**LCC 6650 eTV Project Studio**
Tuesdays Thursdays  4:30-5:45
TSRB 322  (PenLab) and TSRB 113 (Game Lab)


**Prof. Janet Murray**
**TSRB 320A**
**Office hours Monday 4-6**
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Lab Manager
Ricky Yu

*General Course Description*


This course explores the design possibilities at the intersection of complex storytelling and emerging platforms of digital media including eTV, simulation games, and virtual/augmented reality. Students investigate the design space by analyzing existing artifacts, running surveys, and doing user testing, as part of the semester-long process of designing 3 or 4 group prototypes that we demo will be demo-able by the end of the semester and documented in slide presentations, posters, a final video, and often in conference presentations or journal papers. Prototypes may run on existing technologies or they may involve experimental software and/or hardware environments of our own creation.

The fundamental question this Project Studio addresses is how interaction design for emerging computational technologies can allow us to create, experience, and share more complex forms of storytelling.



*Learning Outcomes*


M.S. TOP LEVEL
    Demonstrate the ability to devise, design, create, and assess prototypical digital media artifacts, services, or environments and to contextualize them within recognized traditions of practice.

M. S. SECONDARY LEVEL
    Knowledge
- Formally identify digital media design elements, such as interface conventions, processing strategies, and information structures.

    Comprehension
- Ability to explain, give examples of, and defend one's use of formal digital media design terminology

    Application
- Demonstrate use of digital media to create prototypes
- Demonstrate good time management skills
- Demonstrate ability to set realistic goals

    Analysis
- Can develop interactive media artifacts

Synthesis
- Can design and create digital artifacts that create the experience of agency for the interactor.
- Can design and create digital artifacts that segment and tag media to create meaningful organizational units.
- Can communicate, coordinate, and work productively as a team member.

Evaluation of Works
- Can justify the design choices in their works
- Can formulate and test design hypotheses

PHD Learning Objectives
all the items in the MS Learning Objectives above PLUS

PhD TOP LEVEL
- Students can identify and analyze a domain within the field digital media and identify areas for original contribution as well as methods to pursue these contributions.
- Students can formulate original interpretations and design original prototypes that reflect an understanding of the humanistic context of digital media.

PhD SECONDARY LEVEL
Knowledge
- Identify the historical and cultural roots of digital media

Synthesis
- Demonstrate ability to conduct original research in support of designing new genres and forms of digital media
- Demonstrate ability to conduct original research in support of assessing and / or critiquing new genres and forms of digital media

## *General Policies*

Students are expected to indicate the source and authorship of any work not original to them.

Students are expected to come to class prepared and actively respond to presentations by the instructor and fellow students. Students are encouraged to bring their laptops to class, and are always welcome to look up information related to the discussion during class.

All students will have access to the PenLab in TSRB 322 and Game Lab in TSRB 113 and are expected to abide by the rules of that lab, including never propping open doors or leaving the room empty and unlocked.

**There is zero tolerance for discrimination or harassment on any basis**, including but not limited to race, color, religion, sex, national origin, age, disability, sexual orientation, gender identity, or veteran status. Georgia Tech is committed to providing its staff, faculty, and students the opportunity to pursue excellence in their academic and professional endeavors. This opportunity can exist only when each member of our community is assured an atmosphere of mutual respect. Georgia Tech's full anti-harassment policy is online here:
http://www.policylibrary.gatech.edu/anti-harassment-policy

**Students in need of Learning Accommodations**: Any student who feels that they may need an accommodation for any sort of disability, please speak to me after class or come see me in my office hours so we can discuss alternative strategies.  Georgia Tech support services are available through the  Office of Disability Services of the Dean of Students Office, as described here: http://disabilityservices.gatech.edu.

**Attendance Policy** Students are expected to attend every class meeting and to participate actively in the design discussion. Students are expected to fulfill the development schedule as developed by the team, and to make their work available in a timely manner that supports the overall team effort

**Recommended software**

Blender - Blender is a free 3D software. You can download it from their official website. 🡥 https://www.blender.org (Links to an external site.)Links to an external site.

Other softwares including Maya and Cinema 4D may also work. Make sure you export your models in .FBX format then they can be imported into Unity and compatible with other 3D softwares.

**Tutorials**

Lynda.com - This website provides you with video tutorials to learn most of the knowledge about 3D modeling. You can sign in with your Georgia Tech account. Here are some tutorials I recommended:

Blender Essential Training 🡥https://www.lynda.com/Blender-tutorials/Blender-Essential-Training/87088-2.html (Links to an external site.)Links to an external site.
Blender: Character Modeling 🡥https://www.lynda.com/Blender-tutorials/Character-Modeling-Blender/135362-2.html (Links to an external site.)Links to an external site.
Blender: UV Mapping 🡥https://www.lynda.com/Blender-tutorials/Blender-UV-Mapping/169107-2.html (Links to an external site.)Links to an external site.
Creating a Finished Character Animation in Blender 🡥https://www.lynda.com/Blender-tutorials/Creating-Finished-Character-Animation/421798-2.html (Links to an external site.)Links to an external site.
Unity: Materials and Lighting 🡥https://www.lynda.com/Unity-tutorials/Materials-Lighting-Unity/133342-2.html (Links to an external site.)Links to an external site.

**Something to help you save the time**
Yobi3D - This is a free 3D Models Search Engine. You can use keywords to search the models you want. Then you can download them or even modify them by yourself. 🡥 https://www.yobi3d.com (Links to an external site.)Links to an external site.
Unity Asset Store - They have awesome and beautiful assets you can directly import into Unity. And some of them are free. You also can find some amazing animations and particle systems from it. But it might be hard to modify them if they come in .prefab format. 🡥 https://assetstore.unity.com (Links to an external site.)Links to an external site.

**AR/VR Projects of PenLab Group**

Videos here: http://etv.gatech.edu/projects/ (use left-hand filters and start with most recent)

Of special note:
http://etv.gatech.edu/2017/05/05/ares-room-scale-vr-narrative/  Ares
http://etv.gatech.edu/2017/12/11/alien-encounter-vr/  Trespass

**http://etv.gatech.edu/2016/05/16/harry-pottar-2/  Harry PottAR**

**VR/AR Human Rights**

*The Guardian* 6x9 A Virtual Experience of Solitary Confinement https://www.filmlinc.org/films/6x9/
Oculus: https://www.oculus.com/experiences/go/1073856559366835/

Derek A Ham, I AM A MAN https://www.youtube.com/watch?v=Ko9Igz20_LQ

Nonni de la Peña, Out of Exile: Daniel's Story  https://www.youtube.com/watch?v=TiSKz2Wa9w8

**Immersive Reconstruction of an 18th Century Ship**
https://www.youtube.com/watch?v=i6CGVWDjs-A
https://hal.inria.fr/hal-01218209/document

*Readings*

A Universal Declaration of Human Rights (1948)
https://en.wikisource.org/wiki/Universal_Declaration_of_Human_Rights

Brenda Laurel
"What is Virtual Reality" ⚑https://medium.com/@blaurel/what-is-virtual-reality-77b876d829ba
Janet Murray "Not a Film and Not an Empathy Machine "⚑https://immerse.news/not-a-film-and-not-an-empathy-machine-
Janet Murray ⚑How Close Are We to the Holodeck?

**Videos**
"Thresholds of Reality: Creating Coherent Enchantment in VR (NYU 2017)⚑Thresholds of Reality: Creating Coherent Enchantment in AR | Janet Murray | AR in ACTION NYC (Links to an external site.)Links to an external site.

Who's Afraid of the Holodeck? ⚑https://www.youtube.com/channel/UCJPPEt6e10-mmkOreS1oCiw

(other references will be added based on semester-specific issues)

*Grading*
Students will be given specific project tasks and responsibilities, such as coding, visual design, project management, and will report weekly on progress. Students will formally assess themselves and one another on their contribution to collaborative projects.

Project Development 60%  for collective accomplishment and 20% for individual contribution as witnessed by instructor, documented by the student, and reported by teammates.

Individual Contributions to class includes individual assignments, creative ideas, technical contributions to the group, constructive participation in class including response to other classmates' and other teams' presentations  20%

**Required IRB Training:**  http://researchintegrity.gatech.edu/irb-required-training  Follow links to complete CITI training for Social and Behavioral Research with Human Subjects.  Must be completed by the end of Week 4. This is a pre-req of doing the user testing which you must all participate in.

*Schedule*

Details of assignments will be on the Project Studio Canvas site under Discussions and all assignments and project documentation should be handed in there by linking to longer files. You can upload files or host them elsewhere, but if you host on google docs please make sure your permissions are set to public..

**Week 1 Review of recent prototypes of this group and Human Rights/Civil RIghts Projects**

**Week 2** Tuesday: Discuss Dramatic Agency in projects we reviewed
        Thursday: Discuss how we would revise an existing project

**Week 3** Propose a new human rights/civil rights VR/AR scenario with dramatic agency; form preliminary teams

**Week 4 Skills development – all lab week** (IRB certification must be completed by end of this week)

**Week 5 Mockup of 1 interaction** in coordination with at least 1 other class member with complementary skillset;  Thursday: **Team formation**

**Weeks 6 Team Presentation** of Storyboard and Schedule; development underway

**Weeks 7** Scenario Refinement; development continues

==**Week 8  Poster v. 1;** development continues==

**Week 9** Prototype v1 Internal Testing (classmates)

**Weeks 10** Prototype v 1 testing with others ("mid" term team evaluations due)

SPRING BREAK

**Weeks 11** Iterative Design

**Week 12 Prototype v. 2** internal testing

**Weeks 13 User Testing, Revised Poster**

**Week 14**  Possible GVU Open Lab Day?

**Week 15 Final prototype and Poster due (v.3)**

**Week 16  (Reading Period)** Final Demo and write-up of user testing and design process, posters , web page added to eTV site with video documentation of the project.

(maybe an additional public demo day/celebration during finals week)

Project Studio: PenLab Spring 2019

| Week # | Tuesday date | |
|---|---|---|
| 1. | 1/8 | AR/VR intro: PenLab Projects |
| 2. | 1/15 | Human Rights Projects |
| 3. | 1/22 | Conceptualization |
| 4. | 1/29* | Skills acquisition |
| 5. | 2/5 | Team formation; development plan |
| 6. | 2/12 | Scenario refinement; development |
| 7. | 2/19 | Scenario refinement; development |
| 8. | 2/26 | Poster v 1; development |
| 9. | 3/5 | First Prototype – alpha test |
| 10. | 3/12 | First prototype - User Testing<br><br>Team evaluations due |
| Spring Break | | |
| 11. | 3/26 | Iterative Design |
| 12. | 4/2 | Second Prototype and Poster v2 |
| 13. | 4/9 | User Testing |
| 14. | 4/16 | ==Iterative design GVU open lab day this week 4/18== |
| 15. | 4/23 | Final prototype and poster v3 |
| Finals week | 4/30 | Web page with video of demo run posted; running code, final poster, final team evaluations |


***Resources and Tips***

15 Microsoft compatible Acer VR headsets
10 Mobile phone devices (Android)
1 VIVE room-scale set ups in Room 322
3 VIVE trackers with straps
2 Oculus room-scale set ups in Room 113
1 Oculi set up in Room 322
2 HoloLens
1 Samsung Odyssey

2 AMD machines optimized for VR in Room 113
1 equally fast machine in 322
Another good enough machine in 322

For intro to the Microsoft development environment see http://aka.ms/mixedreality

Recommended AR platform: ARKit
NOTE: We are part of the Oculus Next Generation Program
NOTE: We are in a relationship with Microsoft mixed reality as well and there is a slack group for those using the Microsoft Platform

Oculus store – download free VR applications and try them out

Ricky Yu's  google doc of resources and development tips from previous students:
https://docs.google.com/document/d/1tHdkHngZ41CQIj1-8fBUQeF9a8WZXnOLLqb1IbaZ53c/edit?usp=sharing

**Josh Fisher's Recommended Unity Tutorials**:
1. Unity Essential Training
https://www.lynda.com/Unity-tutorials/Unity-3D-Essential-Training/639062-2.html
2. Advanced Unity 3D Game Programming
https://www.lynda.com/Unity-3D-tutorials/Advanced-Unity-3D-Game-Programming/160270-2.html?srchtrk=index%3a1%0alinktypeid%3a2%0aq%3aunity3d%0apage%3a1%0as%3arelevance%0asa%3atrue%0aproducttypeid%3a2


**Ricky Yu's Modeling Recommendations**

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Unity Asset Store - They have awesome and beautiful assets you can directly import into Unity. And some of them are free. You also can find some amazing animations and particle systems from it. But it might be hard to modify them if they come in .prefab format. ⬈
https://assetstore.unity.com (Links to an external site.)Links to an external site.


**How to get Oculus to work with Unity (thanks to Chris Purdy)**

How to get Oculus integration with Unity:

1) Make sure Unity and Oculus app are both up to date

2) In the Unity asset store, look for "Oculus Integration" package. It should be from Oculus VR themselves.

3) Import this package into Unity.

4) Remove all existing cameras in the Unity scene.

5) Find the LocalAvatar.prefab asset in the OvrAvatar folder in your Assets folder. (Alternatively, look for the "LocalAvatar" asset in the search bar at bottom of the screen). This is the object that controls the Unity hand controllers. Drag it into the scene where you want your player to start. (This is the "virtual body" of the interactor.

6) Find the OVRCameraRig.prefab asset in the OVR folder in your Assets folder. Drag it into the scene, *and add it as an immediate child object of the LocalAvatar object.* Be sure to reset the transform of the OVRCameraRig after doing this.

7) That should be all! Load up the scene with the headset attached and you should be able to control the camera with your head. Also, you should be able to see your hands when you have the controllers equipped. Make sure you have finger articulation by moving your thumb, index finger, and middle fingers on both hands.