METU, Department Of Computer Engineering

Graduation Project
Proposal Form

**** * * This Part is for guidance and to be deleted from your proposal * * ****

(Please read carefully, and follow the instructions to prepare the project proposal form.)

(Instructions to fill in this form are given in italic fonts and in parentheses. These instructions should be replaced by relevant information to provided.)

(To provide an input for a section of the form, delete the instruction and provide your input in place of the deleted instruction. In the final form that you will submit, there shouldn't be any instructions left over, including this section of the form.)

(If you feel that a particular instruction is not relevant to your project proposal, please use a proper explanation for this, rather than ignoring the instruction.)

(The final form should not exceed 4 pages, excluding this page and including the References section. Please use Arial, Normal, 10pt fonts and single line spacing.)

(Please follow these instructions carefully to improve the quality of your proposal.)

Important Notes

A project could be proposed by (i) a student group, (ii) a company, or (iii) a faculty member of the department by filling in this form and submitting it to 49x-proposal@ceng.metu.edu.tr by e-mail. For a project proposal, there might be a sponsoring company supporting the project and providing some form(s) of resources for the project.

Each project will be carried out by a group of 4 students over the course of 9 months, which amounts to 36 man*months. It is very important that your project's workload is around 36 man*months. Please make sure that you have a rough justification about the workload of the project.

If your proposal might contain a patentable idea or any type of intellectual property, please first make sure to follow appropriate steps (apply for a patent, etc.) before sending your idea to us. Once this form is received from you, the instructor(s) and the department has no responsibility regarding to intellectual properties of your project/idea.

All sources and documentation developed for this course are assumed to be public domain (GPL, CC or similar license) by default. If you need any exception for license and disclosure of project work, please specify this in detail in IP section of the form.

Please note that source codes, documents and issue tracking should be kept in department servers. No restrictions can be requested for limiting faculty and assistants access to student work.

Project Information

Title

EduSys

Target

Public [ ] Restricted [x]

Team squ4re

Proposer Information

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IP (Intellectual Property) Information

All intellectual properties belong to the project group. Team members right to branch a commercial copy at the end of the year is reserved.

Project Description and Background Information

Description

Our project is designed to analyze the behavior of students in a classroom and produce true and proper feedback to both lecturers and students. The system will have the following properties:

For lecturer:
- Attention level of students, both in general and day by day.
- How many students attend during a lecture.
- Which topic is more interesting according to the students.
- Which region of the classroom is preferred more by the students.

For department administration:
- End of the semester feedbacks for teachers, in an honest way.
- Successful and unsuccessful lecturers.

Similar Products/Projects

There are a lot of paper [1] [2] about class attendance by face recognition with a camera which takes place in the class but there is not very similar products with this kind of project. Similar projects are more like an embedded system that everybody shows their faces one by one while entering the building or class etc. And also our project is give more importance to create feedback for understanding the current productivity and efficiency of lectures and give lecturers to improve themselves by analyzing student's behaviors during the class time by image processing. And after some research, we couldn't find a similar product like ours.

Justification of the proposal

Main purpose of our project is collect all the data about every single lecture and serve them to users as a proper way. We wanted to create a single platform for understanding and improving class environment and give an idea to people for proper and quality education. At some universities, not all, at the end of every semester, students evaluate teachers and the result of this evaluation should give proper feedback to teachers. However, we observed that most of the time students doesn't give importance to these evaluations and again most of the time they don't share their true opinion. They just wanted to finish that job because they are required to do so. Because of this situation, improving of education system is very limited and there is no proper communication between students, lecturers and administrators. Since education is maybe the most important thing, this kind of situation cannot be ignored. We wanted to handle this problem.

In addition, we make students come to the lectures. And we know that the old ways of taken attendance like taking signature or lecturers saying all the names in the list, is not effective as it is distracting and can be abused by students who put signature to list for their other friends. However, they cannot trick

Since this project is also for administrators, the teachers that doesn't care for their students and their education can be detected and actions can be taken against this kind of teachers specified in the procedure.

Contributions, Innovation and Originality Aspects of the Project

The contribution that comes with this project is that it will be the first complete classroom monitoring feedback and attendance system. As a better aspect of our project, we aim to collect all data coming from camera in the classroom and analyze it to create statistics in a real time environment. For further use, our product will be helpful in universities and schools. Since there is no such a popular product that does the same thing with our project, there is no need to say difference between other products.

Technical Aspects of the Project

We are planning to develop a Web application. We are going to create a database that keeps information about every lecture. This information includes how many students
and which students were attend to specific lecture, whether students sit front seats or back seats to understand how much they are interested to the topic that were taught by using image processing. This data is going to be served to lecturer with graphs and other visual materials on the web application. If a student is in a risky situation about attendance, system is going to send an automatic e-mail to that student to warn.
Lecturers can change settings about attendance (%70 or %60 attendance required etc.). Also they can keep track the results of teaching method that they used in specific lectures. System is going to give feedback to lecturers by using the data that is stored in database.
In addition, we are going to create a different webpage for department administration in the same web application. This webpage is going to fetch some data from the same database and create statistical information about the lecturer of that department. This information is going to be used as honest evaluation method instead of the one that is done at the end of the semester.

Targeted Output, Targeted User/Domain Profile

There will graphs and visual materials that shows how much students are interested during lectures and attendance lists for each lecture. Also there will be proper information about evaluation of every lecturer. Targeted users are lecturers and administrators of that university or school.

Project Development Environment

For the web application, we are going to use HTML5, CSS, Javascript, AngularJS, AJAX.
For the database and server part of the project, we are going to use JAVA, PostgreSQL, Hibernate, Tomcat. And we are going to server data as JSON.
For image processing, we are going to use OpenCV, JavaFaces and JavaCV.
There will be a camera for fetching the images and recognizing faces.

External Support

We can ask questions about designing website to an Industrial Design student and we can use some basic open source libraries. Also we may ask some questions about understanding emotions from the face of a person to a psychology professor.

References

[1]http://www.ijarcce.com/upload/2014/june/IJARCCE10A%20a%20Jyotshana%20%20smart%20attendance.pdf
[2]http://www.mm.media.kyoto-u.ac.jp/old/research/doc/682/FRLASinAEARU.pdf