Interactive Installation Studio

Course #: LMC 8803 BM
Instructor: Brian Magerko
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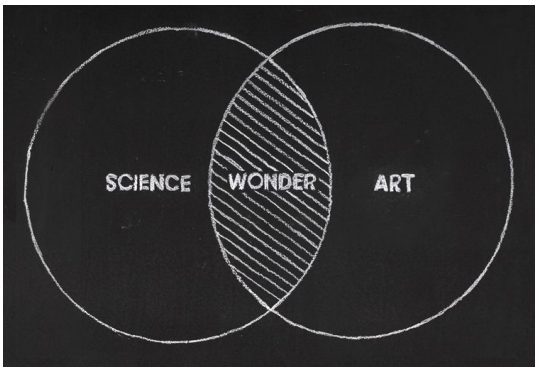
Office hours: by appointment



Class meetings: T/TH: 1:30-2:45PM Skiles 002

This syllabus is a living document subject to change during the term.

This course is a studio-based learning experience in computational expression, in conjunction with the ADAM Lab, under Dr. Brian Magerko. This semester will focus on familiarization with new computational tools, rapid prototyping of expressive computational media, and design research. Future terms will heavily focus on building complete prototypes. Higher quality outputs from this course have the potential to go on to public display in local and international outlets.

M.S. Learning Objectives

- Demonstrate the ability to analyze and critically evaluate existing digital media artifacts, services, and environments using formal knowledge, and to explain and defend one's critical evaluation.
- 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.
- Demonstrate use of digital media to create prototypes
- Demonstrate good time management skills
- Develop interactive media artifacts
- Can justify the design choices in their works
- Can formulate and test design hypotheses
- Can communicate, coordinate, and work productively as a team member
- Can serve in a team leadership and / or mentorship role

Ph.D. Learning Objectives

- 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.

- Apply theoretical concepts to specific digital media works
- Students can formulate and explore the answers to critical questions in the domains of Arts & Entertainment, Public & Civic Media, and Knowledge & Creativity as related to new media
- Summarize and paraphrase key theoretical works
- Can serve in a team leadership and / or mentorship role

Attendance & Participation

Class attendance and participation is mandatory. Participation in class discussion is imperative because it allows you to explore the readings, computing concepts, and projects collaboratively, and in the process, discover meanings and issues that you probably would not discover on your own. Participation in class also challenges you to continuously question, refine, and articulate your own ideas and interpretations.

In addition, much of this class is based in critique, which require full participation and cannot be replicated outside of class. Extensive teaching and learning occur through critiques: it is through critiques that you will develop your skills for both making and discussion of the made. Thus, your attendance and participation in critiques is an important and required aspect of this class.

Document your work. If there is a question about your effort in team work, I may ask all members to present their documented contributions to reflect their continued involvement in the work as a responsible team member. This can mean git commits with your username, written notes of yours from meetings or design sessions, etc. This is as much about learning the habits of documentation as it is to make your efforts clearly communicable.

Grading

Grade distribution will be: course discussion & participation (25%, pass/fail), prototype participation (25%, pass/fail) & final design project (50%, letter grade). If you complete all of the requirements for the above reasonably well, you should expect to earn a B. In order to earn an A, you must complete and go "above and beyond" all of the requirements and your work / efforts / contributions must be exceptional.

Absence from more than three classes will result in the loss of 1-letter grade for the course. Tardiness for more than four classes will result in the loss of 1-letter grade for the course.

Information for Students with Disabilities

Please notify the instructor if you have any disabilities with which you need special assistance or consideration. The campus disability assistance program can be contacted through ADAPTS: http://www.adapts.gatech.edu.

Course Communication

Slack will be used as the primary form of communication for collaboration during the course. Please download the Slack app for your computer and phone, register your email account, and join the ADAM lab slack (www.adamlab.slack.com). Once you've joined the ADAM lab slack account, please monitor and join the *#adamlab_studio* and *#general* channels.

Honor Code Statement

Students are expected to adhere to the Georgia Tech Honor Code: http://honor.gatech.edu.

Assignments

The course is centered around the progress construction of knowledge through our interactions in the classroom and outside project work. The final project for this term will be a presentation of a design, initial prototype, and documentation of the creation process for the team.

Course Schedule

The course schedule is below. The course topics and papers will be heavily determined by student participation and interest. We will discuss and decide on topics of interest early on in the term. Students will take sign up for turns ushering papers and leading discussion during class.

Note: Plan on being at the finals presentation; absence because of travel will not be permitted.

Date	**Class activity**	Reading topic	Usher	Papers
1/9	Introduction and errata			
1/11	reading discussion; paper signups	Digital media	Magerko	
1/16				Manovich: New Media from HTML to Borges; Murray: Inventing the Medium; Investigating Design and Evaluation Guidelines for Interactive Presentation of Visual Art
1/18	project brainstorming			
1/23	Paper discussion	Expressive Data		A Concise Taxonomy for Describing Data as an Art Material
1/25	Project brainstorming &			

	paper assignment			
1/30	project proposals (1 page description posted on slack & 3 minute oral pitch in class)			
2/1	Interactivity			
2/6	Project discussions			
2/8	Paper discussions	Viz vs. art	Catherine & Henry	
2/13	project discussions			
2/15	paper discussion	TBD		
2/20	project discussions			
2/22	paper discussion	TBD		
2/27	project discussions			
3/1	paper discussion	TBD		
3/6	project discussions			
3/8	paper discussion	TBD		
3/13	project discussions			
3/15	paper discussion	TBD		
SPRING BREAK				
3/27	project discussions			
3/29	paper discussion	TBD		
4/3	project discussions			
4/5	paper discussion	TBD		
4/10	project discussions			
4/12	paper discussion	TBD		
4/17	project discussions			
4/19	paper discussion	TBD		
4/24	conclusion			
	presentations during final			

Topics:

- Data & the senses
    - 1) Viz vs. art (Henry, Catherine)
    - Multi-sensory experience (Bruno, Sanjana)
        - Accessibility?
        - Non-sound / image?
- Evaluation
- Installation case studies
- Critical design theory (Kamryn)
- Designing for publics
- Atmospherics & engagement
    - Honeypot model
    - Business / ad world view
    - 9/11 memorial
- Interaction design
    - Breadth & depth?
    - Wittingness (awareness of being in the performance frame)
    - Agency & perceived agency
    - Authenticity
    - Aesthetics & interaction
    - (Edmonds & Candy)

Lagniappe

You are required to get IRB training. It is a simple online process that takes about an hour to complete. Go here (http://researchintegrity.gatech.edu/about-irb/irb-required-training/) for the training and test site.

ADAM Lab door access (TSRB 325) is for lab and studio members only. Please coordinate with Mr. Terrell for door access.

Please do not remove any equipment from the lab without permission & signing it out. There is a signup document for games, books, etc. Some equipment can be purchased in support of your projects; speak to Dr. Magerko about what is needed. The DILAC Lab is the official first place to check for equipment to be trained on, check out, etc., on the third floor of Skiles.

Reading Resources

- **Collaboration**
    - Mamykina, L., Candy, L., & Edmonds, E. (2002). Collaborative creativity.*Communications of the ACM*, *45*(10), 96-99.
        - Note: How to cross disciplines in creative collaboration
    - Sawyer, R. K., & DeZutter, S. (2009). Distributed creativity: How collective creations emerge from collaboration. *Psychology of Aesthetics, Creativity, and the Arts*, *3*(2), 81.
        - ftp://pop3.infomus.org/pub/AestheticsPapers/Creativity-Sawyer2009.pdf
- **Designing for Creative Collaboration**

- Herrmann, T., 2009, January. Design heuristics for computer supported collaborative creativity. In *System Sciences, 2009. HICSS'09. 42nd Hawaii International Conference on* (pp. 1-10). IEEE.
  - https://www.researchgate.net/profile/Thomas_Herrmann4/publication/224373001_Design_Heuristics_for_Computer_Supported_Collaborative_Creativity/links/00b7d51a90b1b5ef4c000000.pdf
  - Note: Helping to think about how to facilitate a collaboration and intentionally design human interactions and processes for facilitating quality collaboration (i.e. applying computational design principles to people processes)
- Bilda, Z. Edmonds, E. Candy, L. (2008) Designing for creative engagement, Design Studies, Vol 29, Issue 6, pp 525-540.
  - http://www.sciencedirect.com/science/article/pii/S0142694X08000707

- **Technology Principles for Creative Interactions**
  - Compton, K., & Mateas, M. (2015, June). Casual creators. In *Proceedings of the Sixth International Conference on Computational Creativity June* (Vol. 228).
    - http://computationalcreativity.net/iccc2015/proceedings/10_2Compton.pdf
  - Davis, N., Popova, Y., Sysoev, I., Hsiao, C. P., Zhang, D., & Magerko, B. (2014). Building artistic computer colleagues with an enactive model of creativity. In *Proceedings of the fifth international conference on computational creativity. The International Association for Computational Creativity* (pp. 38-45).
    - https://scholar.google.com/scholar?hl=en&q=co-creative+agents+enactive+model&btnG=&as_sdt=1%2C11&as_sdtp=
- **Practice-Based Research Strategies**
  - Edmonds, E. A. and Leggett, M. (2010) How Artists Fit Into Research Processes. Leonardo 43:2, pp 194-5.
    - http://www.mitpressjournals.org/doi/abs/10.1162/leon.2010.43.2.194?journalCode=leon#.V6tiVJgrLic
- **History of Interactive Art**
  - Popper, F. (1987). Editorial: Technoscience art: The next step. *Leonardo*, 301-303.
    - http://www.jstor.org/stable/1578522?seq=1#page_scan_tab_contents
  - Burnham, J. (1970). Software: Information Technology: its New Meaning for Art. *Jewish Museum, New York*.
    - https://monoskop.org/images/3/31/Software_Information_Technology_Its_New_Meaning_for_Art_catalogue.pdf (intro)
- **New Media Technology Research Examples**
  - Chan, M. T., Gorbet, R., Beesley, P., & Kulič, D. (2015, September). Curiosity-Based Learning Algorithm for Distributed Interactive Sculptural Systems. In*Intelligent Robots and Systems (IROS), 2015 IEEE/RSJ International Conference on* (pp. 3435-3441). IEEE.
    - https://www.researchgate.net/profile/Philip_Beesley/publication/295918880_Curiosity-Based_Learning_Algorithm_for_Distributed_Interactive_Sculptural_Systems/links/56d0886108ae059e375d4645.pdf
  - Tidemann, A., & Brandtsegg, Ø. (2015, June). [self.]: an Interactive Art Installation that Embodies Artificial Intelligence and Creativity: A Demonstration. In *Proceedings of the 2015 ACM SIGCHI Conference on Creativity and Cognition* (pp. 153-154). ACM.
    - http://dl.acm.org/citation.cfm?id=2767691
  - Jung, C., Kim, H. C., & Kim, H. (2015). Interactive Interfaces in Projection Mapping Projects: Participation through Play.

        - http://onlinepresent.org/proceedings/vol99_2015/57.pdf
    - Leigh, S. W., Roseway, A., Paradiso, A., & Maes, P. (2015, April). Remnance of Form: Interactive Narratives through Unexpected Behaviors of a Shadow. In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems* (pp. 387-390). ACM.
        - https://www.semanticscholar.org/paper/Remnance-of-Form-Interactive-Narratives-through-Leigh-Roseway/ec846b163507c1cda986dbbd42dbd962dffff718/pdf
    - MacDonald, L., Brosz, J., Nacenta, M. A., & Carpendale, S. (2015, January). Designing the Unexpected: Endlessly Fascinating Interaction for Interactive Installations. In *Proceedings of the Ninth International Conference on Tangible, Embedded, and Embodied Interaction* (pp. 41-48). ACM.
        - https://research-repository.st-andrews.ac.uk/bitstream/handle/10023/6001/MacDonaldBroszNacentaCarpendale_DesigningtheUnexpected_EndlesslyFascinatingInteraction.pdf?sequence=1
    - Murray-Browne, T., Aversano, D., Garcia, S., Hobbes, W., Lopez, D., Sendon, T., ... & Chapman, D. (2014). The cave of sounds: An interactive installation exploring how we create music together. In *Proceedings of the International Conference on New Interfaces for Musical Expression* (pp. 307-310).
        - https://www.semanticscholar.org/paper/The-Cave-of-Sounds-An-Interactive-Installation-Browne-Aversano/c2c2ac4850ba15dd8ec3d65b750bf4b93582b564/pdf
    - Johnson, D., Manaris, B., Vassilandonakis, Y., & Stoudenmier, S. (2014).*Kuatro: A Motion-Based Framework for Interactive Music Installations*. Ann Arbor, MI: Michigan Publishing, University of Michigan Library.
        - http://www.smc-conference.net/smc-icmc-2014/images/proceedings/OS14-B02-Kuatro.pdf
    - Reilly, D., Chevalier, F., & Freeman, D. (2014). Blending art events and HCI research. In *Interactive Experience in the Digital Age* (pp. 153-168). Springer International Publishing.
        - http://www.cs.utoronto.ca/~fchevali/resources/projects/blending_art_hci_research.pdf
    - Kikukawa, Y., Kato, M., Baba, T., & Kushiyama, K. (2013). Hakoniwa: A sonification art installation consists of sand and woodblocks.
        - https://smartech.gatech.edu/bitstream/handle/1853/51681/37_S9-03_Kikukawa.pdf
    - Simbelis, V., & Höök, K. (2013, April). Metaphone: an artistic exploration of biofeedback and machine aesthetics. In *CHI'13 Extended Abstracts on Human Factors in Computing Systems* (pp. 2995-2998). ACM.
        - http://dl.acm.org/citation.cfm?id=2479593
    - [Long] Weiser, H. (2016). The Color of Smell: A cross-modal interactive installation for individual expression.
        - https://dspace.mah.se/bitstream/handle/2043/21031/TP1_HannahWeiser_June2016.pdf?sequence=2
    - Mitchell, T., Hyde, J., Tew, P. and Glowacki, D. (2016) danceroom Spectroscopy: At the frontiers of physics, performance, interactive art and technology. Leonardo, 49 (2). pp. 138-147. ISSN 0024-094X Available from: http://eprints.uwe.ac.uk/26045
        - http://eprints.uwe.ac.uk/26045/1/leon_a_00924.pdf

Interactive Artists & Materials

- So you want to build a generator...Kate Compton (casual creators) tutorial

    - http://galaxykate0.tumblr.com/post/139774965871/so-you-want-to-build-a-generator\
- Imogen Heap
    - Mitchell, T. J., Madgwick, S., & Heap, I. (2012). Musical interaction with hand posture and orientation: A toolbox of gestural control mechanisms.
        - http://eprints.uwe.ac.uk/18267/1/272_Final_Manuscript.pdf
    - Video:
        - 4 min description on vimeo:
            - https://vimeo.com/90252137
        - 20 min wired performance
            - https://www.youtube.com/watch?v=6btFObRRD9k
- Laurie Anderson
    - Video
        - 5min Interview: Advice to young artists
            - http://channel.louisiana.dk/video/laurie-anderson-advice-young
        - 25 min Interview: A Life of Storytelling
            - http://channel.louisiana.dk/video/laurie-anderson-advice-young
    -
- Everything is a remix
    - 35 min video
        - https://www.patreon.com/kirbyferguson
- Cubist Mirror
    - http://thecreatorsproject.vice.com/blog/cubist-neural-network-mirror
- Augmented reality sandbox with realtime water flow simulation
    - https://www.youtube.com/watch?v=j9JXtTj0mzE
- Information is beautiful
    - http://www.informationisbeautiful.net/
- Creative Applications.NET
    - http://www.creativeapplications.net/
- A study of Generative Algorithms
    - http://inconvergent.net/
- Context free art - procedurally generated art examples & downloadable kit to create your own
    - http://www.contextfreeart.org/
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Artistic Tech Examples:

- Terrifying animatronic doll stares at you as it gyrates
    - http://www.dailymail.co.uk/sciencetech/article-2588040/Is-terrifying-robot-Animatronic-dancer-stares-gyrates-Blurred-Lines.html
- SandyStation the interactive sandbox
    - https://www.youtube.com/watch?v=E9aL3HjZbcw
- New Media art and dance
    - http://www.am-cb.net/projets/pixel-cie-kafig/
- AquaTop - An Interactive Water Surface
    - http://sngymn.github.io/aquatopdisplay/
- Pyro Board: 2D Rubens Tube
    - https://www.youtube.com/watch?v=2awbKQ2DLRE
- The crystal universe actually xists, LED responding to movement

    - http://www.cnn.com/2016/08/04/arts/teamlab-art-installation-tokyo/index.html?sr=cnnifb
- Visualizing smog - Clothing that visualizes smog
    - http://www.takepart.com/article/2016/07/19/see-clothing-shows-how-bad-smog-is-your-neighborhood?cmpid=organic-share-twitter
- 100 Dancing drones set world record
    - http://iq.intel.com/100-dancing-drones-set-world-record/
- 3D printed light based zoetrope
    - http://www.thisiscolossal.com/2016/06/a-fascinating-3d-printed-light-based-zoetrope-by-akinori-goto/
- First virtual reality exhibit with tilt brush
    - https://virtualrealityreporter.com/tilt-brush-virtual-reality-painting-art-exhibition-world-first/
- Virtual reality expo
    - http://www.virtualrealityla.com/

Interesting Art Exhibitions

- Creative traditional art
    - http://www.designboom.com/art/top-10-art-exhibitions-2015-12-09-2015/
- Best of 2015 Top 10 works of internet art
    - http://hyperallergic.com/263538/best-of-2015-our-top-10-works-of-internet-art/
- Art goes interactive: 14 stunning digital exhibitions
    - http://www.computerworld.com/article/2473016/computer-hardware/90160-tk.html

New Media Companies

- Second Story
    - http://secondstory.com/projects/browse/featured-work
- Meow Wolf - Immersive art experiences production company
    - https://meowwolf.com/

Interactive Sonification:

- Murray-Browne, T., Aversano, D., Garcia, S., Hobbes, W., Lopez, D., Sendon, T., ... & Chapman, D. (2014). The cave of sounds: An interactive installation exploring how we create music together. In *Proceedings of the International Conference on New Interfaces for Musical Expression* (pp. 307-310).
- Kikukawa, Y., Kato, M., Baba, T., & Kushiyama, K. (2013). Hakoniwa: A sonification art installation consists of sand and woodblocks.
- Johnson, D., Manaris, B., Vassilandonakis, Y., & Stoudenmier, S. (2014).*Kuatro: A Motion-Based Framework for Interactive Music Installations*. Ann Arbor, MI: Michigan Publishing, University of Michigan Library.
- The Allosphere

Topic paper suggestions from class:

- **the *place* of brand**

- creating empathy
- point-of-use behavior change
- social impact / critical design
- everything analog
- ambient technologies
- digital objects
- analog interactive exhibits (Exploratorium; Launchpad in London)