Project 1 - You Can't Judge a Book by Its Cover

Alpha Due Saturday 9/14 at 8:59pm Chicago time
Application Due Saturday 9/21 at 8:59pm Chicago time
Documentation Due Monday 9/23 at 8:59pm Chicago time

Project 1 is focused on Augmented Reality. In the future when everyone is wearing their AR enabled eye-wear most of the time, what kind of future will it be? We are going to explore this a bit by looking into what the future of how physical books might become augmented. How can books survive in an AR world? How can they 'advertise' themselves? This project will give you some experience writing an Augmented Reality application using Unity3D and Vuforia, and let you experience what interacting with this kind of augmented world will be like. It will also give you some experience with creating and modifying 3D models for use in these kinds of worlds.

For example, from the week 2 demos, I can take a copy of Thor Heyerdahl's paperback on Rapa Nui / Easter Island and augment it with a 3D moai from 3D Warehouse (https://3dwarehouse.sketchup.com/model/d784e09f-71ce-4020-a40e-be49a6f87e2e/Moai)

In the future people may be wearing lightweight trendy glasses, or contact lenses, or ocular implants, but for now we are going to use a webcam attached to a computer to simulate this AR eyewear. Make sure you have regular access to a modern webcam that you can plug into your development computer. There will be a webcam available on the classroom computer for testing, which also gives a common platform for evaluating your work. There are also several apps out there that let you use your smartphone as a webcam, so you may also want to try those (e.g. DroidCam) while developing.

You can work on this project alone, or in groups of two or three. The amount of work scales linearly with the number of people in your group. Note that the entire project is graded as a single whole, not as a collection of components from different people - group members must make sure their individual work combines together well.

To start with you (or your group) should pick a classic book, play, or short story, fiction or non-fiction. You should have a physical copy of this book / play as you will augment the physical copy as part of the project, and you will need to turn in this book for a few weeks during grading. Note that books with 'noisy' covers will work better for AR than simple ones for AR purposes.

You will be implementing the project in Unity 2019.2 and Vuforia to run on the classroom PC.

75% of the points on the project (C level functionality) are for:

- create an image target based on the front cover of your book so that you can set your book on the table, point your webcam at it, and see the augmented information hovering over the front cover
- the front cover needs to have the title and author(s) displayed in augmented text
- the front cover should show a 3 dimensional scene from the book with appropriate lighting with at least 2 lights. For each person in your team you need to add the following things to the front scene which should be clearly visible / audible in appropriate scale and appropriate style
  - at least 5 unique pre-existing models
  - at least one reasonably interesting unique model you created yourself
  - at least one ambient sound
  - at least one animated/moving object or particle effect
- the front cover needs to have an AR button that the user can activate which will trigger a 3D character from the book to appear as a spokesperson, in addition to the scene, to speak the name and author of the book and encourage you to read it.

25% of the points on the project are for:

- create an image target based on the back cover of your book so that you can set your book on the table, point your webcam at it, and see the augmented information hovering over the back cover
- by default text should appear above the book giving the title, author(s), language, number of pages, and publication year
- the user should see an augmented reality button allowing them to change the visible information floating above the back cover from the title / author / etc information to a set of mostly textual reviews, and a set of video reviews (using unity's video player)
- for each person in your team you need to add the following things which should be clearly visible / audible in an appropriate scale and appropriate style
  - at least 2 brief reviews of the book similar to what you would see on rotten tomatoes or amazon with some kind of iconic score (fresh / rotten, thumbs up / thumbs down, n out of m stars using 3d objects), a 1-sentence textual review, brief info about the reviewer, and the date of the review.
  - one short video review of the book (feel free to be as excited or deadpan as you want in the video review as long as the video and audio are good. You can do the review yourself or recruit others, but you need to name anyone else you recruit. You can not

just grab something off the web - you need to purposely record the review for this project)

Graduate students in the class also need to translate the augmentations into one additional unique language per graduate student. This language could be a real language or Klingon or Swedish Chef, or High Valerian, etc. The user should be able to choose the language via an AR control on either cover and see all of the text and hear all the spoken language shift to that language.

Note that each group needs to pick a unique book or story and have it approved by Andy. The first email that reaches Andy claims that book. You can only try to claim one book at a time (no lists) so think it over with your team and look at what free models are available that you could make use of. The definition of 'classic' is up to Andy ... feel free to try and convince me something is a classic. The book and the scenes you create from it should be rated G or PG and not be overtly violent or offensive. While there are many classic books that are important and offensive, and important because they are offensive, this project is not the place to have in depth contextualized discussions of them.

You should create a GitHub page for your project. You can integrate Unity with git so that it will track all your changes, or just regularly push files to git. The final project will need to be turned in via git so we know the timestamp on the files, but it can be also helpful to have regular commits to resolve any potential group conflicts.

Note that there is a very big difference between getting something working and getting it working well. The first is not that hard. The second takes much more time. You are expected to have things working well, so be sure to test on the actual hardware regularly. The projects are going to be graded based on how they run on the classroom PC.

There are three due dates for the project.

The alpha is due first. At this point you should have all the basic C level functionality working. Add the TA as a collaborator to your GitHub repository so she can have access to your work, and email a link to the repository to her. You should also create a short 1 minute video YouTube video showing all of the basic C level functionality of your application running on the classroom PC or a computer of your choice, probably captured through a screen capture program. Send a link to the video to Andy and the TA by the alpha deadline.

The unity source and application is due next. This will be turned in via GitHub by making your repository public. Be sure to email the location of your repository to Andy and the TA before the deadline. You will need to turn in your physical book in class.

The third deadline is for the documentation.

(http://people.uic.edu), GitHub,

enumerated list with images of the n models you used and the ones you created for your application to make it easy to see that you have those n models in your scene (one good way to do this is to take some high resolution screen shots of your scene and put numbers next to each of the models and then have a textual list showing where the models came from and author credits or that they were created by you)
enumerated list of the sounds you used and their sources, or state that you created them
at least a one page / 500 word discussion of how effective you think this technique could be as a kind of 3 dimensional 'movie trailer' for the book.

When the project is done, each person in a group should also send Andy a private email with no one else CC'd ranking your coworkers and yourself on the project on a scale from 1 (low) to 5 (high) in terms of how good a coworker they were on the project. If you never want to work with them again, give them a 1. If this person would be a first choice for a partner on a future project then give them a 5. If they did what was expected but nothing particularly good or bad then give them a 3. By default your score should be 3 unless you have a particular reason to increase or decrease the number. Please confine your responses to 1, 2, 3, 4, 5 and no 1/3ds or .5s please.

An important part of creating AR applications is getting feedback and using it to improve your design.

We will be spending time in class for each person/group to show off their work. Given the number of groups, each group will have <?> minutes to present their project.

The classroom VIVE PC will have a folder on the desktop named 428 Fall 19 Project 3. You should put a copy of your executable and its associated data folder into a folder named after you, and then put that folder into the 428 Fall 19 Project 3 folder. Be sure to test and make sure your