

IPCV 2006

Summer School on Computer Vision

Dietrich Paulus and Wolfram Hans

Color Histogram Algorithms

17th August 2006

Universität Koblenz-Landau

Computervisualistik

Sommersemester / Summer 2002

In this lecture we will discuss color histograms and their use for object recognition. This will lead us also to some related subjects, namely color normalization, color sensor calibration, and simple classification. We will introduce color histograms in various flavors, resolutions, and representations. We discuss different distance measures for color histograms and compare them. We learn how to compute histograms efficiently. Histogram intersection and histogram backprojection provide very simple and yet efficient ways to find objects in scenes. These methods can also be applied to image database queries.

Some of the computations require linear algebra. As the singular value decomposition can be used to compute many numerical solutions in linear algebra, we introduce this method and apply it to color calibration and color normalization problems.

In the exercises we implement the methods that are introduced in the lecture. These methods can be used to solve the task in the project work: recognize objects from a set of known objects in a database.

The task of the project will be solved in small groups (international members) of three students. The groups are free to choose their individual solution. On the final day of the summer school the groups will present their solution. In a contest we will determine the best solution.