Real Time Face Tracking And Recognition

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  - System Blocks
  - Modular Architecture
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Project Overview

- Allow real time tracking and recognition of human faces in a video stream.
- Compare the performance of different combination of face detection and recognition algorithms.
- Develop a security application which can keep track of all the people entering and leaving a secured zone.
Pre-recognition Transformation

Face Detection
- Neural Network
- Cascaded Adaboost

Face Recognition
- Subspace LDA
- Kepenekci

Input Transformation

Presentation
Pre-recognition Transformation

Face Detection
- Neural Network
- Cascaded Adaboost

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Presentation
Face Detection using Neural Network

Facades

Non Faces

Neural Network
Face Detection using AdaBoost

Original Image

Feature Selection

Cascade of Features (Detector)
Pre-recognition Transformation

Face Detection
- Neural Network
- Cascaded Adaboost

Input Transformation

Presentation

Face Recognition
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Pre-recognition Transformation

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Face Recognition
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Presentation
### Face Recognition

#### Subspace LDA: Holistic Approach

<table>
<thead>
<tr>
<th>Subspace LDA</th>
<th>Kepenekci</th>
<th>Reported face-id</th>
</tr>
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</tr>
<tr>
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<td>x</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>x</td>
</tr>
</tbody>
</table>

#### Kepenekci: Feature Based Approach
Face Detection
- Neural Network
- Cascaded Adaboost

Pre-recognition Transformation

Face Recognition
- Subspace LDA
- Kepenekci

Input Transformation

Presentation

Lakesh
Abhishek
Face Detection
- Neural Network
- Cascaded Adaboost

Pre-recognition Transformation

Input Transformation

Face Recognition
- Subspace LDA
- Kepenekei

Presentation
Modular Architecture
Face Detection
- Neural Network
- Cascaded Detector
- Some new Algorithm

Pre-recognition Transformation

Face Recognition
- Subspace LDA
- Kepenekci
- Some new Algorithm

Presentation

Input Transformation

WWW

AVI

Webcam
Open Source and RTFTR
GNU GPL v2.0 License

- Strong copyleft license.
- Ensures four pillars of freedom.
Underlying Technology

- GNU C / C++
- Linux Environment
- GCC and Automake tools
- Gtk+ for Interface
- OpenMP for multithreading
- Kdevelop IDE
Libraries used

- GCC
- boost C++ Libraries
- FFTW
- VIGRA
- The GTK+ Project
- OpenMP
Unique Selling Proposition
Market Values

- **Research Platform**
  - Extendible and open to further research.
  - Freely downloadable and can be implemented in custom software and hardware.

- **Business Model**
  - Customization and Support
  - With RTFTR, everybody in the society has access to a surveillance system that can be used to secure homes, schools, public places, etc.
Learning

- Research and Contribute to Computer Vision.
- Project Management and Collaboration.
- Open Source Hacking.
- Open Source is a self sufficient ecosystem.
Thank you

http://collaborate.d2labs.org/projects/rtftr
http://rtftr.sourceforge.net