ITU-T H.626.5V2 (2022), *Architecture for intelligent video surveillance systems*.

[ITU-T H.627] Recommendation ITU-T H.627V2 (2020), *Signalling and protocols for a video surveillance system*.

[ITU-T H.627.2] Recommendation ITU-T H.627.2 (2022), *Requirements and protocols for home surveillance systems*.

Documents
Document Sharing Hub
Full document details: ITU-T F.743.19 2022

[ITU-T T.81] Recommendation ITU-T T.81 (1992), *Information technology – Digital compression and coding of continuous-tone still images – Requirements and guidelines*.

[ITU-T T.800] Recommendation ITU-T T.800 (2019), *Information technology – JPEG 2000 image coding system: Core coding system*.

[ISO/IEC 14496-3] ISO/IEC 14496-3:2019, *Information technology – Coding of audio-visual objects – Part 3: Audio*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 facial recognition [ITU-T F.743.1]: Detection of the human face in video and extraction of its characteristics. The extracted information and/or image are compared with other images or a database of individuals' images, generating comparison results. Facial recognition can be used in airports, ports, railway stations, coach stations and other public places.

3.1.2 intelligent video diagnosis [ITU-T F.743.1]: Automatic recognition of video images failures, such as snowflakes, scrolling or fuzzy video, partial colour, picture freeze, gain imbalance, pan/tilt/zoom (PTZ) control problems and video signal loss.

3.1.3 premises intelligent video (PIV) [ITU-T H.626.5]: An intelligent identification module in the premises unit (PU). It identifies required information from input video and outputs the result.

3.1.4 region detection [ITU-T F.743.1]: Alarm output that is based on the polygonal regions defined by the user and that is triggered when an object enters or leaves the region.

3.1.5 region stranded [ITU-T F.743.1]: Alarm output that is based on the polygonal regions defined by the user and that is triggered when the retention time of an object exceeds a prescribed threshold.

3.1.6 traffic/pedestrian flow analysis [ITU-T F.743.1]: Motion analysis and feature classification of the video of moving target(s) within the specified single or multiple video monitoring area. The pedestrian flow data can be detected accurately.

3.1.7 tripwire intrusion [ITU-T F.743.1]: The setting off of an alarm when an object crosses a line drawn within the surveillance area.

3.1.8 video surveillance system [ITU-T H.626]: A telecommunication service focusing on video (but including audio and image) application technology, which is used to remotely capture multimedia (such as audio, video, image, alarm signal, etc.), and present them to the end user in a user-friendly manner, based on a managed broadband network with ensured quality, security and reliability.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 detection rate: The ratio of the number of correct targets or correct events detected to the number of targets or events that should be detected. The detection rate, r_d, is calculated by

$$r_d = \frac{n_{t+}}{n_{f-} + n_{t+}} \times 100\%$$

where:

n_{t+} is the number of true positive results

Documents
Document Sharing Hub
Full document details: ITU-T F.743.19 2022