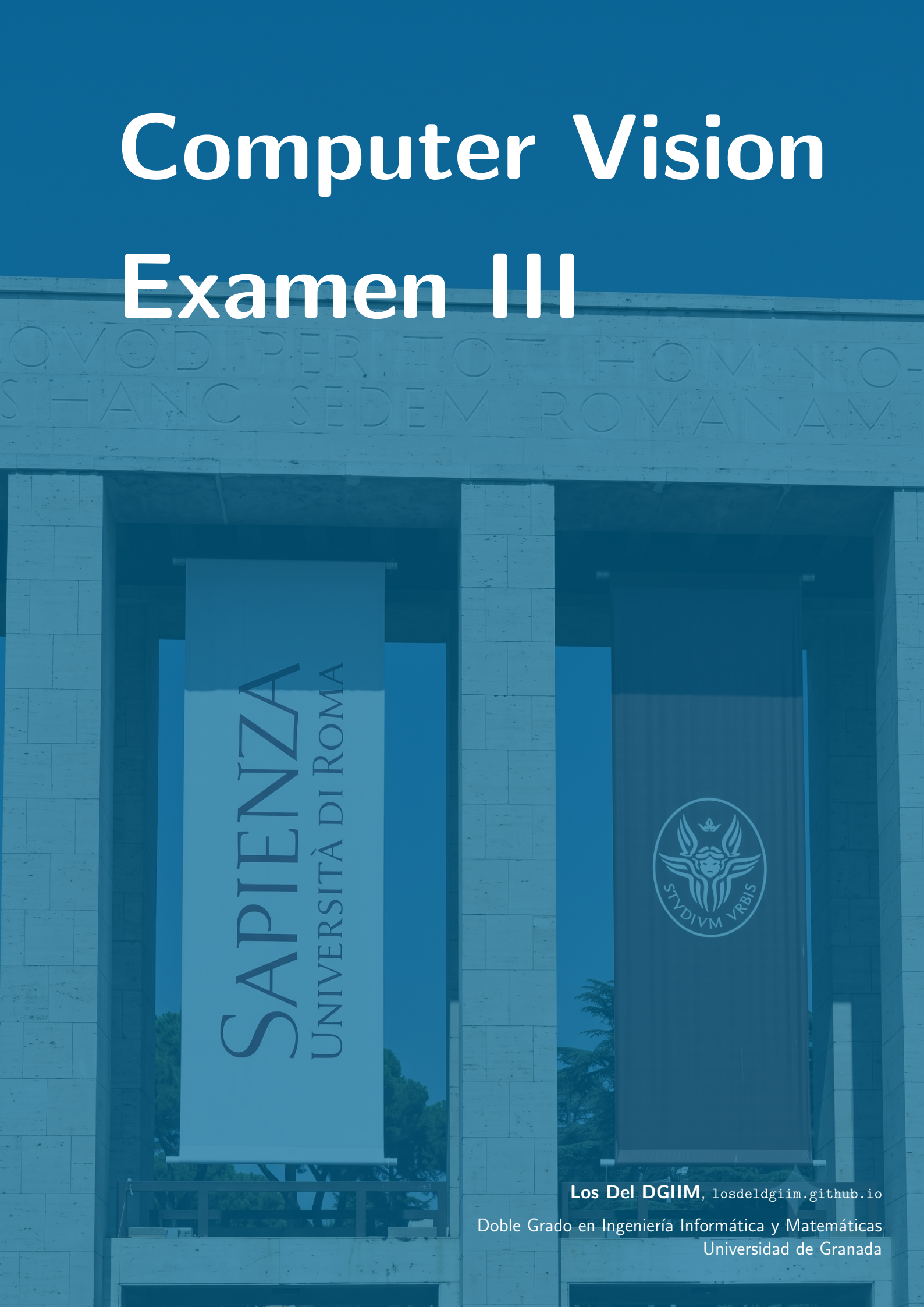
Computer Vision
Examen III



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Doble Grado en Ingeniería Informática y Matemáticas
Universidad de Granada

Computer Vision
Examen III

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Joaquín Avilés de la Fuente

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Asignatura Computer Vision.

Curso Académico 2025-2026.

Grado Grado en Informática.

Grupo Grupo A.

Profesor Irene Amerini.

Descripción Examen final escrito de Computer Vision.

Fecha abril de 2026.

Duración 60 min.

Observación. The total sum of all the exercises is 32 points, although the maximum mark of the exam is 30.

Ejercicio 1 (8 points)**.** Describe the Sobel filter for edge detection. How does it differ from the Canny edge detector?

Ejercicio 2 (8 points)**.** Explain feature matching and how the RANSAC (Random Sample Consensus) algorithm can be used in conjunction with feature matching to improve the accuracy of homography estimation between two images.

Ejercicio 3 (8 points)**.** a. Explain the concept of fundamental matrix. How is it computed, and what information does it convey about the relationship between two images?

b. What is the geometric meaning of the epipoles in the two images? How are they related to the fundamental matrix (algebraically)?

Ejercicio 4 (8 points)**.** Propose a method to detect keyframes in a video sequence using traditional (non-deep learning) techniques. Explain the features you would extract, how you would measure frame importance or uniqueness, and the criteria for selecting keyframes. Justify each step in your approach. A keyframe in this case could be: a frame that is visually different from surrounding frames (e.g., scene changes, new objects) or a frame where meaningful action begins (e.g., explosion, expression change, speaker switch).