

Collective Visual Field

CS 171 Final Project **Process Book**

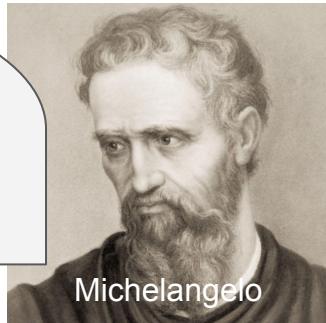
Zhiwei Liao

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12/12/2016 Harvard University

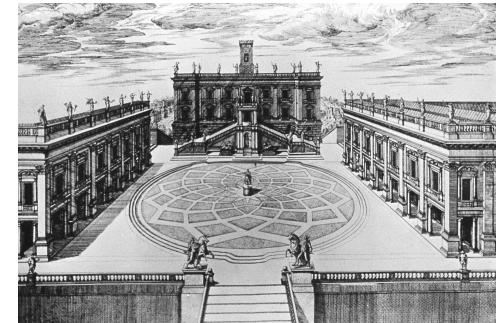
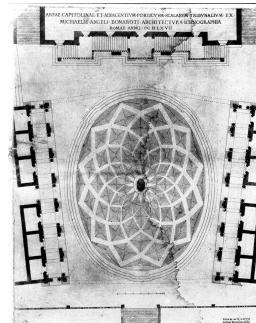
09/1/2016

Inspiration

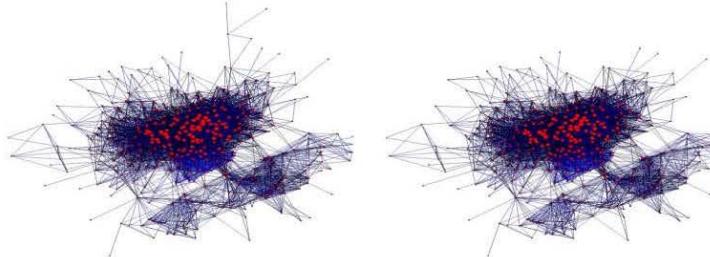
As an architect, I design buildings, but I rarely know how people look at the building I designed, so through internet photos, I can generate 3d points cloud [of the building] and cameras' location [where people like to stand to take photos that will be uploaded onto the internet] and visualize them in many different perspectives. So I can start to understand how people perceive the building I designed and with that I can design better buildings.



Michelangelo



Ref: Michelangelo 1, I. Piazza del campidoglio, campidoglio, rome, italy. 1538.

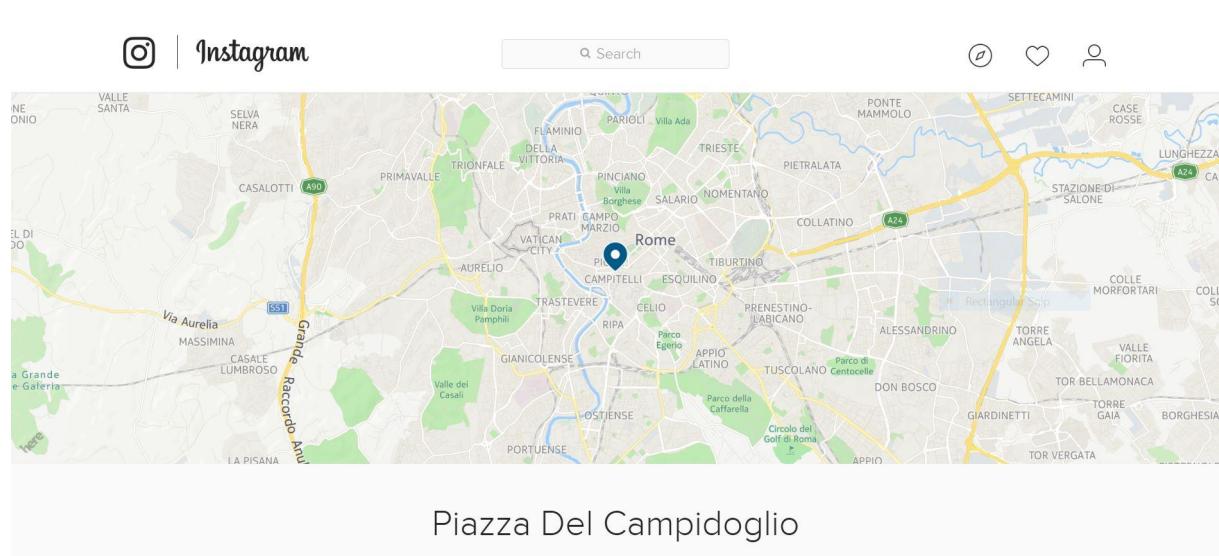


Noah Snavely, Steven M. Seitz, Richard Szeliski. "Modeling the World from Internet Photo Collections." International Journal of Computer Vision (IJCV), 80(2), pp. 99-115, November 2008.

10/1/2016

Instagram & Value Proposition

Downloading photos in a specific location such as Piazza Del Campidoglio from Instagram is the starting point of the data flow for this project. Instagram provides the way for people to frame themselves through showing how they frame their lives or perspective in social media at large. Likewise, This project is to visualize how people frame their photos and try to inform them a better way. The potential value exists in the gap between how people want to represent themselves and what their representations truly are. In other words, people will appreciate if there is a innovative way to minimize this gap.



10/15/2016

3D Reconstruction

VSFM by Changchang Wu is the program for computing the 3d reconstruction. First, a selected set of photos (225 count) from instagram as input, is processed and structured into different categories based on their feature information. There is a prevailing category that contains the main views of the building. This category then is the focus of this project and its photos are used for 3D reconstruction and data visualization.



Instagram Photos #Piazza Del Campidoglio (225 count)



Photos Used for 3D Reconstruction (55 count)



11/03/2016

Dilemma

Should I drop this final project?

If not, I have to manage myself in order to make it work because I will proceed independently with minimal programming skills. (I just audited the CS50 in the summer this year. It took a month and listened to all its youtube videos and read through the problem sets, try to tackle all of them but time does not allow.) At the beginning, I have an idea but it is not very lucid so I hesitate to partner with others. Also, this is closely related to the investigation of my thesis project at GSD, so I can not take the risk. On the other hand, I want to work with software engineers so badly because as a designer I have ideas requiring those skillful people for implementation. It is clear to me that I can not be a successful programmer.

So at the end, I choose to be alone.

Team Member Sheet (one per team member)

Times unavailable for group work. In the spaces below, please cross out the times when you will NOT be available to work outside class on assignments with your group. Mark only genuine conflicts, such as with classes or job responsibilities.

Mo	Tu	Wed	Thu	Fri	Sat	Sun
8-9						
9-10						
10-11						
11-12						
12-1						
1-2						
2-3						
3-4						
4-5						
5-6						
6-7						
7-8						
8-9						
9-10						
10-						

Personal Skill Assessment:

Target	Data Wrangling	Design	Implement	Evaluate
choose domain online question explore data Solution	find & clean data Exploratory data analysis transform & summarize data	Visual encoding		
4	2	4	3	4

Team Expectation Agreement (one per team member)

Team Name: LEGO

Members: Zhiwei Liao

How and when you will **meet**: regular meeting time?

How you will **communicate**: rules, technology?

How you will **collaborate on implementation**: rules, technology?

How you will deal with **non-performing members**?

Team Responsibilities:

Target	Data Wrangling	Design	Implement	Evaluate

Signatures: 

11/07/2016

Project Proposal

Must have:

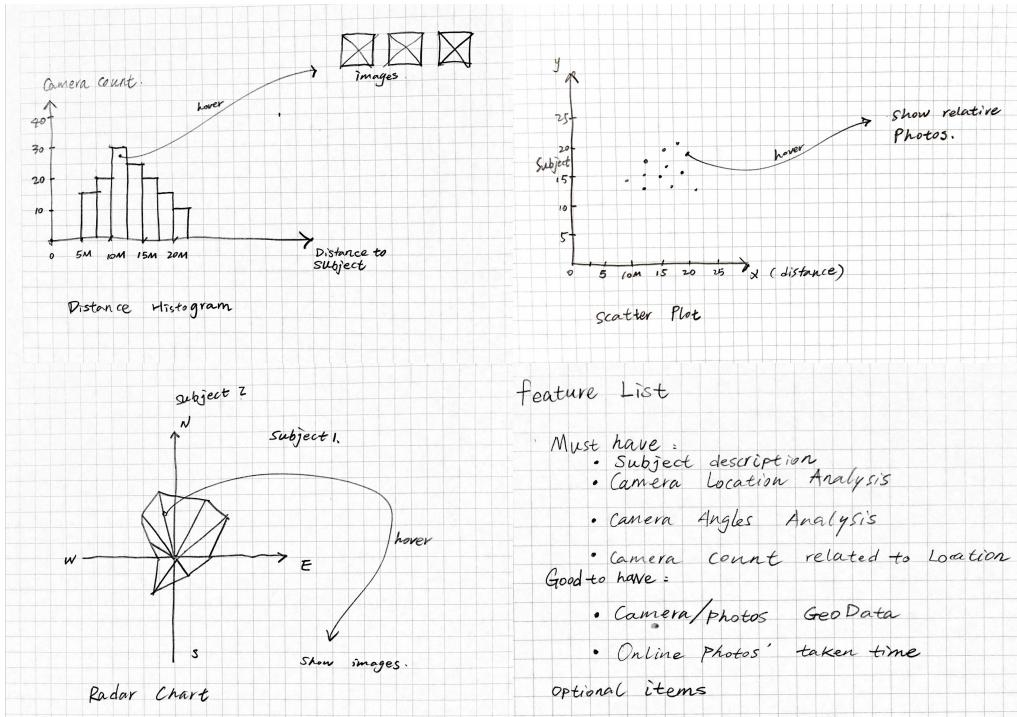
- Subject description
- Camera location analysis
- Camera angles analysis
- Camera count related to location

Good to have:

- camera /photos geodata
- photos taken time

Major visualization:

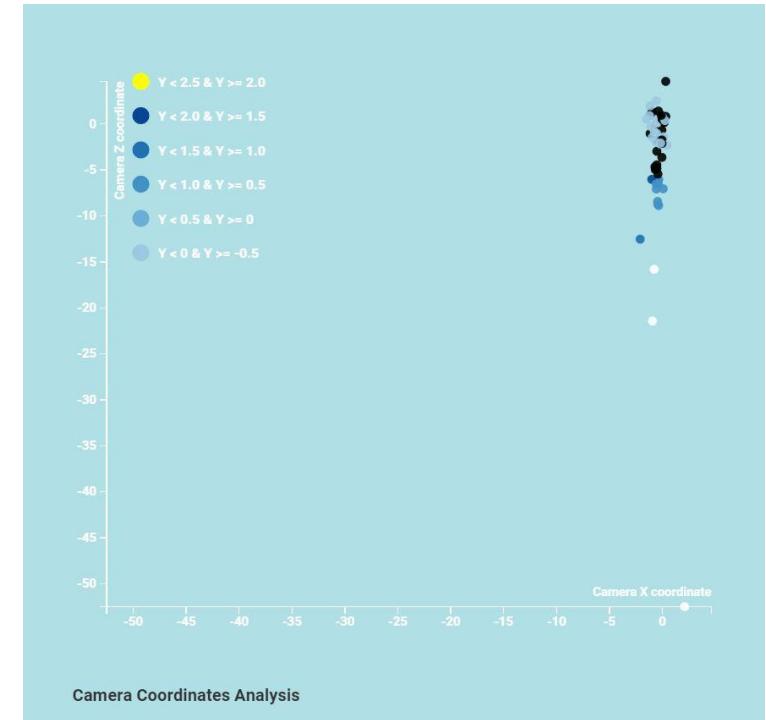
- Scatter plot
- Barchart
- Radar chart



11/14/2016

Scatter Plot

The first attempt to try a scatter plot to see what this would look like, but unlike the other data I saw in the class, the data I dealt with is intrinsically limited because by nature it is already 3 dimensional. It has been already too much to show without telling any thing or information yet. So I keep asking myself, is d3 the right tool to represent this? But meanwhile, I have to keep working on this until I see what it means or doesn't.

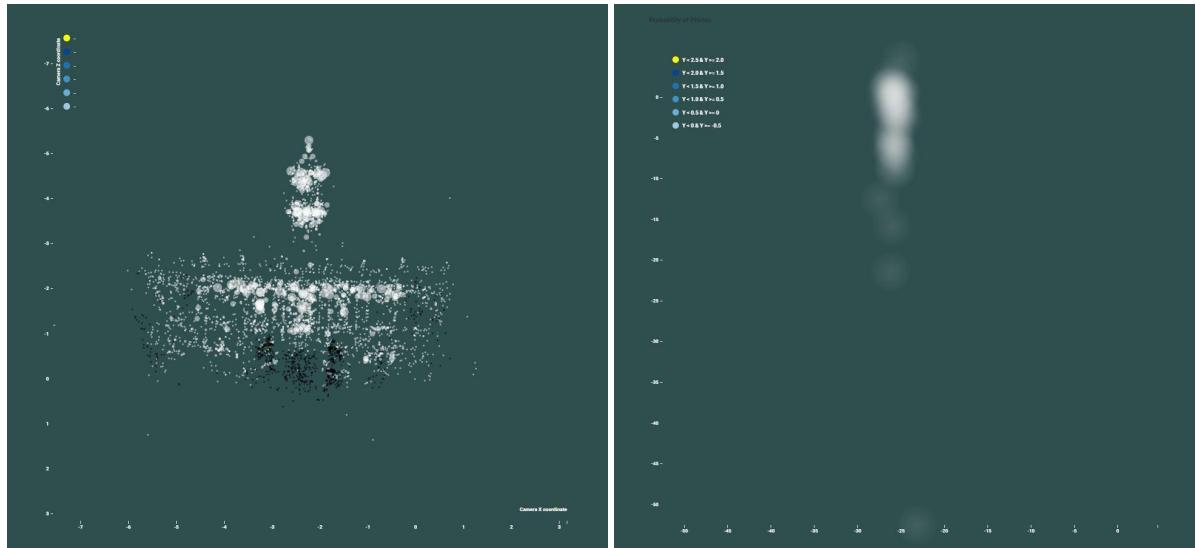


11/16/2016

Dual View & Headmap

Self Evaluation:

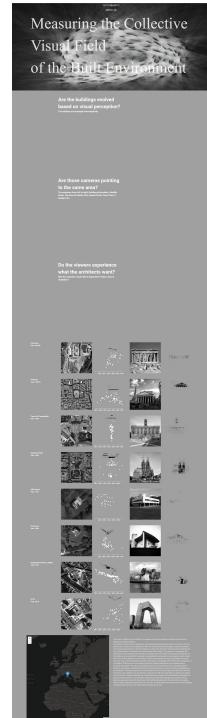
This is the first attempt of the Dual View from the earlier concept study, I was trying to make a heatmap on the right to map out the probability, as a sense of field, of where the people tend to stand to take photo. One thing is not clear is that the subject was not present so the graph does not mean anything actually. Also, graphically it looks vague, artistic but less scientific.



12/01/2016

Prototype V2

In this v2, I carefully selected these 8 famous architectural site from classic, renaissance to modern architecture with a hypothesis that there is a linear evolutionary pattern can be revealed by the visualization, then I start to gather site plan and mass produce them using the prototype format, which I found extremely helpful. The front page is added in order to attract classmate to give me feedback, it works.



Are the buildings evolved based on visual perception?

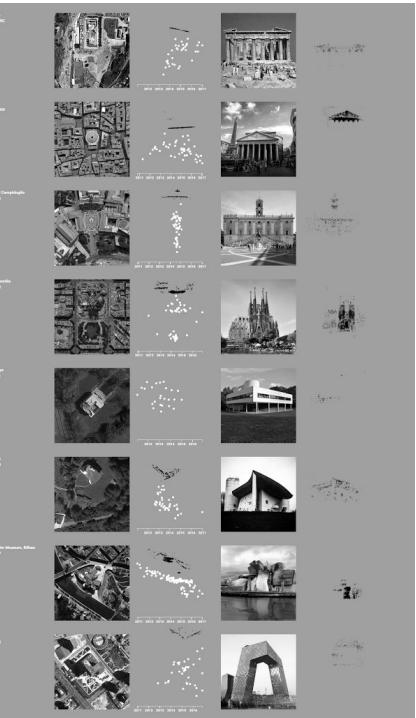
The subjects are arranged chronologically

Are those cameras pointing to the same area?

The sequence from left to right: Building Information, Satellite Photo, Top View of Scatter Plot, Facade Photo, Front View of Scatter Plot

Do the viewers experience what the architects want?

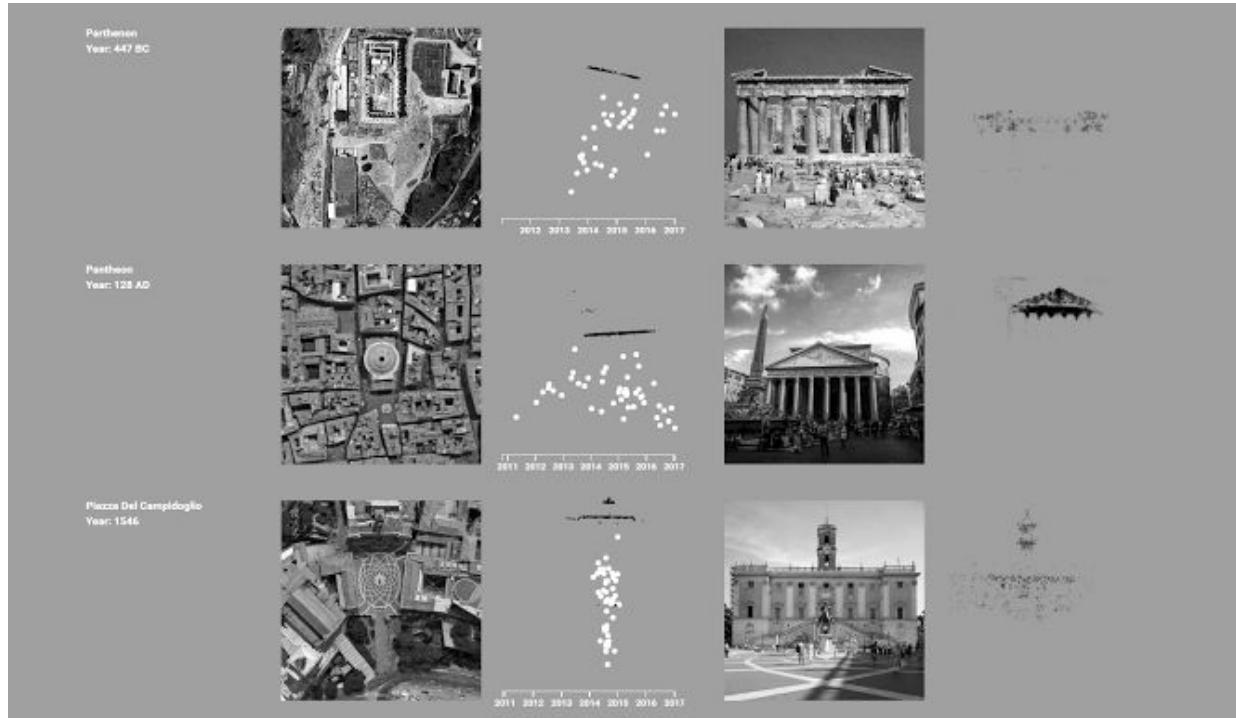
Why the collective visual field is important? Is this a way of revelation?



12/01/2016

Prototype V2

Due to the technical issue, such as the plot need to be rotate and scale in order to match the photo or vice versa. So I have to put the viz next to the picture instead of overlay, which i also think is compelling graphically, but less informative.



12/01/2016

Feedback from classmate A

Original feedback: "Very original & attractive topic, excellent job so far. Some more storytelling more balance between images and text will be excellent"

My Takeaway: supportive, comments are helpful and to the point

Project Demos - Peer Evaluation

1. Group Name: ZHIWEI LIAO

2. Project Name: COLLECTIVE VISUAL VIEW

Please continue to the next page

3. Rubrik:
Please give scores are from 0-5 (0 means bad, 5 means good)

Criteria	Points
Technical requirement 1 fulfilled (multiple coordinated views)	4
Technical requirement 2 fulfilled (one innovative view, either an extension of an existing visualization type or a novel visualization)	5
Effective visualizations	4
Innovative visualizations	5
Level of technical difficulty	5
Clear storytelling	3
Visual design (including website)	3
Addresses the goals	4
Sensible and effective interaction	3

4. Please write down any other comments you might have:

Very original & attractive topic
Excellent job so far
Some more storytelling
More balance between images & text
will be excellent

1 2

12/01/2016

Feedback from classmate B

Original feedback: "Overlay of viz with pictures, would be amazing!"

My Takeaway: True, but at the time I think there is a lot of work to align individual viz with its picture as the scale and orientation are all different. But this is the key part of the project. I have to find a way to make it work.

Project Demos - Peer Evaluation

1. Group Name:
Zhiwei Liao

2. Project Name:
Collective Visual Field.

Please continue to the next page

3. Rubrik:
Please give scores are from 0-5 (0 means bad, 5 means good)

Criteria	Points
Technical requirement 1 fulfilled (multiple coordinated views)	4
Technical requirement 2 fulfilled (one innovative view, either an extension of an existing visualization type or a novel visualization)	5
Effective visualizations	5
Innovative visualizations	5
Level of technical difficulty	4
Clear storytelling	4
Visual design (including website)	4
Addresses the goals	5
Sensible and effective interaction	4

4. Please write down any other comments you might have:

↳ Overlay of viz with pictures
would be amazing!

12/01/2016

Feedback from classmate C

Original feedback: "Super, innovative idea! Lacking labels"

My Takeaway: It seems to me that it is difficult to show what the viewers want to see. But somehow the label should be the easier way to do in order to make it informative. So add labels! But is it enough? As it turns out at the end, i think adding photo with labels to the dots are even more informative.

Project Demos - Peer Evaluation

1. Group Name:
Zhiwei Yao

2. Project Name:
Collective visual Field

Please continue to the next page

3. Rubrik:
Please give scores are from 0-5 (0 means bad, 5 means good)

Criteria	Points
Technical requirement 1 fulfilled (multiple coordinated views)	5
Technical requirement 2 fulfilled (one innovative view, either an extension of an existing visualization type or a novel visualization)	5
Effective visualizations	4
Innovative visualizations	5
Level of technical difficulty	4
Clear storytelling	3
Visual design (including website)	4
Addresses the goals	4
Sensible and effective interaction	3

4. Please write down any other comments you might have:

Super innovative idea!
lacking labels

1

2

12/01/2016

Feedback from classmate D

Original feedback: there is no comments but with a super low points in contract with the other 3 feedback.

My Takeaway: At the beginning, I think this feedback does not help me at all and I was even very mad at this and want to find out who did this and ask why and get feedback comments in details so that I can work hard on this. But then I calm myself down and look to the high points and indeed this person did this in a rational manner, which actually is precisely what I need to know and point out where I should improve.

Project Demos - Peer Evaluation

1. Group Name: ZHIWEI LIAO

2. Project Name: COLLECTIVE VISUAL VIEW

Please continue to the next page

3. Rubrik:
Please give scores are from 0-5 (0 means bad, 5 means good)

Criteria	Points
Technical requirement 1 fulfilled (multiple coordinated views)	3
Technical requirement 2 fulfilled (one innovative view, either an extension of an existing visualization type or a novel visualization)	4
Effective visualizations	2
Innovative visualizations	3
Level of technical difficulty	4
Clear storytelling	2
Visual design (including website)	2
Addresses the goals	2
Sensible and effective interaction	1

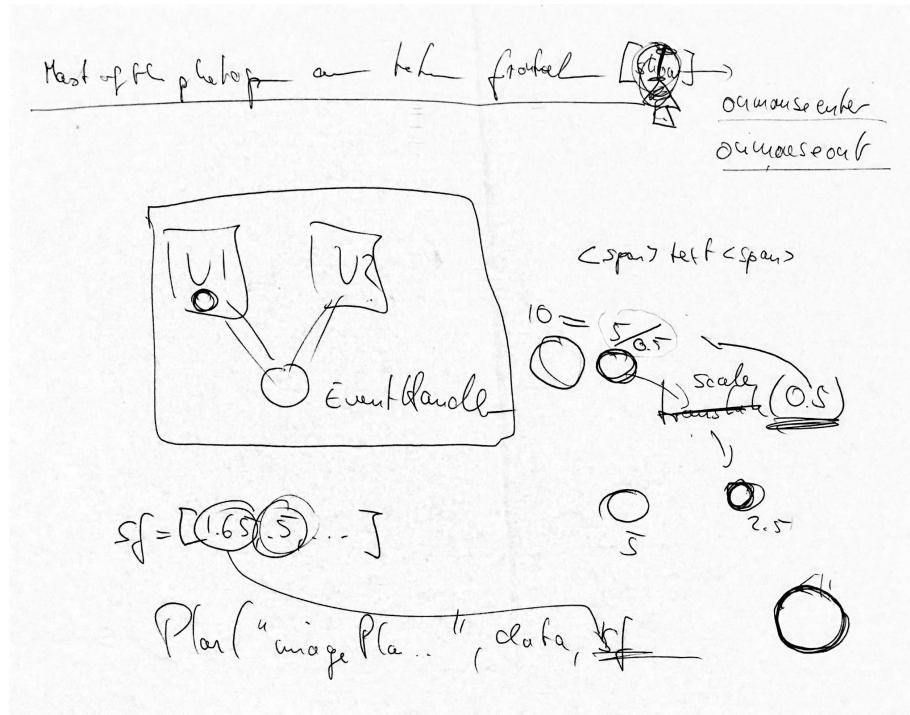
4. Please write down any other comments you might have:

12/06/2016

Feedback from mentor

Original feedback: event handler to control crossing from one viz to the other. Map with onmouseenter was suggested. I was suggested to consult with my colleagues in the class.

My Takeaway: I have limited access to reach my colleagues since my project is independently moving forward. And I do not know who I should ask and maybe at this point, I should have find a partner on this.



12/12/2016

Feedback from TF

COMPSCI171 : Grades Ziwei Liao			
Homework	Homework	Print Gradebook	Total: 9.74%
Announcements		↳ Show "Smart" Scores	
Syllabus	For the course: COMPSCI171: Visualization	Show ID Details	
Academic Integrity Policy		Assessments are weighted by group.	
Modules	Name	Date	Score
Grades	Module Paper - Lecture (Week 1)	Sept 16 to 23:20pm	1
Project	Project	Oct 10 to 17:20pm	1
Academic Resources	Quizzes	Sept 16 to 23:20pm	1
PolyU	Participation	Sept 16 to 23:20pm	1
	IHW	Sept 16 to 23:20pm	1
	Midterm	Sept 16 to 23:20pm	1
	Studio	Sept 16 to 23:20pm	1
	Total	Sept 16 to 23:20pm	100%
			■ Show student responses on graded assignments
			Click any scores and create a new value to show how the change will affect your total.
	Pre-Quiz - Lecture 2	Sept 19 to 26:20pm	12
	Module Paper - Lecture 2	Sept 19 to 26:20pm	1
	HW 2	Sept 19 to 26:20pm	3.5
	Pre-Quiz - Lab 3	Sept 19 to 26:20pm	12
	HW 3	Sept 20 to 27:20pm	4
	Pre-Quiz - Lab 2	Sept 20 to 27:20pm	12
	Module Paper - Lab 2	Sept 20 to 27:20pm	1
	Pre-Quiz - Lecture Week 2	Sept 20 to 27:20pm	12
	Module Paper - Lecture Week 2	Sept 20 to 27:20pm	1
	HW 4	Sept 21 to 28:20pm	1
	Pre-Quiz - Lab 4	Sept 21 to 28:20pm	12
	HW 5	Sept 21 to 28:20pm	4
	Module Paper - Lab 5	Sept 21 to 28:20pm	12
	Pre-Quiz - Lecture Week 4	Sept 21 to 28:20pm	12
	Module Paper - Lecture Week 4	Sept 21 to 28:20pm	1
	HW 6	Sept 21 to 28:20pm	1
	Pre-Quiz - Lab 6	Sept 21 to 28:20pm	12
	HW 7	Sept 21 to 28:20pm	4
	Module Paper - Lab 7	Sept 21 to 28:20pm	12
	HW 8	Sept 21 to 28:20pm	4
	Pre-Quiz - Submission	Sept 21 to 28:20pm	0
	Module Project	Oct 01 to 08:20pm	1
	• Project Protocol	Oct 01 to 08:20pm	50
	Pre-Quiz - Lab 8	Oct 01 to 08:20pm	12
	Module Paper - Lab 8	Oct 01 to 08:20pm	1
	Pre-Quiz - Lecture Week 8	Oct 01 to 08:20pm	12
	Module Paper - Lecture Week 8	Oct 01 to 08:20pm	1
	HW 9	Oct 01 to 08:20pm	2.88
	Pre-Quiz - Lab 9	Oct 01 to 08:20pm	12
	HW 10	Oct 01 to 08:20pm	4
	Module Project	Oct 01 to 08:20pm	1
	• Group Homeworks - Detailed Project Plan	Oct 01 to 08:20pm	10
	• Lab 10 Submission	Oct 01 to 08:20pm	0
	Pre-Quiz - Lab 9	Oct 01 to 08:20pm	12
	Module Paper - Lab 9	Oct 01 to 08:20pm	1
	HW 11	Oct 01 to 08:20pm	46
	Module Paper - Lecture Week 11	Nov 03 to 10:20pm	12
	Module Project	Nov 03 to 10:20pm	5
	• Pre-Project VI	Nov 03 to 10:20pm	12
	Module Paper - Lab 8	Nov 03 to 10:20pm	1
	Pre-Quiz - Lecture Week 10	Nov 03 to 10:20pm	10
	Module Paper - Week 10	Nov 03 to 10:20pm	1
	HW 12	Nov 03 to 10:20pm	20
	Pre-Quiz - Lab 9	Nov 03 to 10:20pm	1
	Module Paper - Week 10	Nov 03 to 10:20pm	1
	HW 13	Nov 03 to 10:20pm	1
	Final Project	Dec 12 to 19:00pm	40
	Midterm Exam	Dec 12 to 19:00pm	50
	Presentation	Dec 12 to 19:00pm	12
	Studio 1	Dec 12 to 19:00pm	1
	Studio 2	Dec 12 to 19:00pm	1
	Studio 3	Dec 12 to 19:00pm	1
	Studio 4	Dec 12 to 19:00pm	1
	Studio 5	Dec 12 to 19:00pm	1
	Studio 6	Dec 12 to 19:00pm	1
	Studio 7	Dec 12 to 19:00pm	1
	Studio 8	Dec 12 to 19:00pm	1
	Studio 9	Dec 12 to 19:00pm	0
	Assignments	N/A	0
	Project	94.29%	40%
	Quizzes	100%	30%
	Participation	95.65%	5%
	IHW	93.52%	20%
	Midterm	80.5%	20%
	Studio	95.24%	5%
	Total		91.74%