

Preface

Probably the most interesting and influential class to the authors about video compression was EE E6830 (Digital Image Processing and Understanding) at Columbia University in 1995, offered by adjunct Professors Dr. Netravali, Dr. Haskell and Dr. Puri at AT&T. In the class, they impressed the authors with how such difficult and mysterious statements in video standards could be interpreted/ understood in plain human languages. Since then, the authors had had a dream that similar services could also be provided to interpret difficult video subjects into reasonable level of explanations in the future.

The VC-1 standard is fundamentally the same as WMV-9. WMV-x video compression technologies of Microsoft have long been the most popular over the Internet due to popularity of Microsoft Operating Systems. The technologies were published in August 2005 for the first time in a formal SMPTE document in the name of VC-1, and the official standard then was finalized in April 2006. In contrast, the MPEG committee recently standardized the MPEG AVC (H.264) video coding standard, whose first version was officially published in May 2003, and several subsequent amendments and corrigenda then followed until recently. These two are highly efficient compression standards that can make high-quality video services possible for Digital Storage Media (e.g., Blu-ray DVD or HD DVD) and/or broadband networks applications (e.g., IPTV).

In the industry, on the other hand, video compression text/reference books have become less useful due to the advance of bitstream analyzer tools such as Interra or Vprove. The tools cross-link statements in the standards in the middle of bitstream verification. In other words, documents explaining in low level are not useful very much any more. Therefore, the focus on the text/

reference books might need to shift from definitions of bits and pieces to ideas/ philosophies about technologies/ tools. This book is designed to present the readers with reasonable understanding and reasoning about why such tools are devised in such ways – as was once done by Dr. Netravali, Dr. Haskell and Dr. Puri. Only the domain is shifted in this book from MPEG-2 to VC-1/ H.264.

The authors are grateful to Professors Anastassiou, Chang and Eleftheriadis (now with the University of Athens, Greece) in the department of Electrical Engineering at Columbia University who helped to shape our understanding about video compression more than a decade ago with the ADVENT project at Center for Telecommunications Research.

A companion website for this book is available at: www.cse.fau.edu/~hari/vc1-h264. The web site will be updatated with useful resources, software tools, and errata. The authors hope that the readers find this book enjoyable and useful.

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