Dr. Qadri Hamarsheh

Digital Image Processing (730474)

Lecture 2

Outline of the Lecture

- Fundamental Steps in Digital Image Processing.
- Components of a Digital Image Processing System.

Fundamental Steps in Digital Image Processing

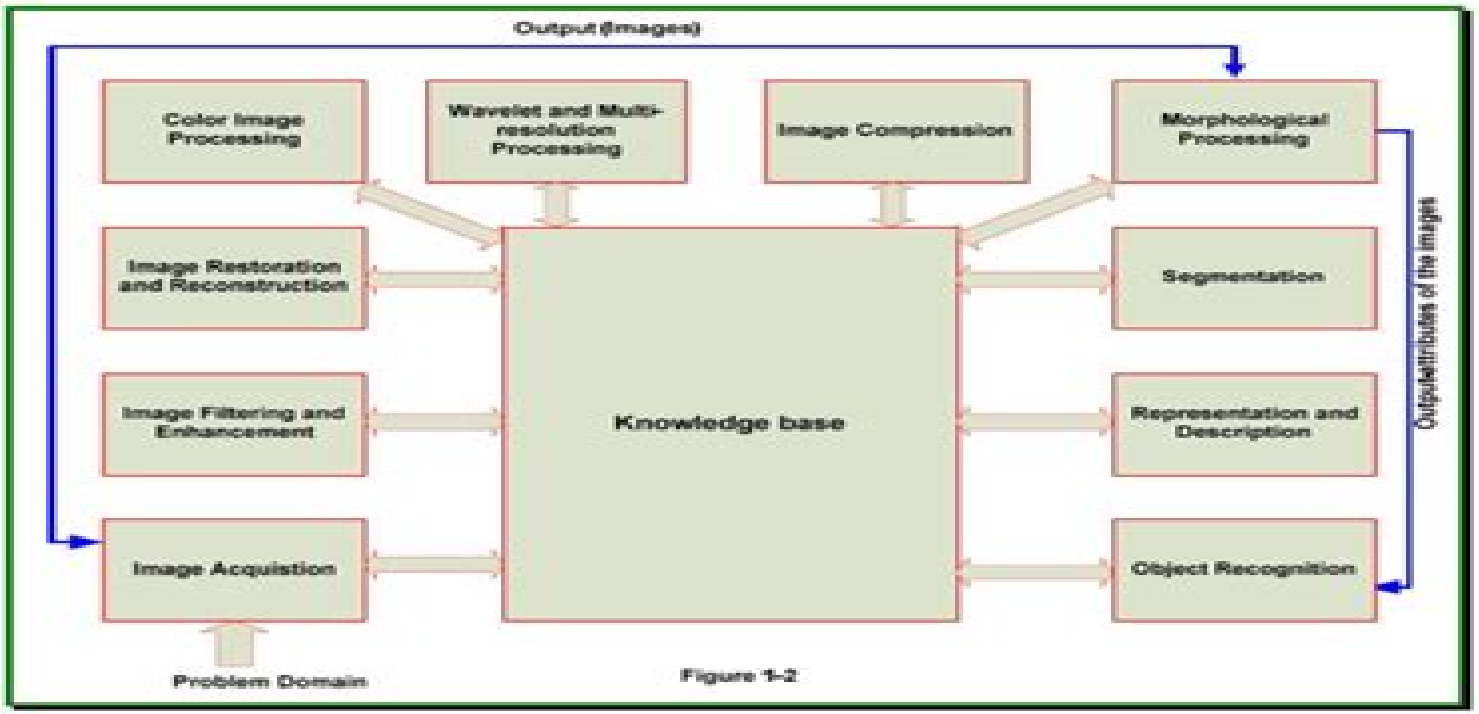

Figure 1-2

Step 1. Image Acquisition:

- In this step, the image is captured by a **sensor** (such as a monochrome or color TV camera) and **digitized**, if the output of the camera or sensor is not already in digital form- an **analog-to-digital** converter (**ADC**) digitizes it.
  - **Camera**:

Camera consists of 2 parts:

- A **lens** that collects the appropriate type of radiation emitted from the object of interest and that forms an image of the real object.

Lecture 2 Fundamental Steps In Digital Image Processing

Ensheng Dong

Lecture 2 Fundamental Steps In Digital Image Processing:

, **Fundamentals of Digital Image Processing** Dandak Kaniyar,2025-02-20 Fundamentals of Digital Image Processing is a comprehensive guide that delves into the intricacies of manipulating and analyzing digital images We provide a thorough exploration of fundamental concepts techniques and applications in digital image processing Catering to both beginners and seasoned professionals the content spans a wide spectrum Starting with the basics we introduce core principles of digital image representation pixel operations and color models We then progress into advanced topics such as image enhancement filtering and transformation offering a deep understanding of the algorithms involved The book covers image segmentation a crucial aspect of image analysis discussing various segmentation techniques and their applications in fields like medical imaging computer vision and pattern recognition We also address the evolving field of image compression highlighting methods to reduce image size without compromising essential information One notable strength is our practical approach integrating theory with hands on examples and real world applications We equip readers with tools to implement image processing algorithms using popular programming languages and software Case studies illustrate digital image processing s impact in diverse fields including medicine remote sensing and multimedia Fundamentals of Digital Image Processing is an indispensable resource for academics researchers and practitioners offering theoretical knowledge and practical insights Digital Holography and Digital Image Processing Leonid Yaroslavsky,2013-03-14 Digital holography and digital image processing are twins born by computer era They share origin theoretical base methods and algorithms The present book describes these common fundamentals principles methods and algorithms including image and hologram digitization data compression digital transforms and efficient computational algorithms statistical and Monte Carlo methods image restoration and enhancement image reconstruction in tomography and digital holography discrete signal resampling and image geometrical transformations accurate measurements and reliable target localization in images recording and reconstruction of computer generated holograms adaptive and nonlinear filters for sensor signal perfecting and image restoration and enhancement The book combines theory heavily illustrated practical methods and efficient computational algorithms and is written for senior level undergraduate and graduate students researchers and engineers in optics photonics opto electronics and electronic engineering **Digital Image Processing in Industrial Applications** Martin Ollus,1987 **Graduate Announcement** University of Michigan--Dearborn,1990 *Archives Internationales de Photogrammetrie Et de Teledetection* International Society for Photogrammetry and Remote Sensing. Congress,1992

Digital Image Processing J. David Frost,Jeff R. Wright,1993 Researchers and practitioners detail digitizing techniques digital information management image interpretation and recognition and morphological operations and analysis

Aerospace Marketing Management Philippe Malaval,Christophe Bénaroya,2003-05-31 Aerospace Marketing Management is a marketing manual devoted to the aeronautics sector parts suppliers aircraft manufacturers and airlines the space sector

suppliers integrators and service providers It presents the essentials of marketing from basic concepts such as segmentation positioning and the marketing plan to the product policy pricing distribution and communication This book also includes specific chapters on project marketing brand policy gaining loyalty through maintenance and training compensation and alliance strategies The different chapters show the new changes due to Internet e procurement for the purchase strategy interactive communication with websites e ticketing for the airlines to reach final consumers Scientific and Technical Aerospace Reports ,1984-08 Film & Video Finder ,1989 **Local Approximation Techniques in Signal and Image Processing** Vladimir I□A□kovlevich Katkovnik,Karen Egiazarian,Jaakko Astola,2006 This book deals with a wide class of novel and efficient adaptive signal processing techniques developed to restore signals from noisy and degraded observations These signals include those acquired from still or video cameras electron microscopes radar X rays or ultrasound devices and are used for various purposes including entertainment medical business industrial military civil security and scientific In many cases useful information and high quality must be extracted from the imaging However often raw signals are not directly suitable for this purpose and must be processed in some way Such processing is called signal reconstruction This book is devoted to a recent and original approach to signal reconstruction based on combining two independent ideas local polynomial approximation and the intersection of confidence interval rule **The 2002 Guide to the Evaluation of Educational Experiences in the Armed Services** American Council on Education,2002 Long considered to be the standard reference work in this area this three volume set describes more than 8 000 courses offered between January 1990 and the present by various service branches and the Department of Defense Long considered to be the standard reference work in this area this three volume set describes more than 8 000 courses offered between January 1990 and the present by various service branches and the Department of Defense Updated every two years **Proceedings** C. E. Vandoni,1996

Catalogs of Courses University of California, Berkeley,1995 Includes general and summer catalogs issued between 1878 1879 and 1995 1997 **American Book Publishing Record** ,2001 *Selected Papers on Particle Image Velocimetry* Ian Grant,1994 SPIE Milestones are collections of seminal papers from the world literature covering important discoveries and developments in optics and photonics **Cornell University Courses of Study** Cornell University,2007

International Conference on Experimental Mechanics ,2002 A Guide to the Evaluation of Educational Experiences in the Armed Services ,2002 Introduction to Media Production Gorham Anders Kindem,Robert B. Musburger,1997 A practical framework is provided in this textbook about the techniques operations and philosophies of media production from the standpoint of both analog and digital technologies

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