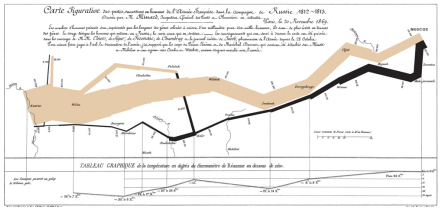
Tuesday 9:00 – 12:00
Professor Eric Sauda



Theory of Computational Design

Design Computation Realms at SoA/CCI

Students can enroll in this course under any of the following numbers

4050, 6050	Architectural elective
4204, 5204	History elective
5611	DesComp research methods

Premise

The premise of this course is that design has become increasingly important to computer scientists and at the same time computation has become important to designers.

Within architecture, there is a unique opportunity to integrate the computer into architectural practice and research. As firms rely more and more on computation, those who know how to think, program and script will be able to change the way architects design and practice. We see the day fast approaching when the IT department at firms is not separate but rather is at the core of what architects do. Already, in advanced practices across the world, computing and design are intermingling.

As computer science has matured as a discipline, it has expanded its focus to include the physical and virtual settings in which users interact with the machine. Specialties like human computer interaction, ubiquitous computing, gaming and visualization require an understanding not only of the logic of the machine, but also the logic of the user. Based on these concerns, the design thinking ability that is an integral part of design training is of interest as an alternative paradigm that may change the way that students think and operate.

Specifically within the DesComp program, there are five areas that are research strengths of the faculty and likely area of concentration for students as they develop their thesis. This course aims to provide them with the theoretical background to be able to effectively situate their work.

Objectives

Upon completion of this course, a student will:

1. be aware of significant domains and methods for the contemporary use of computation in architectural design,
2. be aware of the relationships between design methods and advanced methods in computer science,
3. be able to make informed decisions about personal research in computation.

Topics

The use of computation has become pervasive within architectural design, but its uses ranges from naïve adoption of packaged BIM software to potentially transformative paradigms of architectural practice. This course is an introduction to the theoretical background of:

1. parametric design,
2. visualization and data science
3. human computer interaction
4. cognition/meaning, STS
5. data science/ machine learning

Method

This course is a reading intensive seminar. Each class will be a discussion led by a student.

Assignments

1. Students will be required to take turns **organizing a presentation** and leading the class discussion.
2. **Extended bibliography**: For each reading, each student will find three additional reading using Google scholar. This will be submitted in the form of a running word document with
    a. • a complete bibliographic reference and
    b. • a one or two paragraph annotation that describes the thesis of each reading and its application to the original article
3. There are a series of **midterm debate** lead by the students
4. There will be a **final assignment** that is intended to focus on a possible thesis.

Evaluation

Your grade will be based on 1/4 class participation, 1/4 extended annotated bibliography, ¼ mid term and 1/4 final assignment.

Unexcused absences will result in the reduction of ½ letter grade for the course.