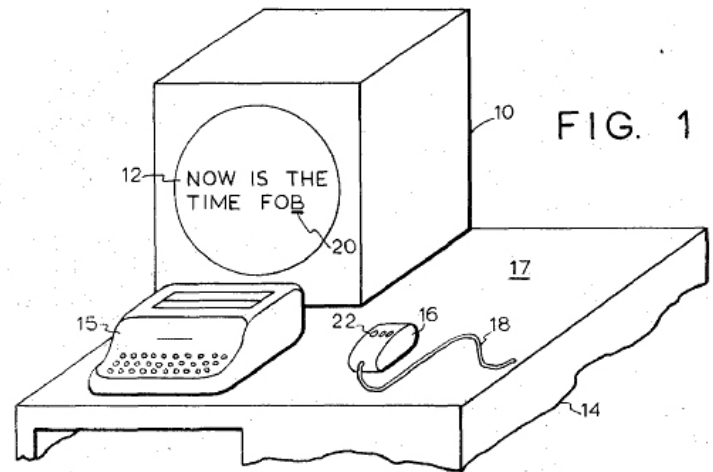# LMC 6310: The Computer as an Expressive Medium

Instructor: Brian Magerko
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Office hours: TBD

TA: Devin Wilson
Email: devwil@gmail.com
Office hours: TBD

Class meetings: T & Th 9:35–10:55
(Skiles 346), F 9:05–10:55 (Skiles 346)

FIG. 1

Course Description

The goal of this course is to gain computational literacy in the context of programming as an art and design practice; that is, to understand computation as an expressive medium. We will juxtapose reading and discussion of seminal articles and works in computational media with programming projects designed to exercise specific technical skills as well as encourage conceptual explorations in computational art and design. Anyone working in new media will eventually be involved on interdisciplinary projects in which the ability to program will be a strong asset, if not a necessity. Even if in your future career as an artist or designer programming is not a large part of your practice, this course will empower you to communicate confidently with programmers, and thus deepen your interdisciplinary collaborations.

M.S. Learning Objectives
- Demonstrate knowledge, comprehension, and application of the tools and formal design elements of digital media design.
- 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.
- Justify the design choices in their works
- Develop digital media artifacts
- Demonstrate ability to set up and use common tools for writing code and managing the software development process

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.
- Students can formulate original interpretations and design original prototypes that reflect an understanding of the humanistic context of digital media.
- Apply theoretical concepts to specific digital media works
- Identify and define a suitable research problem in digital media design and apply appropriate disciplinary or interdisciplinary research methods to address it.

In addition, both M.S. and Ph.D. students should have three portfolio worthy projects that demonstrate their skills in expressive computing. Some subset of these (particularly Project 3) should be presented at Interactivity @ GT in the spring term. Go here for a look at this past Interactivity student portfolio work.

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 critiques, 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.

Grading

If you complete all of the requirements for the assignment 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 must be exceptional across multiple grading factors.

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.

Materials

Students will be required to buy any needed materials, including a webcam or Microsoft Kinect, for their final project.

Suggested texts:
- Learning Python, 5th Edition by Lutz

- [Making Things See by Borenstein](#)
- The New Media Reader

Note: stackoverflow.com is a popular, though harsh environment for finding answers to coding questions. Use with care.

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.

Honor Code Statement

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

Assignments

All students are responsible for the assigned readings, attending critiques & presentations, and three individual project assignments:
- P1: Computational Music Remix
- P2: Twitter Poetry
- P3: Interactive Installation

Ph.D. students will, in addition to the above, complete a 6–8 page term paper in ACM format on a topic of their choosing related to the course.

The grading scale for M.S. students will be: P1 (25%), P2 (30%), P3 (45%).

The grading scale for Ph.D. students will be: P1 (20%), P2 (25%), P3 (35%), Term paper (20%)

Course Schedule

8/19
    Lecture: Course Introduction & Computational Media

8/21
    Lecture: Interchangability

    Readings:
- EarSketch Unit [1](#) and [2](#)

- http://www.complexification.net/gallery/
- Variables in Python
- Text Rain

8/22

Lab 1: EarSketch 1

8/26

Lecture: Repetition, Modularity, and Structure

Readings:
- the tunnel (Consider how repetition & variation occur)
- EarSketch Unit 3

Project 1: Computational Music Remix (released)

8/28

Lecture: Structured Data & Debugging

Readings:
- EarSketch Unit 4
- Debugging Python Like a Boss (be aware these tools exist outside of EarSketch)

8/29

Lab 2: EarSketch 2

9/2

Lecture: Aesthetic Form

Readings:
- Algorithmic Composition by Edwards
- Find & be able to share 3 songs with differing musical structures
- Find & be able to discuss 3 different narrative structures (e.g. The Hero's Journey)

9/4

Lecture: Stochastic Expression

Readings:

- EarSketch [Unit 5](#)
- New Media Reader Ch. 12
- Consider the use of cut-up methods for lyric construction [here](#).
- Stochastic music composition

9/5

Lab 3: EarSketch 3

9/9

Lecture: Data-driven Design

Readings:
- EarSketch [Unit 6](#)
- Examine the article and site on [wefeelfine](#).
- Find an interesting data visualization to share in class.

9/11

Lecture: Recursion

Readings:
- EarSketch [Unit 9](#)
- Examine http://recursivedrawing.com/
- New Media Reader Ch. 9

9/12

Lab 4: EarSketch 4

9/16

P1 Critiques

Readings:
- [How to Survive a Critique](#)

9/18

P1 Critiques

9/19

Lab 5: P1 work

9/23

    Lecture: Native Python

    Readings:
- Hamlet on the Holodeck

Project 1: Computational Music Remix (due 9/22 @ 11:55pm)

9/25

    Lecture: 2D Imagery

    Readings:
- Consider the use of social creativity in [SwarmSketch](#)
- [pyGame Intro](#)

Project 2: Twitter Poetry (released)

9/26

    Lab 6: Interactive Lines

9/30

    Lecture: 2D Motion

    Readings:
- Disney
- [Boids](#)

10/2

    Lecture: Dredging the Net

    Readings:
- [Listening Post](#)
- [Twitter visualizations](#)
- [Visual representations of data in openProcessing](#)
- http://www.civicdatadesignlab.org/

10/3

    Lab 7: Web scraping in Python with urllib

10/7

Lecture: You get what you need….

10/9

Lecture: Grammar

Readings:
- [Context Free Grammars](#)
- [Summary of poetry generation](#)
- [GRIOT](#)

10/10

Lab 8: Grammars in Python with NLTK

10/14

Fall break

10/16

P2 critiques

10/17

Lab 9: P2 work

10/21

P2 critiques

Project 2: Twitter Poetry (due 10/22 @ 11:55pm)

10/23

Lecture: Interactivity in Space

Readings:
- Nam Ch. 5 & 7.3
- New Media Reader Ch. 6
- Viewpoints
- http://inst-int.com/

Project 3: Interactive Installation (due 10/23 @ 11:55pm)

10/24

   Lab 10: Webcam sensing

10/28

   P3 proposals

10/30

   P3 proposals in costumes

10/31

   Lab 11: Kinect sensing

11/4

   Lecture: Gestural interfaces

   Readings:
   - Mazalek

11/6

   Lecture: Guest lecture lecturing

11/7

   Lab 12: MVC frameworks

11/11

   P3 critique

11/13

   P3 critique

11/14

   Lab 13: P3 work

11/18

   Lecture: Agent-based Design

Readings:
- Russell & Norvig Ch. 1 & 2
- [Expressive AI](#) by Mateas
- New Media Reader Ch. 3 & 24
- [A Panorama of Game AI](#) by Togelius and Yannakis

11/20

Lecture: Interactive Narrative

Readings:
- [Interactive Narrative: An Intelligent Systems Approach](#) by Riedl and Butilko
- New Media Reader Ch. 38
- Download & play [Facade](#)

11/21

Lab 14: P3 work

11/25

Thanksgiving is no time for classes. It is time for individual work on projects.

11/27

Thanksgiving is no time for classes. It is time for individual work on projects.

11/28

Thanksgiving is no time for classes. It is time for individual work on projects, you know?

12/2

P3 critique

12/4

P3 critique

12/5

Lab 15: P3 work

Project 3: Interactive Installation (project materials due 12/10 @ 11:55pm)

12/11
P3 presentations

2/?/2015
Interactivity @ GT presentations!