TERM PROJECT

Fall 2010, BESE- 14

Objectives

The aim of this term project is to make you apply the theoretical concepts introduced in the course to real world problems. I will provide a list of possible projects and you are free to choose any of these. You may also work on an idea of your own but in that case you should take prior approval. Most of these projects have state-of-the-art algorithms available and you need to implement one of those. Some of these projects are classical image processing/pattern recognition problems while others are modules which will fit into some ongoing/future PG level research projects.

Suggested Projects/Applications

- Real time hand detection and tracking in videos. (★★★★★)[1]
- Detection and tracking of moving objects in a video. (★★★★★)
- Detection of human faces in images. (★★★★★)
- Business card reader (If you could implement this on a mobile phone that would be great. This feature is available in some latest phones.) (★★★★★)
- Detection of road signs from images. (★★★★★)
- Detection of doors for visually impaired people/robots. (★★★★★)
- Detection of text in scenes for visually impaired people/robots. (★★★★★)
- TV Channel Identification using logo recognition. (★★★★★)
- Identifying personality from handwriting (Graphology – Many companies in Europe would ask you to submit a handwritten application once you apply for a post. Your writing is then analyzed to by graphologists and their recommendations play an important role in the recruitment). (★★★★★)

If you work on one of the following applications, they might be integrated into PG research projects.

[1] Subjective Difficulty

- A system that allows you to sketch letters of alphabet (like you do in paint brush), compare them to the characters stored in the database and output the ascii text. (☆☆☆☆☆)

- A system that allows you to sketch (the shape of) a word and find that word in all the images in a database (It is called sketch spotting). (☆☆☆☆☆)

- A system that takes as an input the image of a postal letter/courier, localize the address fields and identify the script (whether it is written in Urdu or English). (☆☆☆☆☆)

Tools/Languages

You may choose any tool/language that you want to work with. However, you are highly recommended to use either C++ or .NET with the available computer vision / image processing libraries (OpenCV/EmguCV). This will not only be a plus to your skill set but will also be useful once you are working on your degree project. You are also free to download any source codes/functions which could fit into your project as long as you acknowledge the source and very clearly indicate which parts of your system are off-the-shelf modules and which parts are developed by your team.

Team Composition

You may work in teams comprising a maximum of **four** members.

Deliverables

- The complete working system.
- One page synopsis.
- A poster describing your project. The posters will be printed and displayed on a given date and the syndicate will present the project with the help of the poster. This will be a good practice for you as you will frequently need to make poster presentations in the near future, e.g. Open House of your degree projects, participation in different project competitions and conferences.

- Optional Activity (Not graded)
    - A web page for your course where we have all the projects listed with their synopsis, syndicate info and source code etc. (This will be a good source of publicity for you). Of course some of the students will have to volunteer to collect data from all the syndicates and put it on the web.

Submission Date

Prepare your demos/poster/synopsis before **January 1st 2011**.

++++++++++++++++++++++