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Short CV:

- **2012 PhD in Computer Engineering**, Department of Computer Engineering, Yıldız Teknik Univ., Istanbul, TR. **Final dissertation on Robust Classification based on Sparsity**
- **1995 MSc in Computing Software and System Design**, Department of Computing Science, University of Newcastle, Newcastle upon Tyne, U.K. **Final dissertation** on the integration between **Petri Nets** and Process Algebra.
- **1993 Degree in Computing Science**, Department of Computing Science, University of Pisa, Italy. **Final dissertation** on the total design and partial Implementation of an **Operating System**

Current Courses:

- Database Systems I
- Computer Architecture
- Digital Image Processing
- Operating Systems
- Machine Learning
- Artificial Intelligence
- ...

PhD research:

2D face classification under adverse conditions.

Classification

- **Supervised Learning**: All samples are labeled.

Given training images from different classes, the problem is to find the class that a test sample belongs to.

Algorithms: Nearest-Neighbor, Support Vector Machine (SVM), **Sparse Representation based Classifier (SRC)**

- **Unsupervised Learning**
- **Reinforcement Learning**

Extended Cohn-Kanade Database (CK+):

1. It is a video clip dataset with **validated** emotion labels
2. **123 subjects**, with (subject# \times sequence# =) **593 video clips**
3. Every sequence starts with a **neutral** face and ends with an **emotional** face (**apex frame, peak expression**)
4. **118** subjects with **327** sequences with **validated coded emotions**

Emotional Faces of CK+:



anger



disgust



happy



sad

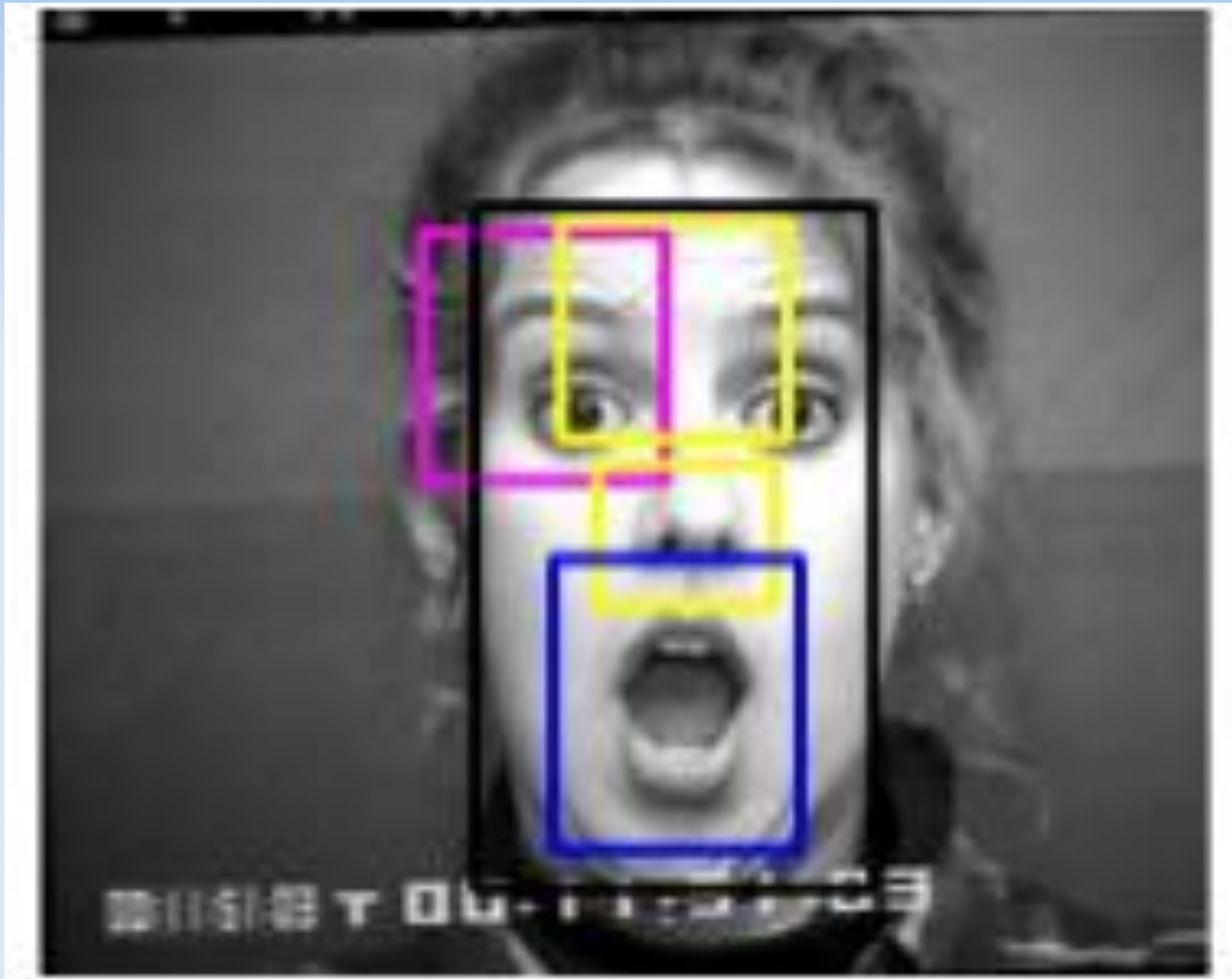


surprise



fear

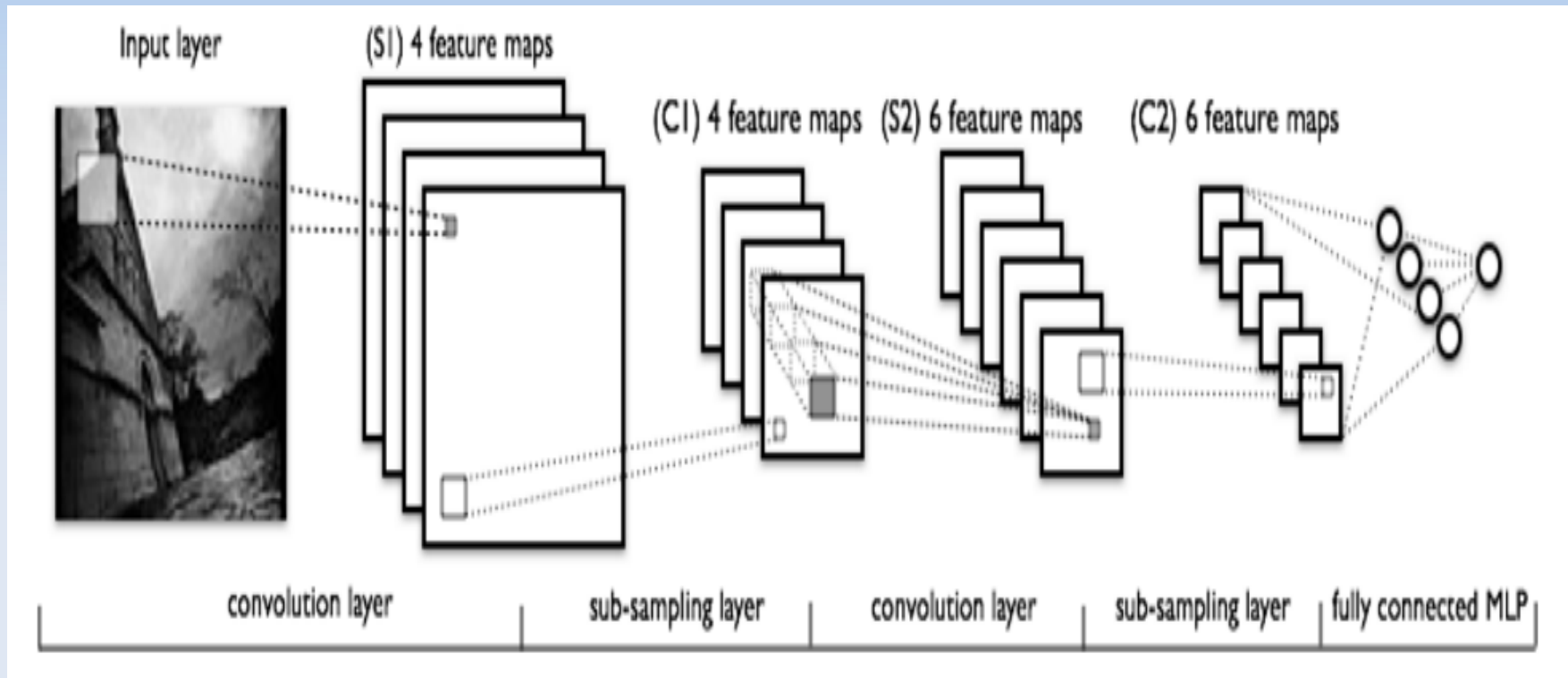
Block Based Technique:



Performance of SRC:

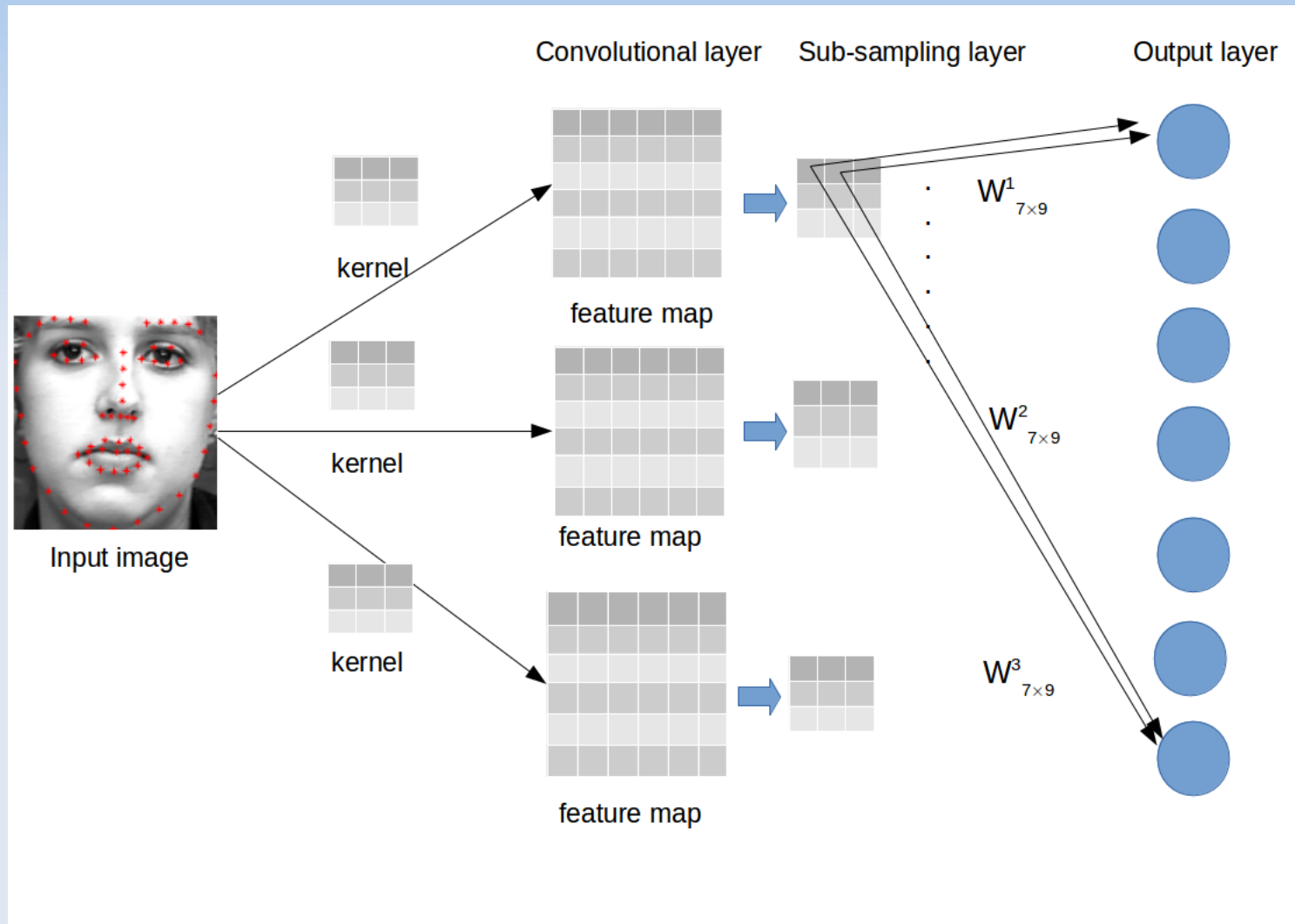
- 2011: Holistic SRC, perf = 88% (same as benchmark)
- 2012: Block based SRC, perf = 94% (much better 😊) ➡ PhD

Convolutional Neural Networks



Courtesy of A. Karpathy. (2015): Convolutional Neural Networks for Visual Recognition

CK+ with CNN:

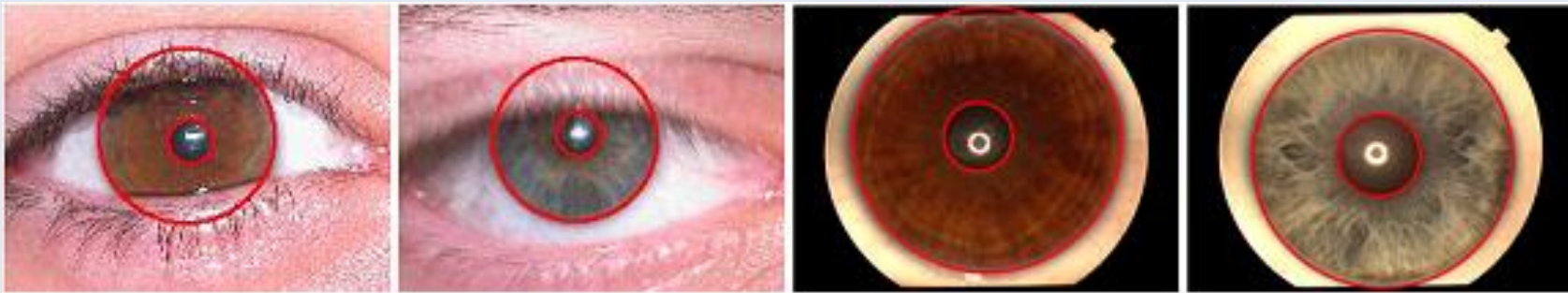


2016 The 9th International Conference on Machine Vision (ICMV): perf = 99,38%

Iris Recognition System:

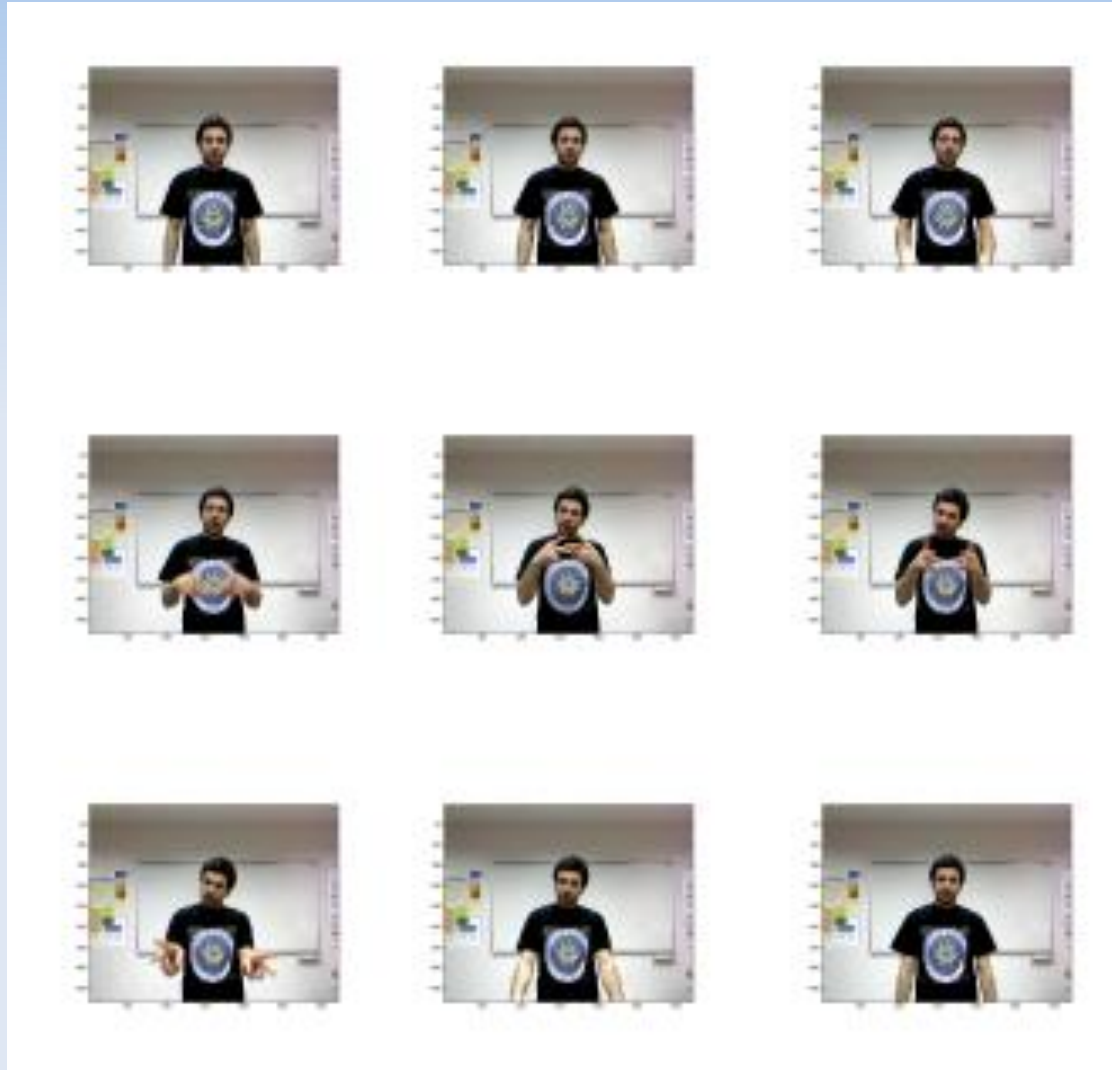


Partially occluded iris in the Ubiris database



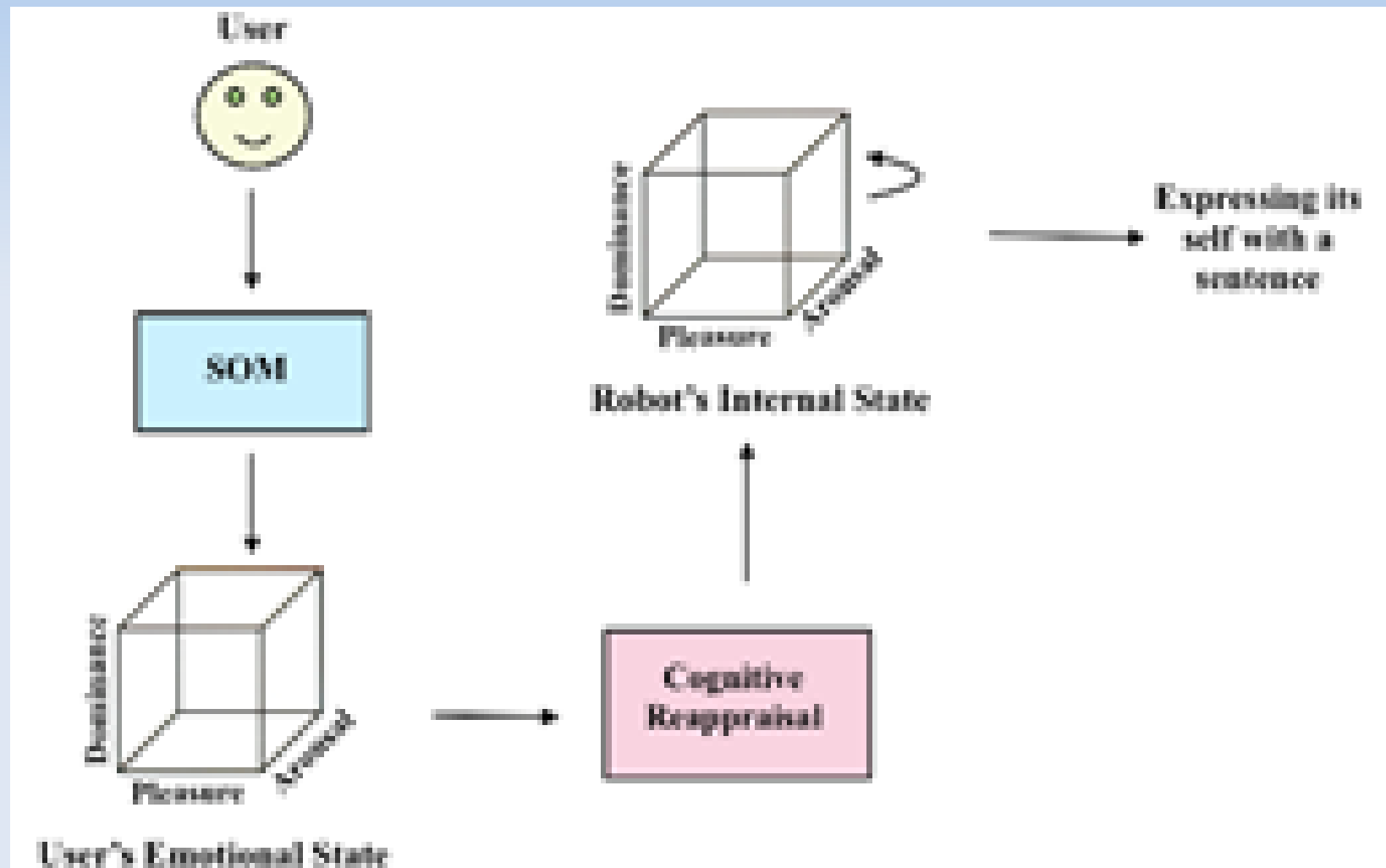
Segmented iris sample from the Ubiris (2 pictures on the left) and the Upol (2 eyes on the right) databases

Turkish Sign Language:

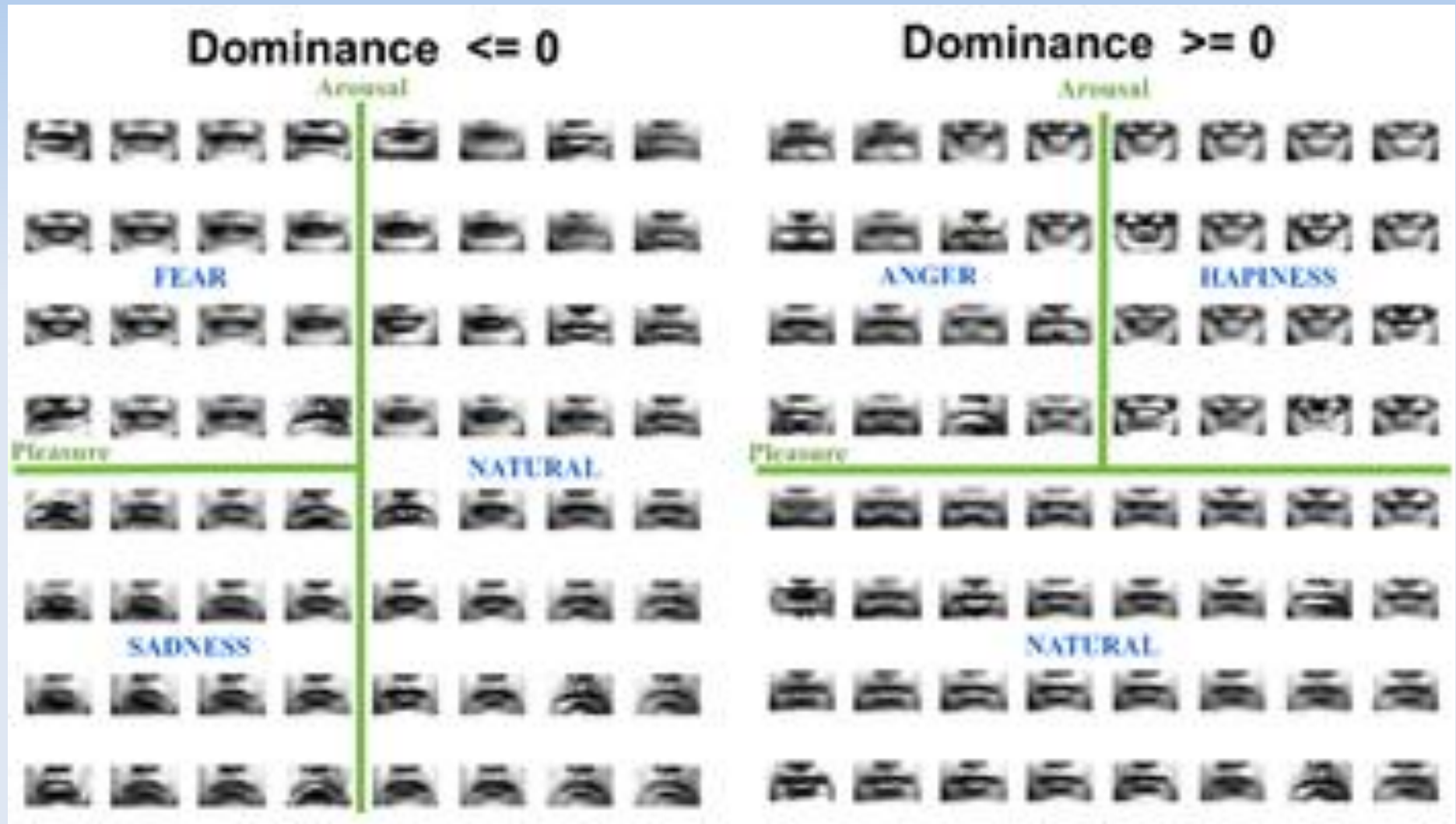


Selected frames of the sign 'Excuse me'

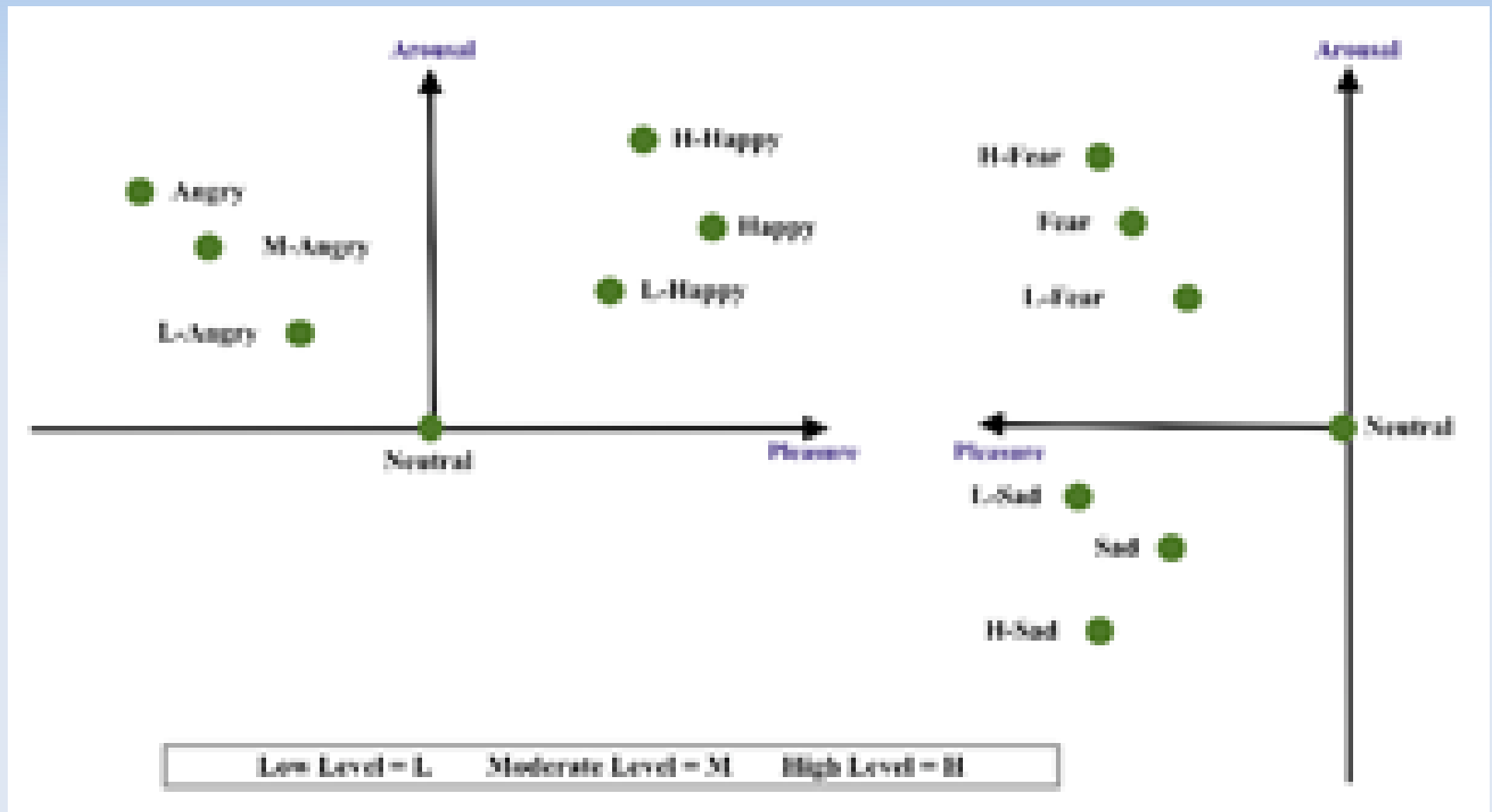
A Model for an Emotional Respondent Robot:



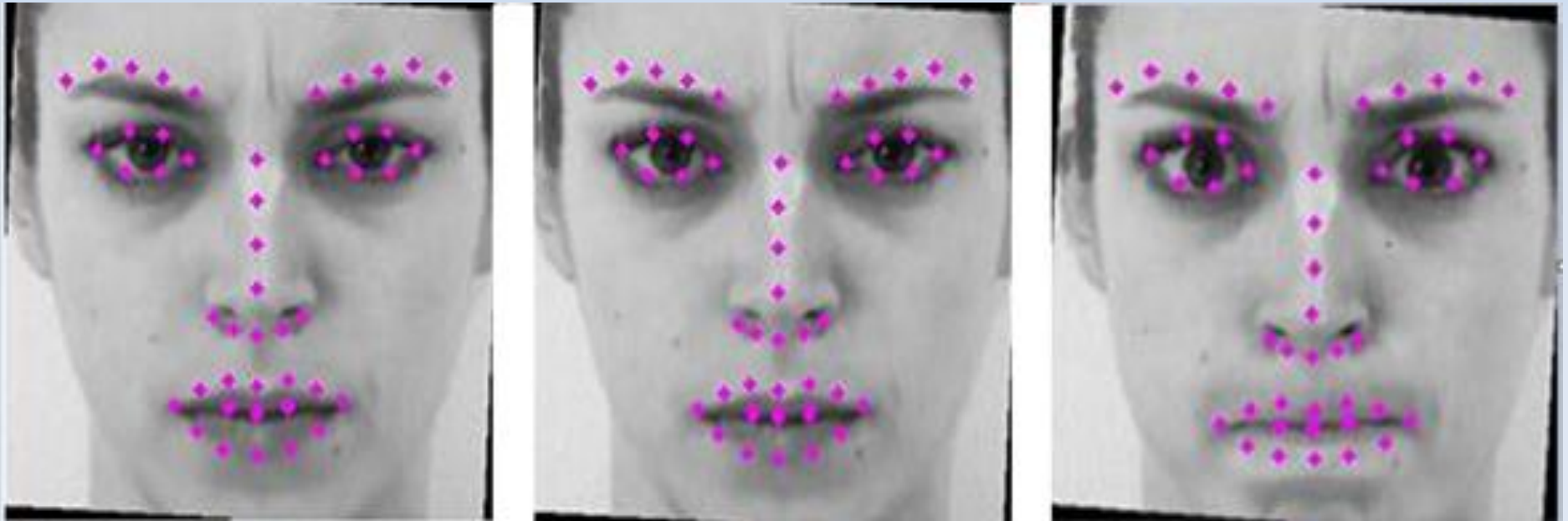
Output of the Self-Organizing Maps:



3D Internal State of the Agent:



Amsterdam Dynamic Facial Expression Set – Bath Intensity Variations (ADFES-BIV):



Faces after normalization with face landmark. From left to right: **low, middle high** intensity. The subject of the ADFES-BIV database is acting the anger emotion

Group based Emotion Recognition:

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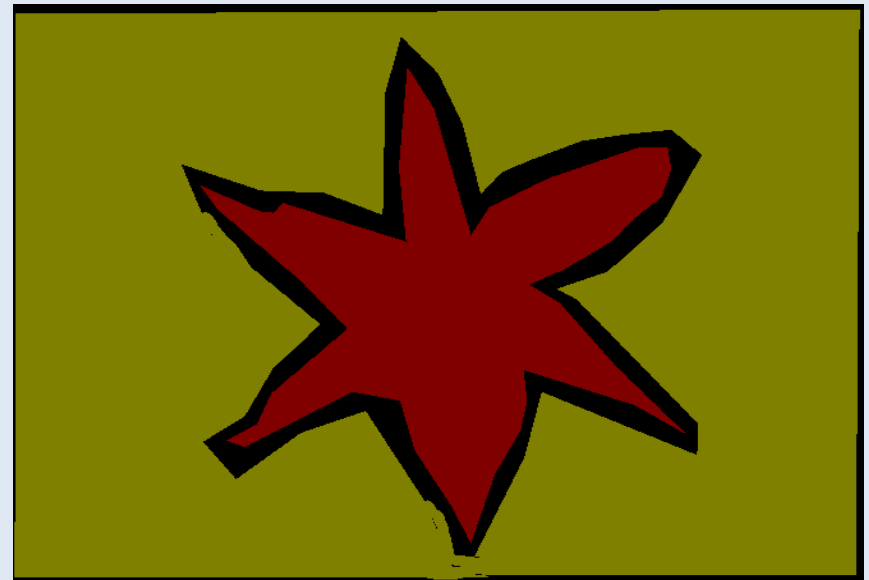


Merchandising:



Current Thesis: Flowers classification

- ❖ Database (db): 70 classes, 80 pictures per class.
- ❖ The data is already divided into training, validation and test sets.
- ❖ Original image and the segmented one:



Current Thesis: Age and Gender detection

PAL database: 575 individuals, age =18-93

The db is divided into 4 classes: 18-29, 30-49, 50-69, 70-93

female, 20



male, 49

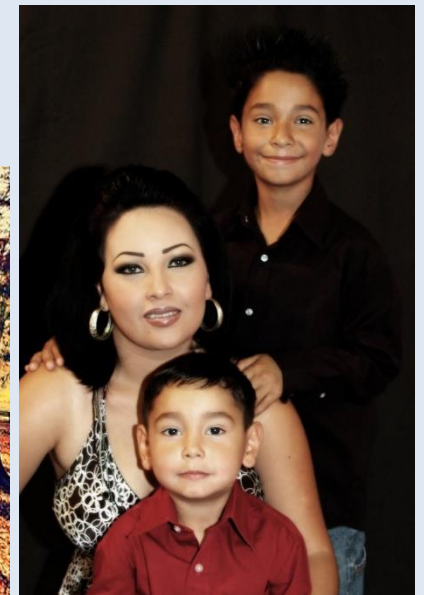


female, 77



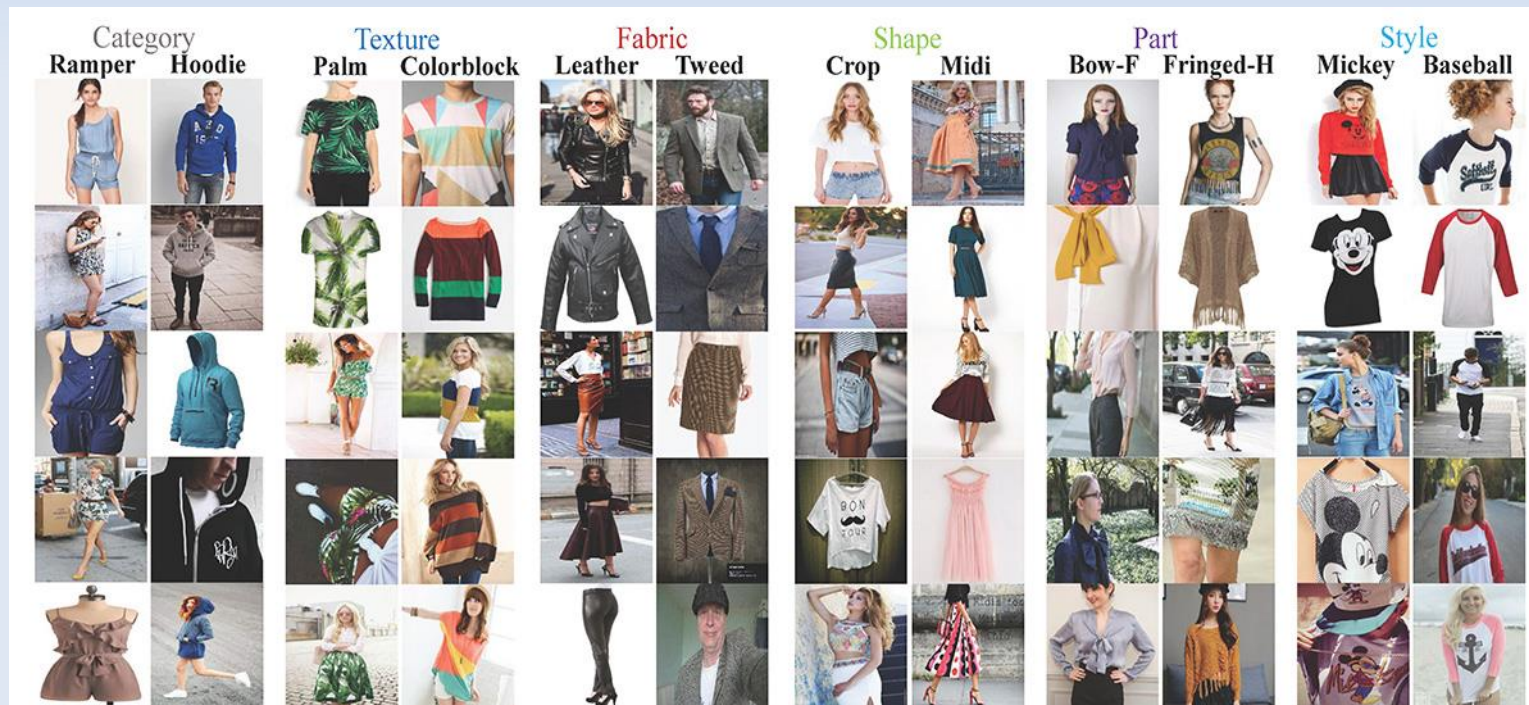
Current Thesis: Food vs NonFood

- The db is divided into training, validation and test sets
- The training folder has 3000 images
- The test folder stires 1000 images
- Both folders are divided into food and non-food
- Ignore the validation (for now)



Deep Fashion:

- 800,000 fashion images
- DB and benchmark paper:
<http://mmlab.ie.cuhk.edu.hk/projects/DeepFashion/AttributePrediction.html>



Images datasets:



Segmentation (2001)

D. Martin, C. Fowlkes, D. Tal, J. Malik.



CMU/VASC Faces (1998)

H. Rowley, S. Baluja, T. Kanade



FERET Faces (1998)

P. Phillips, H. Wechsler, J. Huang, P. Raus



COIL Objects (1996)

S. Nene, S. Nayar, H. Murase



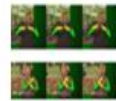
MNIST digits (1998-10)

Y. LeCun & C. Cortes



KTH human action (2004)

I. Leptev & B. Caputo



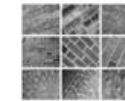
Sign Language (2008)

P. Buehler, M. Everingham, A. Zisserman



UIUC Cars (2004)

S. Agarwal, A. Awan, D. Roth



3D Textures (2005)

S. Lazebnik, C. Schmid, J. Ponce



CuRET Textures (1999)

K. Dana B. Van Ginneken S. Nayar
J. Koenderink



CAVIAR Tracking (2005)

R. Fisher, J. Santos-Victor J. Crowley



Middlebury Stereo (2002)

D. Scharstein R. Szeliski



CalTech 101/256 (2005)

Fei-Fei et al, 2004
Griffin et al, 2007



LabelMe (2005)

Russell et al, 2005



ESP (2006)

Ahn et al, 2006



MSRC (2006)

Shotton et al. 2006



PASCAL (2007)

Everingham et al, 2009



**Lotus Hill
(2007)**

Yao et al, 2007



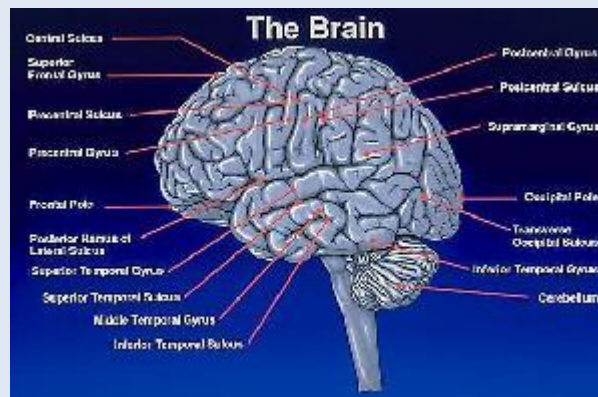
TinyImage (2008)

Torralba et al. 2008

Object Recognition (1/2):

Caltech 101:

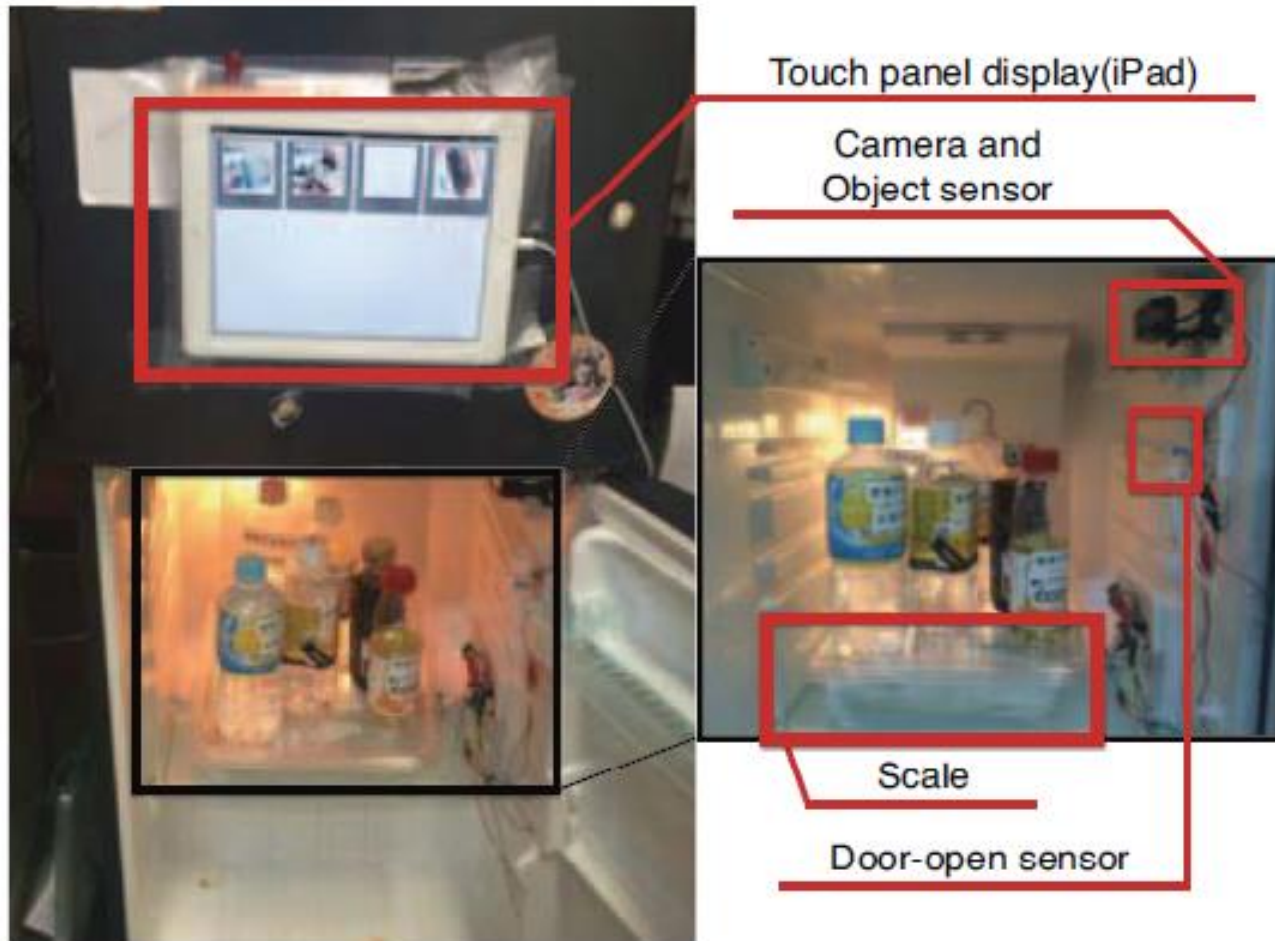
- There are 101 classes
- Most categories have about 50 images
- The size of each image is roughly 300 x 200 pixels
- Several benchmark algorithms available at the link:
http://www.vision.caltech.edu/Image_Datasets/Caltech101/



Object Recognition (2/2):

ImageNet database: <http://www.image-net.org/>

Automatic Stock Food Management:



Others:

Texture database:

<http://www.robots.ox.ac.uk/~vgg/data/dtd/>

Dynamic Texture database:

<http://dyntex.univ-lr.fr/database.html>

A lot of databases:

<http://datasets.visionbib.com/info-index.html>

Questions:

