# Principal Component Analysis: Lab Session

Fabio Maria Carlucci

October 10, 2016

# Administrivia

- Six homeworks during this course.
- Deadline for all is one month before taking the exam.
- Submission through email: send to fabiom.carlucci@dis.uniroma1.it with appropriate subject.
- Questions can be written to same email address.
- Office hours to meet in person: **Monday at B004 (Via Ariosto, the door in front of library), 10AM-12PM**.
- Use any language, Python recommended: `https://www.continuum.io/downloads`

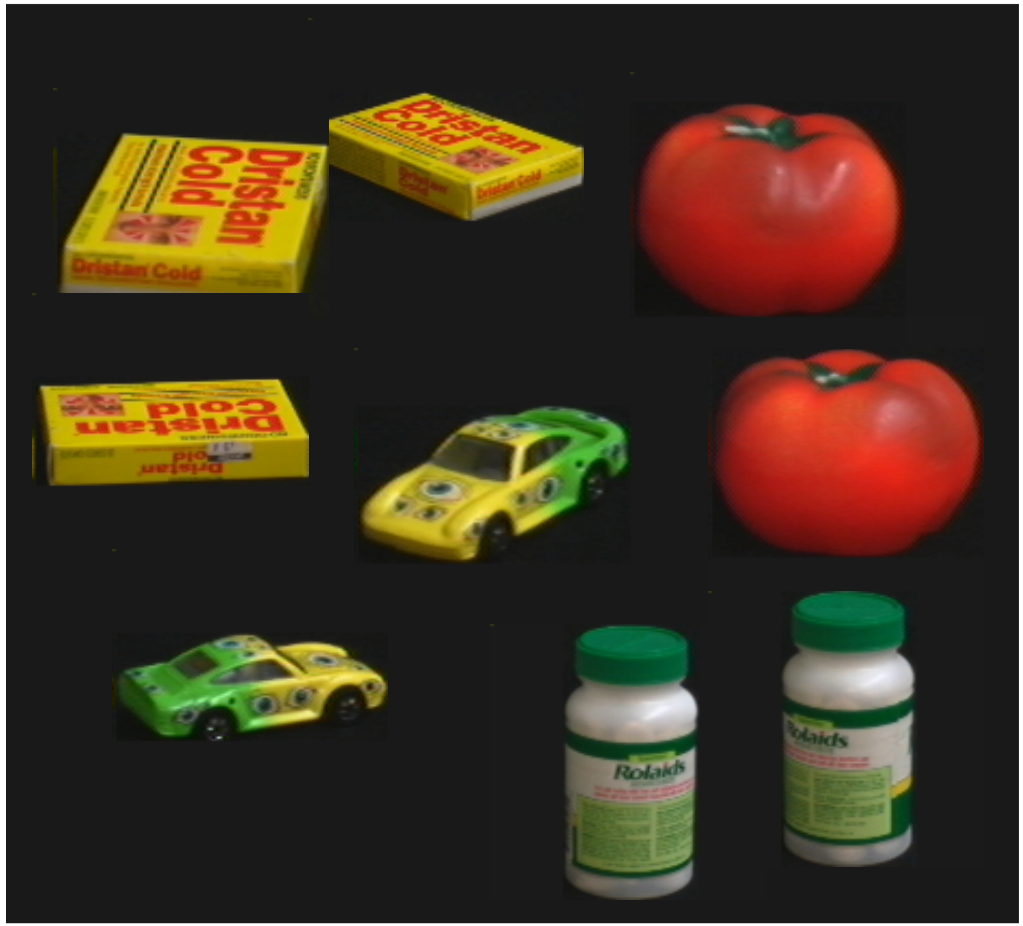
# HW1: Principal Component Analysis

First homework: get the feeling what PCA is about in practice through the series of tasks such as:

- Basics of handling the labeled data: read/manage raw data (e.g. pixels).
- Visualize the data, however, its of very high dimension.
- Use PCA: extract principal components and project data onto them.
- Understand which principal components are useful.
- Visualize again, in 2D, in 3D. Get the feeling of what can be done.
- Classify using Naïve Bayes Classifier.

# Data: COIL-100 dataset

- One hundred object categories.
- $\approx 7k$ images
- `http://www.cs.columbia.edu/CAVE/databases/SLAM_coil-20_coil-100/coil-100/coil-100.zip`



# Demo