

# Senior Project Ideas

Zhizhang Shen \*  
Dept. of Computer Science and Technology  
Plymouth State University

April 6, 2012

## 1. *The following projects are relatively focused on database programming.*

### • **How much can we sell it for?**

A town library, before selling books, wants to check out its market price through, e.g., Amazon.com. What it prefers, however, is to scan in the books, then some of the key information is automatically extracted, and price information is then collected on line. The following steps might be involved:

- (a) Book covers are scanned.
- (b) Critical pieces of information, such as book title and author's name, are extracted, via an OCR (Optical character recognition), then added into a database.
- (c) Use the extracted information to do a search for the resale value

### **Notes:**

- If a framework can be worked out, it can be used to do other stuff, e.g., used DVD, CD, etc..
- A certain amount of research needs to be done to investigate the current OCR technology.
- Something of a similar nature has been done in the past in the sense that, based on certain index, e.g., ISBN, lots of related information can be immediately download from, e.g., Amazon in this example.

### • **Where will I be buried?**

There are lots of cemeteries spread everywhere in a certain town, which causes a great deal of confusion as their whereabouts and the associated management problem.

It will be nice to come up with a “larger scale” digital map of these cemeteries so that when it is clicked, it will fly to, e.g., Google map, to give out its precise location as well as its environment.

---

\*Address correspondence to Dr. Zhizhang Shen, Dept. of Computer Science and Technology, Plymouth State University, Plymouth, NH 03264, USA. email address: [zshen@mail.plymouth.edu](mailto:zshen@mail.plymouth.edu) Home page: [oz.plymouth.edu/~zshen](http://oz.plymouth.edu/~zshen).

**Notes:**

- (a) Do a field trip of all these cemeteries to find out their exact locations.
- (b) Come up with a digitized map, with the names associated with hyperlinks, pointing to appropriate places in, e.g., a Google map.
- (c) This application can be generalized again to help to locate, e.g., parking spaces, restaurants, etc..

• **A multimedia database**

There is a need to organize lots of multimedia objects such as images, sounds, generating programs, etc., into a database. Some of the basic relationship among those objects can be a relation between every image(sound, movie) and the program that generates them, and that reflecting a history of media processing, and where such a file is used, e.g., in which course. For example, a beach image and the one where sunset effect has been added. There could be others, e.g., a video clip and the accompanying audio.

From a logic perspective, this project should consist of two pieces, *the database part* and *the interface part*. For the database part, you are expected to present a good design with a collection of normalized tables. Technically, you should use some of the popular tools, such as the MySQL/PHP combination.

The technically challenging part for this part is how to add in the image, the sound and the movie into the table. Although there do exist data types for you to enter them in binary, it is not an ideal choice considering convenience and the portability issue. One way should be to keep all the objects in their original formats, e.g., .jpg, and just put in the file names in the database tables.

The interface part should be a web page. Besides an appealing background, among the usual operations, the ease of adding and removing objects into such a database is the key, since besides setting up a general model, an immediate application I have in mind for this project is for use by the students of a multimedia course so that they have a central location to look for the related information and a place to dump their homework assignments.

The student who wants to take on this project is expected to have a basic understanding of database design, web design, multimedia and web programming.

2. ***For those research oriented:*** I have been doing some research, mainly dealing with communication network related issues, making use discrete mathematics and programming. If you are interested, have a look at my publication list in my homepage and come too talk to me.