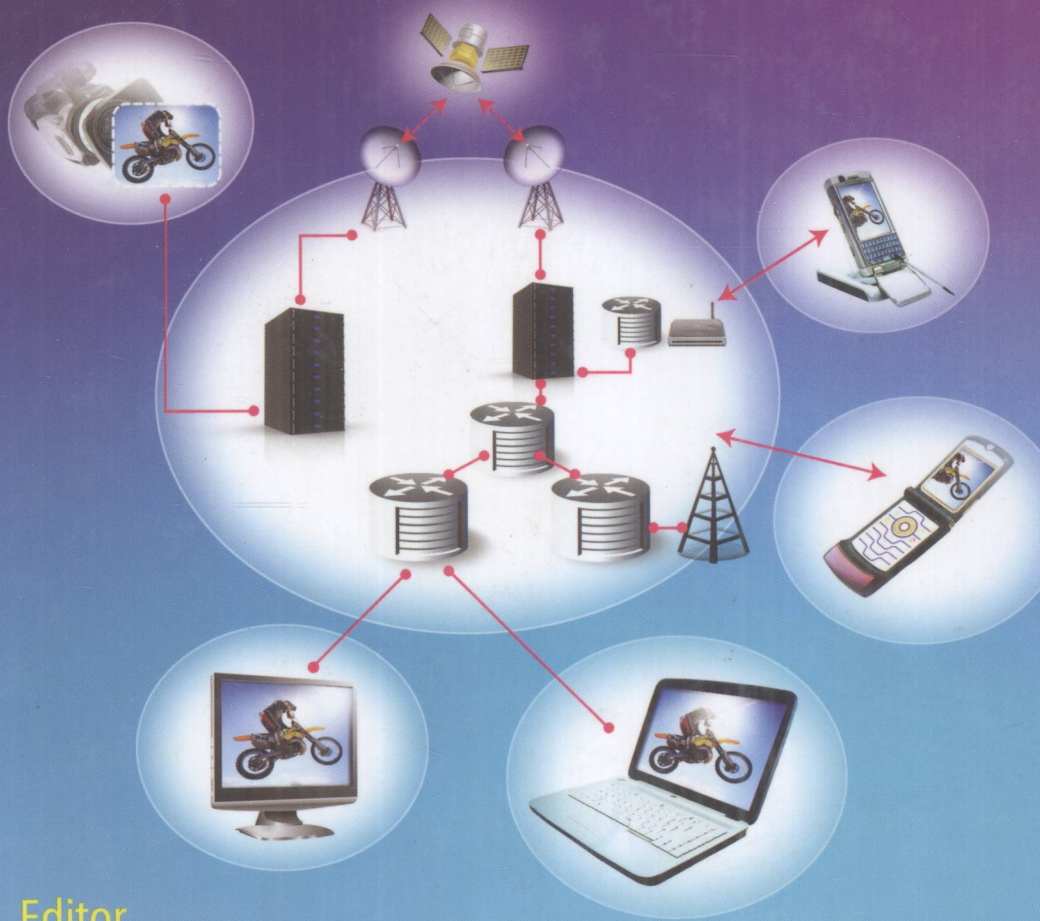


# Visual Media

## Coding and Transmission



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# Visual Media Coding and Transmission

**Ahmet Kondo**

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# Preface

VISNET II is a European Union Network of Excellence (NoE) in the 6th Framework Programme, which brings together 12 leading European organizations in the field of Networked Audiovisual Media Technologies. The consortium consists of organizations with a proven track record and strong national and international reputations in audiovisual information technologies. VISNET II integrates over 100 researchers who have made significant contributions to this field of technology, through standardization activities, international publications, conferences workshop activities, patents, and many other prestigious achievements. The 12 integrated organizations represent 7 European states spanning across a major part of Europe, thereby promising efficient dissemination and exploitation of the resulting technological development to larger communities.

This book contains some of the research output of VISNET II in the area of Advanced Video Coding and Networking. The book contains details of video coding principles, which lead to advanced video coding developments in the form of scalable coding, distributed video coding, non-normative video coding tools, and transform-based multi-view coding. Having detailed the latest work in visual media coding, the networking aspects of video communication are presented in the second part of the book. Various wireless channel models are presented, to form the basis for following chapters. Both link-level quality of service (QoS) and cross-network transmission of compressed visual data are considered. Finally, context-based visual media content adaptation is discussed with some examples.

It is hoped that this book will be used as a reference not only for some of the advanced video coding techniques, but also for the transmission of video across various wireless systems with well-defined channel models.

**Ahmet Kondo**  
University of Surrey  
VISNET II Coordinator

# Glossary of Abbreviations

3GPP	3rd Generation Partnership Project
AA	Adaptation Authorizer
ADE	Adaptation Decision Engine
ADMITS	Adaptation in Distributed Multimedia IT Systems
ADTE	Adaptation Decision Taking Engine
AE	Adaptation Engine
AES	Adaptation Engine Stack
AIR	Adaptive Intra Refresh
API	Application Programming Interface
AQoS	Adaptation Quality of Service
ASC	Aspect-Scale-Context
AV	Audiovisual
AVC	Advanced Video Coding
BLER	Block Error Rate
BSD	Bitstream Syntax Description
BSDL	Bitstream Syntax Description Language
CC	Convolutional Coding
CC	Creative Commons
CC/PP	Composite Capabilities/Preferences Profile
CD	Coefficient Dropping
CDN	Content Distribution Networks
CIF	Common Intermediate Format
CoBrA	Context Broker Architecture
CoDAMoS	Context-Driven Adaptation of Mobile Services
CoOL	Context Ontology Language
CoGITO	Context Gatherer, Interpreter and Transformer using Ontologies
CPU	Central Processing Unit
CROSLOCIS	Creation of Smart Local City Services
CS/H.264/AVC	Cropping and Scaling of H.264/AVC Encoded Video
CxP	Context Provider



DAML	Directory Access Markup Language
DANAE	Dynamic and distributed Adaptation of scalable multimedia content in a context-Aware Environment
dB	Decibel
DB	Database
DCT	Discrete Cosine Transform
DI	Digital Item
DIA	Digital Item Adaptation
DID	Digital Item Declaration
DIDL	Digital Item Declaration Language
DIP	Digital Item Processing
DistriNet	Distributed Systems and Computer Networks
DPRL	Digital Property Rights Language
DRM	Digital Rights Management
DS	Description Schemes
EC	European Community
EIMS	ENTHRONE Integrated Management Supervisor
FA	Frame Adaptor
FD	Frame Dropping
FMO	Flexible Macroblock Ordering
FP	Framework Program
gBS	Generic Bitstream Syntax
HCI	Human-Computer Interface
HDTV	High-Definition Television
HP	Hewlett Packard
HTML	HyperText Markup Language
IEC	International Electrotechnical Commission
IETF	Internet Engineering Task Force
IBM	International Business Machines Corporation
iCAP	Internet Content Adaptation Protocol
IPR	Intellectual Property Rights
IROI	Interactive Region of Interest
ISO	International Organization for Standardization
IST	Information Society Technologies
ITEC	Department of Information Technology, Klagenfurt University
JPEG	Joint Photographic Experts Group
JSVM	Joint Scalable Video Model
MDS	Multimedia Description Schemes
MB	Macroblock

MDS	Multimedia Description Schemes
MIT	Massachusetts Institute of Technology
MOS	Mean Opinion Score
MP3	Moving Picture Experts Group Layer-3 Audio (audio file format/extension)
MPEG	Motion Picture Experts Group
MVP	Motion Vector Predictor
NAL	Network Abstract Layer
NALU	Network Abstract Layer Unit
NoE	Network of Excellence
ODRL	Open Digital Rights Language
OIL	Ontology Interchange Language
OMA	Open Mobile Alliance
OSCAR	Optimized Source and Channel Rate Allocation
OWL	Web Ontology Language
P2P	Peer-to-Peer
PDA	Personal Digital Assistance
PSNR	Peak Signal-to-Noise Ratio
QCIF	Quarter Common Intermediate Format
QoS	Quality of Service
QP	Quantization Parameter
RD	Rate Distortion
RDF	Resource Description Framework
RDB	Reference Data Base
RDD	Rights Data Dictionary
RDOPT	Rate Distortion Optimization
REL	Rights Expression Language
ROI	Region of Interest
SECAS	Simple Environment for Context-Aware Systems
SNR	Signal-to-Noise Ratio
SOAP	Simple Object Access Protocol
SOCAM	Service-Oriented Context-Aware Middleware
SVC	Scalable Video Coding
TM5	Test Model 5
UaProf	User Agent Profile
UCD	Universal Constraints Descriptor
UED	Usage Environment Descriptions
UEP	Unequal Error Protection
UF	Utility Function

UI	User Item
UMA	Universal Multimedia Access
UMTS	Universal Mobile Telecommunications System
URI	Uniform Resource Identifiers
UTRAN	UMTS Terrestrial Radio Access Network
VCS	Virtual Collaboration System
VoD	Video on Demand
VOP	Video Object Plane
VQM	Video Quality Metric
W3C	World Wide Web Consortium
WAP	Wireless Access Protocol
WCDMA	Wideband Code Division Multiple Access
WDP	Wireless Datagram Protocol
WLAN	Wireless Local Area Network
WML	Website Meta Language
WiFi	Wireless Fidelity (IEEE 802.11b Wireless Networking)
XML	eXtensible Markup Language
XrML	eXtensible rights Markup Language
XSLT	eXtensible Stylesheet Language Transformations

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