FELIS
(Feature Extraction based Learning Image Search Engine)

Group No. 12

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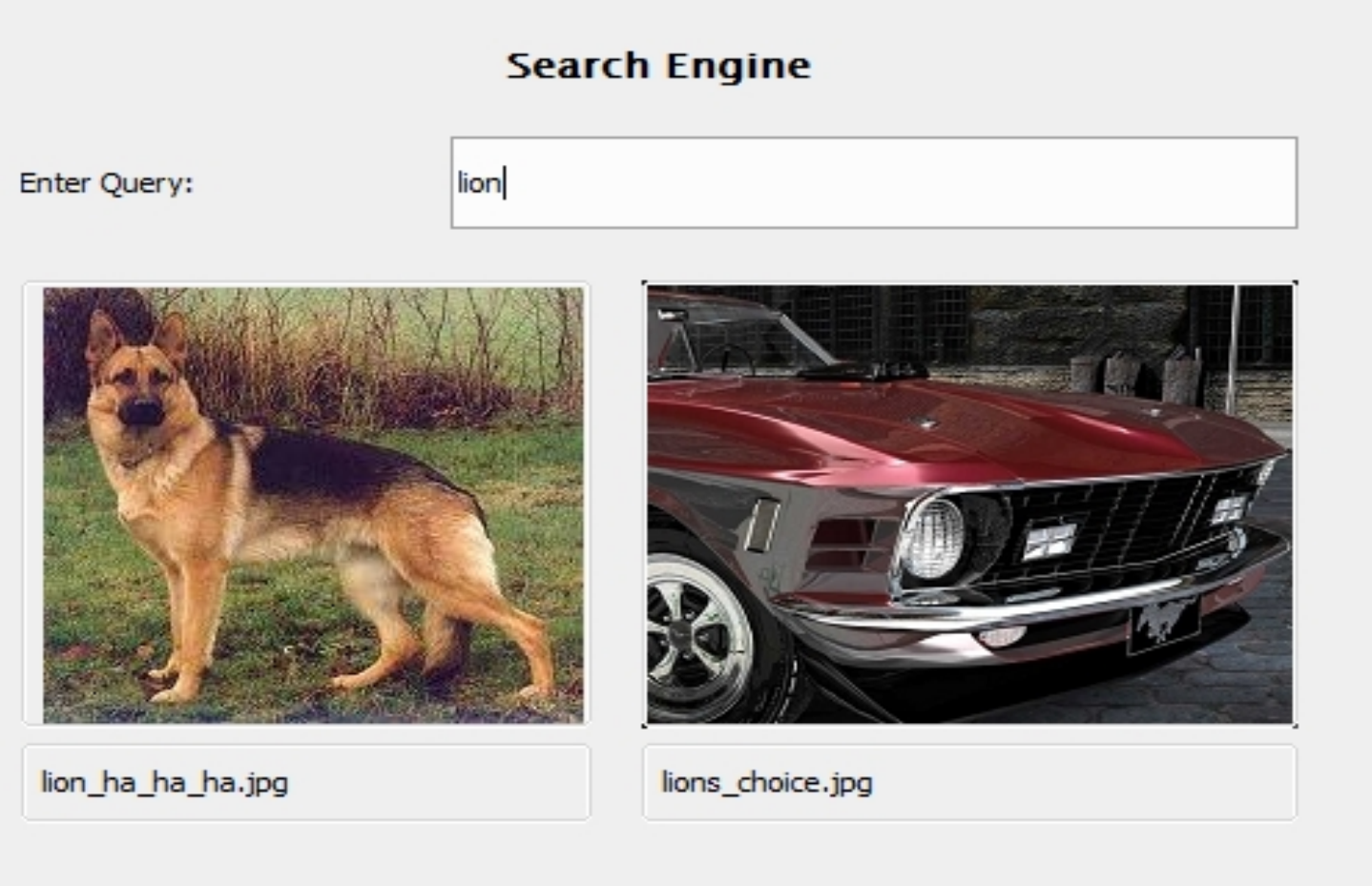
Need of CBIR System



Introduction

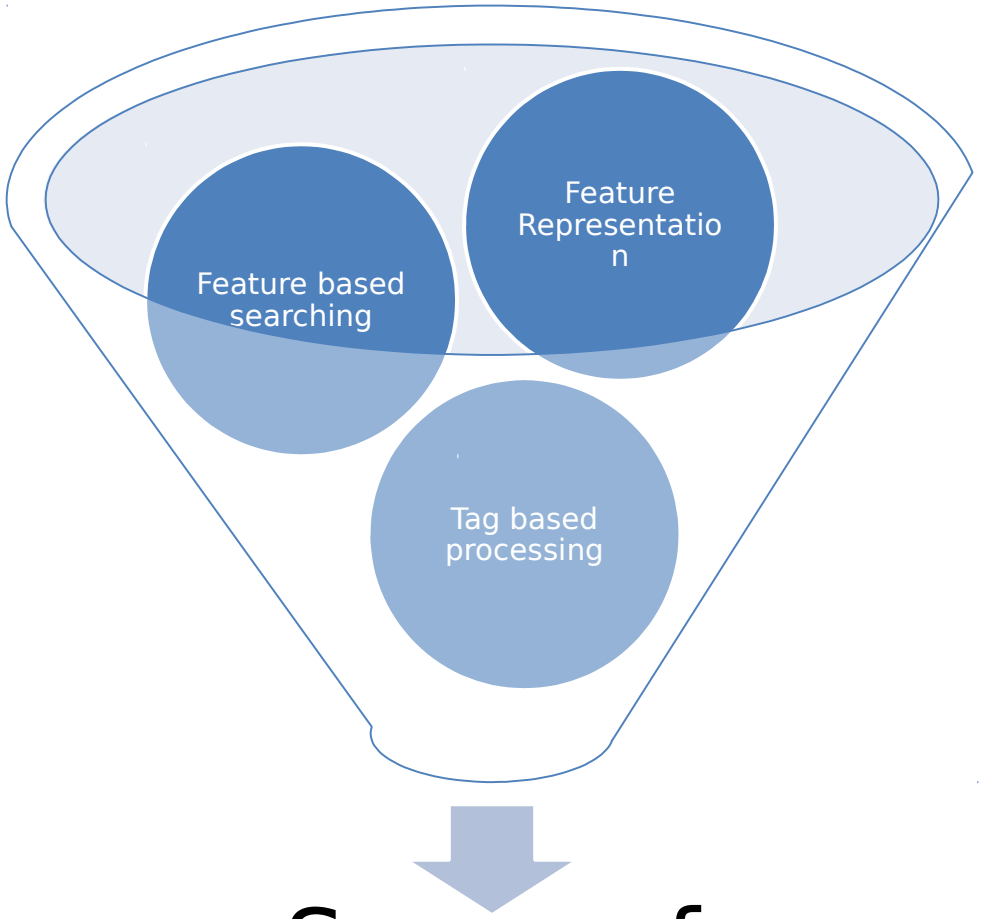
- CBIR term originated in 1992, by T. Kato.
- Retrieving desired images based on their features automatically extracted. from images rather than metadata.
- two phase process

Applications

- Finger print scanning cannot be done using a keyword search.
- Automatic face recognition systems.

- Digital libraries, Crime prevention, Medicine
- Historical research.

Scope of Project



Existing Systems

- BlobWorld
- PatSeek
- SIMBA(Search Image by Appearance)

BlobWorld

- Divides images into regions (“blobs”).
- index the blob descriptions using a R* tree.
- querying based on color, texture, location, and shape of regions (blobs) and of the background.
- Color: by a histogram of 218 bins.
- Texture : by ‘mean contrast’ and ‘anisotropy’.
- Shape : by an area, eccentricity, and orientation.

Limitations

- Rotation variant representation.
- Does not take user preference into consideration

PatSeek

- CBIR system for US based patent System.
- Developed by *Avinash Tiwari, Veena Bansal at IIT Kanpur.*
- Edge representation by EOAC.
- Quantizing edges into 36 bins of 5 degrees.
- Rotation invariant representation.
- Shape based searching.

Limitations

- Does not take color and texture feature into consideration.
- Large time to process query.
- Works only for gray-scale images.

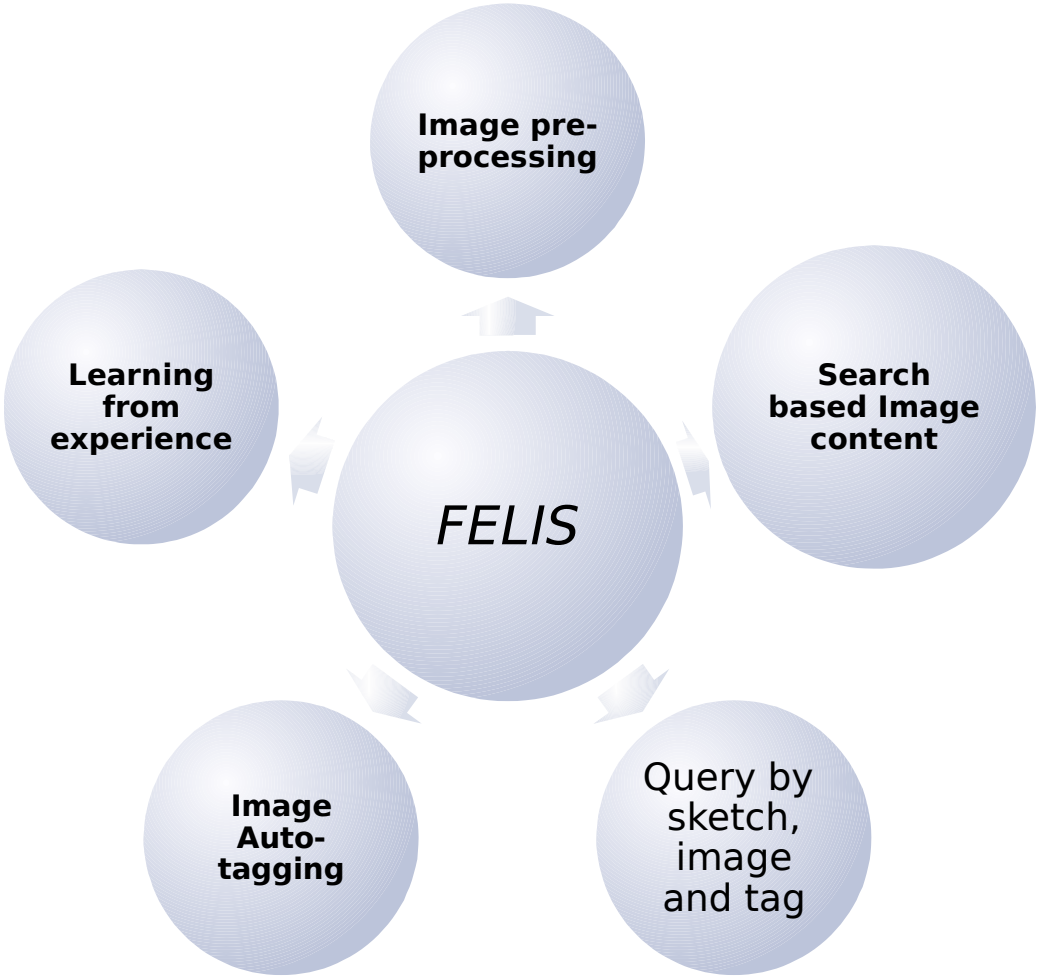
SIMBA (Search Images By Appearance)

- Developed by Institute for Pattern Recognition and Image Processing, Freiburg University, Germany.
- Works for color and texture feature.
- Is based on invariant features (Translation and Rotation).
- Online Prototyping (Client-Server System)

Limitations

- Maximum number of 5 clients is allowed to contact the database server simultaneously.
- Database contains only 2500 photograph images (MPEG-7).

Proposed System



Project Design (Architecture of FELIS)

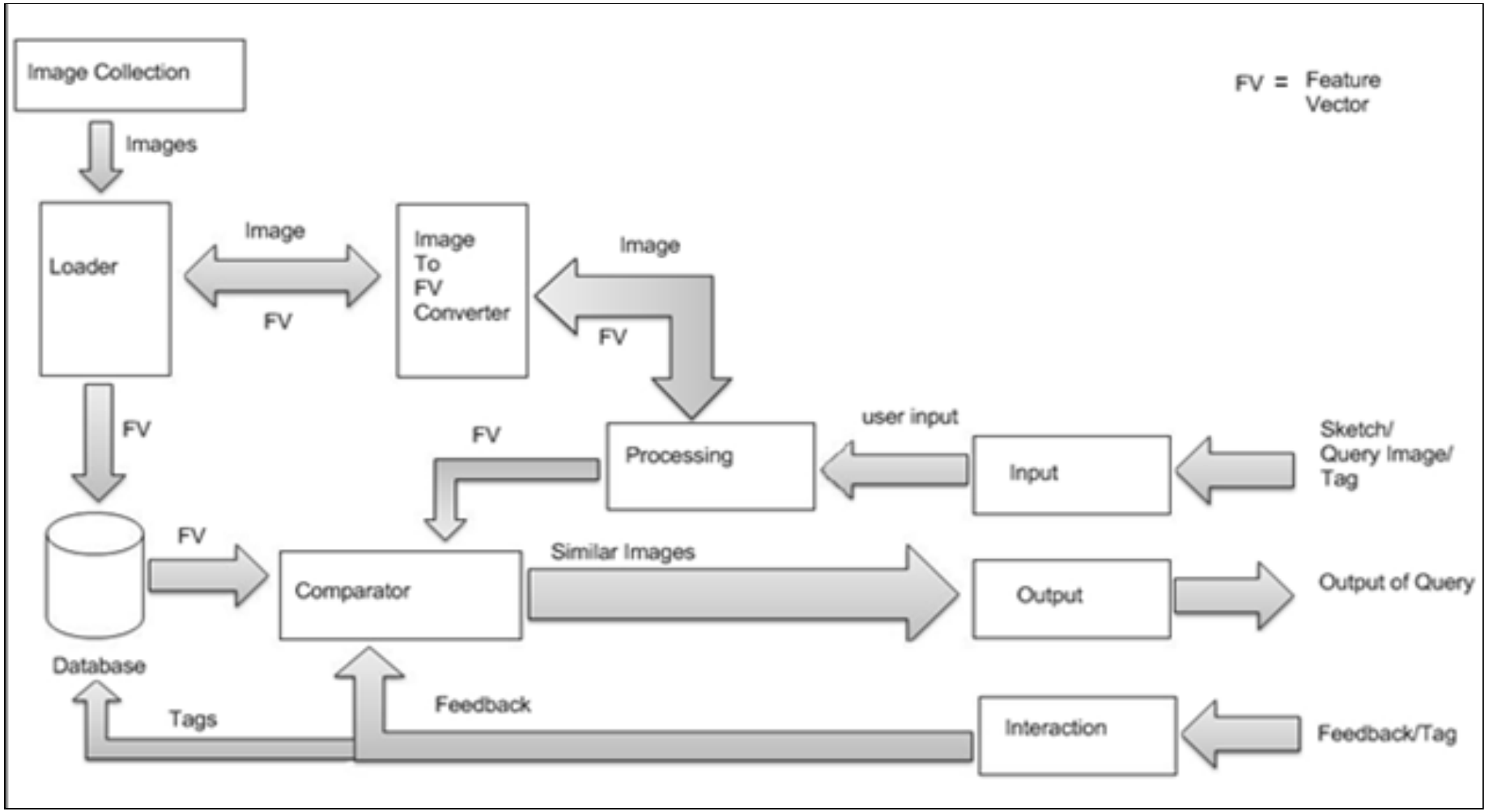


Image To Feature Vector Converter

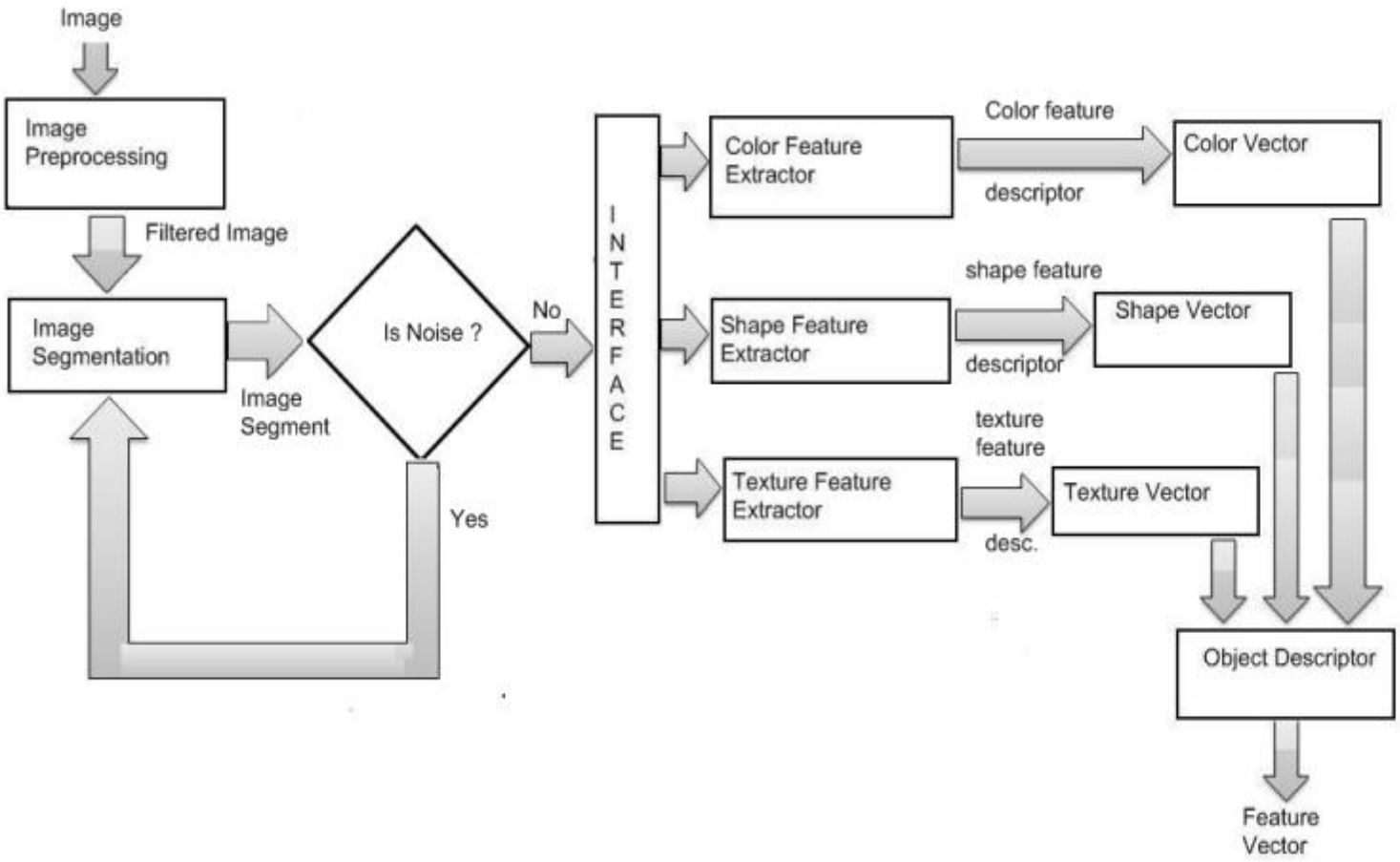
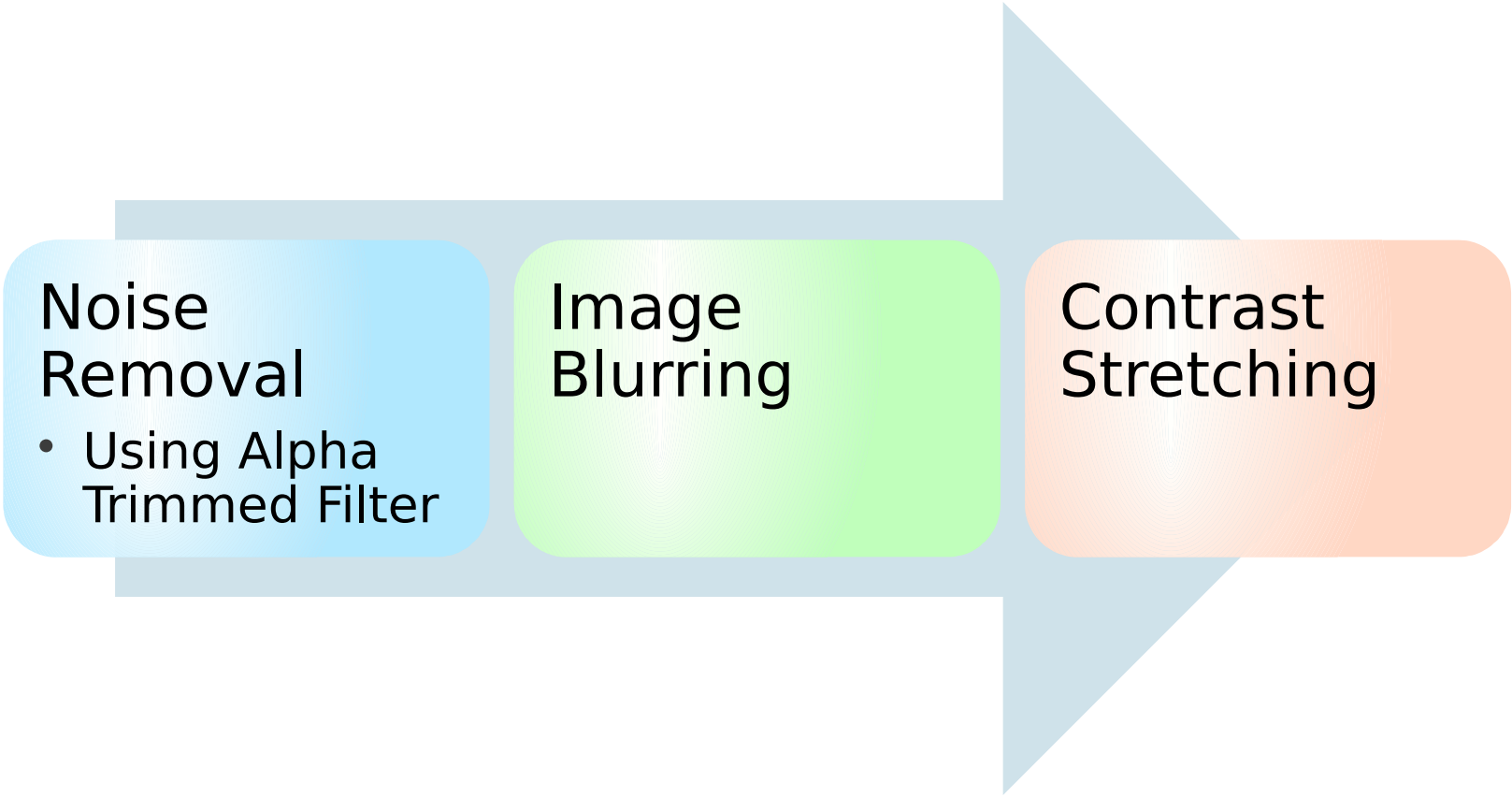


Image Pre-processing



Shape Representation (Using DAC Approach)

- Should be invariant to translation, rotation and scaling.
- Should also be able to represent spatial relation between neighboring edges.
- Hence, Distance Auto-correlogram (DAC) algorithm is used.

Color Representation (Using Color Histogram)

- Algorithm should not be very complex or calculation intense.
- Infinite possibility of colors.
- Hence, quantization is necessary.
- Representation should be able to cover the possibility of multiple colors in an object.
- Hence, Color Histogram is used.

Texture Representation

- Representation of physical property (material) of an object.
- Representation should be accurate and account for different possibilities.
- Standard algorithm for representation – Gabor Algorithm

System Requirements

Hardware Requirements

a) Any Intel or AMD x86 processor supporting SSE2 instruction set

b) Minimum 1GB Hard Disk Space

c) Minimum 1GB RAM

Software Requirements

a) Operating System: Window XP or Higher version or Ubuntu 9.10, Red Hat Enterprise Linux 5.x, SUSE Linux Enterprise Desktop 11.x, Debian 5.x

b) Java Runtime Environment (JRE) version 6

c) Image Processing Toolbox (from www.mathworks.com) version 6 or Higher

d) Oracle Database Server (9i or Higher)

Work Done Till Now

Thank you!!!
Any Suggestions ??