Still Image and Video Compression with MATLAB

Description: This book describes the principles of image and video compression techniques and introduces current and popular compression standards, such as the MPEG series. Derivations of relevant compression algorithms are developed in an easy-to-follow fashion. Numerous examples are provided in each chapter to illustrate the concepts. The book includes complementary software written in MATLAB SIMULINK to give readers hands-on experience in using and applying various video compression methods. Readers can enhance the software by including their own algorithms.

Contents:

Preface.

1 Introduction.

1.1 What is Source Coding?

1.2 Why is Compression Necessary?

1.3 Image and Video Compression Techniques.

1.4 Video Compression Standards.

1.5 Organization of the Book.

1.6 Summary.

References.

2 Image Acquisition.

2.1 Introduction.

2.2 Sampling a Continuous Image.

2.3 Image Quantization.

2.4 Color Image Representation.

2.5 Summary.

References.

Problems.

3 Image Transforms.

3.1 Introduction.

3.2 Unitary Transforms.

3.3 Karhunen-Loeve Transform.

3.4 Properties of Unitary Transforms.

3.5 Summary.

References.
4 Discrete Wavelet Transform.
4.1 Introduction.
4.2 Continuous Wavelet Transform.
4.3 Wavelet Series.
4.4 Discrete Wavelet Transform.
4.5 Efficient Implementation of 1D DWT.
4.6 Scaling and Wavelet Filters.
4.7 Two-Dimensional DWT.
4.8 Energy Compaction Property.
4.9 Integer or Reversible Wavelet.
4.10 Summary.

References.

Problems.

5 Lossless Coding.
5.1 Introduction.
5.2 Information Theory.
5.3 Huffman Coding.
5.4 Arithmetic Coding.
5.5 Golomb–Rice Coding.
5.6 Run-Length Coding.
5.7 Summary.

References.

Problems.

6 Predictive Coding.
6.1 Introduction.
6.2 Design of a DPCM.
6.3 Adaptive DPCM.
6.4 Summary.

References.

Problems.
7 Image Compression in the Transform Domain.
7.1 Introduction.
7.2 Basic Idea Behind Transform Coding.
7.3 Coding Gain of a Transform Coder.
7.4 JPEG Compression.
7.5 Compression of Color Images.
7.6 Blocking Artifact.
7.7 Variable Block Size DCT Coding.
7.8 Summary.
References.
Problems.
8 Image Compression in the Wavelet Domain.
8.1 Introduction.
8.2 Design of a DWT Coder.
8.3 Zero-Tree Coding.
8.4 JPEG2000.
8.5 Digital Cinema.
8.6 Summary.
References.
Problems.
9 Basics of Video Compression.
9.1 Introduction.
9.2 Video Coding.
9.3 Stereo Image Compression.
9.4 Summary.
References.
Problems.
10 Video Compression Standards.
10.1 Introduction.
10.2 MPEG-1 and MPEG-2 Standards.
10.3 MPEG-4.
10.4 H.264.
10.5 Summary.

References.

Problems.

Index.

Ordering:

Order Online - [http://www.researchandmarkets.com/reports/1790643/](http://www.researchandmarkets.com/reports/1790643/)

Order by Fax - using the form below

Order by Post - print the order form below and send to

Research and Markets,
Guinness Centre,
Taylors Lane,
Dublin 8,
Ireland.
Fax Order Form
To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit http://www.researchandmarkets.com/contact/

Order Information
Please verify that the product information is correct.

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>Still Image and Video Compression with MATLAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web Address:</td>
<td><a href="http://www.researchandmarkets.com/reports/1790643/">http://www.researchandmarkets.com/reports/1790643/</a></td>
</tr>
<tr>
<td>Office Code:</td>
<td>SCAYPE4T</td>
</tr>
</tbody>
</table>

Product Format
Please select the product format and quantity you require:

**Quantity**
- Hard Copy (Hard Back): USD 129 + USD 28 Shipping/Handling

* Shipping/Handling is only charged once per order.

Contact Information
Please enter all the information below in BLOCK CAPITALS

<table>
<thead>
<tr>
<th>Title:</th>
<th>Mr ☐ Mrs ☐ Dr ☐ Miss ☐ Ms ☐ Prof ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Name:</td>
<td></td>
</tr>
<tr>
<td>Last Name:</td>
<td></td>
</tr>
<tr>
<td>Email Address: *</td>
<td></td>
</tr>
<tr>
<td>Job Title:</td>
<td></td>
</tr>
<tr>
<td>Organisation:</td>
<td></td>
</tr>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>City:</td>
<td></td>
</tr>
<tr>
<td>Postal / Zip Code:</td>
<td></td>
</tr>
<tr>
<td>Country:</td>
<td></td>
</tr>
<tr>
<td>Phone Number:</td>
<td></td>
</tr>
<tr>
<td>Fax Number:</td>
<td></td>
</tr>
</tbody>
</table>

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check: Please post the check, accompanied by this form, to:
Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer: Please transfer funds to:
Account number 833 130 83
Sort code 98-53-30
Swift code ULSBIE2D
IBAN number IE78ULSB98533083313083
Bank Address Ulster Bank,
27-35 Main Street,
Blackrock,
Co. Dublin,
Ireland.

If you have a Marketing Code please enter it below:

Marketing Code: ______________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp

Please fax this form to:
(646) 607-1907 or (646) 964-6609 - From USA
+353-1-481-1716 or +353-1-653-1571 - From Rest of World