

New Media / Image Arts
Ryerson University
Fall 2009

MPM35A

Visualization and Generative Processes

Room: RCC-359B
Monday 9:00-12:00 / Section 2
Friday 9:00-12:00 / Section 1
Instructor: David Bouchard
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Office hours: Monday 13:00-14:00, Friday 13:00-14:00
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Description

This class will explore the role of generative algorithms and database visualization approaches in New Media Art works. Processes of randomization, feedback, behaviour, mapping and emergence will be related to data and structure through the construction of interactive experiences. In particular, we will examine the social, cultural and political impact of data visualization through a discussion of contemporary and historical artworks as well as hands-on exercises. Students will deepen their understanding of presentation skills and professional practice through the development of individual works, including a final project.

Prerequisite: MPM022

Technical skills

Some level of proficiency with programming using Processing is assumed, although the first few weeks of the term will be devoted to a review of programming basics. The studio portion of the classes will be centered around using Processing for accessing, mining and visualizing datasets. However, most assignments and the final project will not be constrained to using Processing. With the instructor's approval, students are welcome and encouraged to explore other mediums and technologies as they see fit, as long as the project requirements are met and with the caveat that there will not be any in-class examples for these technologies.

Course Objectives

- Survey the state of the art in the fields of data visualization and generative art
- Provide the students with theoretical and practical foundations to explore this creative space
- Enable the students to apply these ideas through the realization of a final project

Communication

Your Ryerson email will be the main method of communication for this class. Class announcements will be made over the BlackBoard system. You will also be required to maintain a class website where you will post your responses to the assignments.

Grading & Evaluation

Participation	5
1 st Assignment	20
2 nd Assignment	10
Research Blog	20
Final Project	45

Late written assignments will be deducted 15% per week, and will not be accepted beyond 2 weeks late. Projects should be ready to be submitted on the due date, **before** we begin the scheduled critique. Late final projects and practical assignments will NOT be accepted.

This course represents one half of your overall production mark for MPM35. Your final mark will be the average of the Fall and Winter components of this course.

Participation – 5

Participation is expected and required. You can demonstrate participation by being on time, doing the assignments, voicing your opinions in class and helping others. Failure to sign the attendance sheet will constitute an absence; 3 absences will be an automatic 0 for participation.

1st Assignment – Many Eyes – 10

For the first assignment, we will put in practice some of the theories and concepts from the foundations lecture to acquire a dataset and create a visualization using IBM Research's Many Eyes on-line tool.

2nd Assignment – Interactive Visualization – 20

The second assignment will close the Processing review session and will be centered around using Processing to interactively visualize a data source.

Research Blog – 20 (10/each)

You will be required to have a website for the class where you can post your assignments, project status reports and documentation. You will also have to do two short research assignments, where you will report on a project of your choice from a selection of on-line databases and discuss it in the context of the class. A research question will be given for each, and you will be graded on your answer to that question, as well as your analysis of the project you selected. Research blog posts are due the week after they are assigned.

Final project – 45 (5/proposal, 10/prototype, 20/final piece, 10/documentation)

For the final project, you will pick a data set (it can be anything you want). For your project will have to *acquire* this data, *parse* it, *filter* it and *visualize* it in a creative and critical way. The final project is meant to be an individual project, although small teams of two will be considered if the members can provide an adequate justification. The expectations for team projects in terms of quality and scope of the work will be raised accordingly. A work-in-progress prototype as well as documentation will be integral components of the final project.

Class Schedule

**The instructor may deviate slightly from the class schedule if more time is required for a particular topic.*

Week 1	Introduction Student and teacher introductions, class overview
Week 2	Foundations: data models, perception, color, design principles <i>Assignment: Many Eyes, due Week 3</i>
Week 3	Processing Review: Basics
Week 4	Processing Review: Advanced <i>Assignment: Interactive Visualization, due Week 6</i>
Week 5	Data Mining <i>Final project: Proposal -- pick a data source</i> <i>Reading: Artistic Data Visualization: Beyond Visual Analytics</i>
Week 6	Social Networks <i>Assignment: Research Blog 1</i>
Week 7	Information Aesthetics <i>Final project: Proposal review</i>
Week 8	Algorithmic Art <i>Reading: Exploring Emergence interactive essay</i>
Week 9	Emergence and Complex Systems <i>Assignment: Research Blog 2</i>
Week 10	<i>Final project: Prototype presentations</i>
Week 11	Hybrid spaces and Outlook <i>Final project documentation: how to document your work</i>
Week 12	<i>Consultation time on final projects</i>
Exam period	<i>Final project critiques</i>

Academic Conduct

Students are expected to follow the Student Code of Academic Conduct which can be found in the calendar or on-line at the Academic Council website: <http://www.ryerson.ca/calendar/2009-2010/pg2030.html>

With respect to writing programs, borrowing source code from various on-line resources is an accepted and wide-spread practice (assuming that the license allows it). However, make sure that you provide full references (source URLs, original author) in your program's documentation for any borrowed code snippet.

Suggested readings

Additional readings and links will be added to the class website as the semester progresses.

- **Processing: a programming handbook for visual designers and artists** / Casey Reas, Ben Fry.
- **Learning Processing** / Daniel Shiffman
- **The Visual Display of Quantitative Information** / Edward R. Tufte.

Books available online from the library through Safari:

- **Visualizing Data** / Ben Fry
- **Programming Collective Intelligence** / Toby Seragan (advanced topics)