Computer Vision

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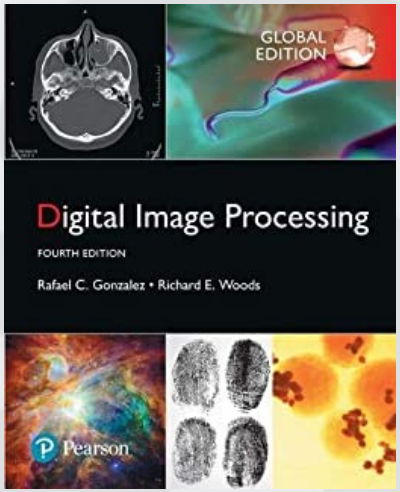
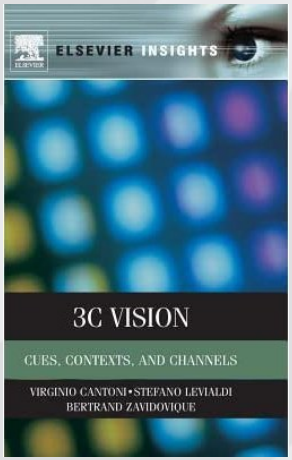
Contents

- Basic definitions. Low-level image analysis methods, including image formation, edge detection, feature detection, and image segmentation.
- 3D Vision and motion analysis
- Methods for reconstructing three-dimensional scene information using techniques such as depth from stereo, structure from motion, and shape from shading. Motion and video analysis.
- Object recognition
- Recognition Processes. Direct Comparison. Alignment methods. Invariant properties methods. Parts decompositions method. Hough transform.
- Image synthesis
- Computer graphics topics involving computational photography and image-based rendering. Local rendering, Phong model. Advanced rendering techniques, topics include ray casting, ray tracing, and radiosity.

Textbooks



- Digital Image Processing, Global Edition, Gonzalez Rafael, Woods Richard, Pearson 2018



- 3C Vision: Cues, Context and Channels, Virginio Cantoni, Stefano Levialdi, Bertrand Zavidovique, Elsevier 2011

Examination procedures

- An oral examination and the discussion of a project with the implementation of an algoritms presented in the course in a standard language (as an exaple C, Java, Python) and the solution of a computer vision problem, in this case a standard computer vision library can be used (for instance OpenCv)