

# Real-time Face Detection

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## Research Goal

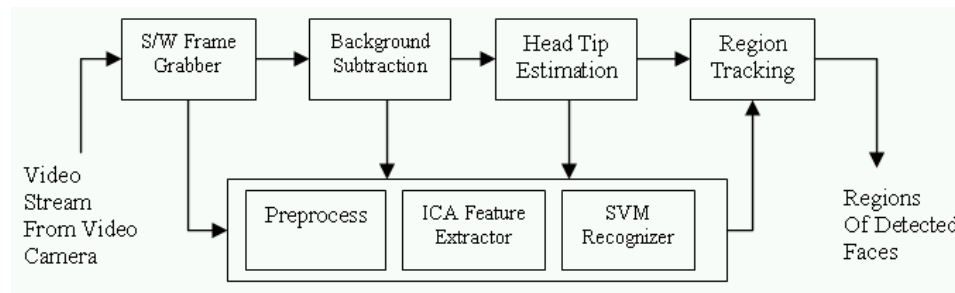
The goal of this research effort is to construct an automatic face detection system using a standard PC camera in real-time, targeting the applications of video surveillance and human-computer interface

## Role in IMSC

This research falls in the IMSC's Sensory Interfaces research front. The proposed real-time face detection approach can easily interact with many current systems including facial expression cloning and analysis, and data-driven face modeling and animation.

## Research Approach

Our approach is based on a statistical learning framework. Whenever people are coming within the field view of camera, the system automatically recognizes the existence of the face and obtains the location among segmented regions. In order to improve performance and robustness of the system, several strategies have been adopted including ICA feature extraction, SVM recognition, and pyramid matching, allowing us to automatically detect human faces with various sizes in real-time.



## Accomplishments

The developed approach achieves robust face detection using a standard firewire camera in real-time (30fps).



Kyoung Chin Seo, Suyu You, Isaac Cohen, and Ulrich Neumann. "A Real-Time Face Detection using Hybrid ICA-SVM Learning Method", Tech. Report, Computer Science Department, USC, 2003

## Research Plan

The proposed face detection system will be integrated into a head pose estimation module, and eventually to a face expression analysis and animation system. The integrated system will be able to obtain pose parameters of the detected face from input video, and allow automatic recognition and simulation of facial expression.

