

GEOG 780 Seminar: Web Mapping, Social Media, and Big Data

(Spring 2015)

Blackboard URL: <https://blackboard.sdsu.edu/>
Facebook: <https://www.facebook.com/SDSUgeospatial>

Lectures: Tuesday 1:00pm – 3:40pm (with a ten minute break around 2pm)
Location: SH-324. (SAL lab)

Instructor: Dr. Ming-Hsiang Tsou
Storm Hall Room 313C
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Office Hours: Tuesday 10:30am- 12:00pm
or by appt. (619) 594-0205

Overview:

This seminar will focus on the discussion of web mapping technology, social media, big data, and their impacts and implications for our society and GIScience. The seminar class will provide a comprehensive literature review covering recent advancement of web mapping technology (ArcGIS Online, Google Map APIs, OpenStreetMap, etc.) and social media applications (Twitter, Facebook, Flickr, Youtube) along with related mobile and location-based services (LBS) (Foursquare, Facebook Place, Yelp, etc.). Through reading journal articles, book chapters, websites, and in-class discussions, students will be able to identify the key research questions and challenges related to web mapping, social media, and big data. Students can utilize the smart classroom (SH324) to demonstrate various web applications and social media tools. **Each student will lead one topic discussion and two technical demonstrations** during the semester. At the end of the semester, students will create a final research project proposal or write a technical white paper. Each student should make a final presentation for their white paper or research proposal at the final date.

Prerequisites: Six units of upper division or graduate level courses in spatial analytic techniques. Basic understanding of GIS technology.

Textbooks:

There is no required textbook. Journal articles and book chapters in Blackboard will be the major reading materials.

Grading: Your grade will be based on the following components:

- **Class participation and leading discussions 30%**
- **Two technical application demonstration (15 + 15) 30%**
- **Final presentation 15%**
- **Final research project proposal or a white paper 25%**

This course is a seminar and all students are expected to (1) read the assigned material carefully before each class meeting and (2) participate in class. All students in this class are required to submit **one question for each topic (each week) on the Blackboard** pertaining to the assigned readings prior to **6pm on the day (Monday) before class**. We will discuss these questions in class on Tuesday.

ONE Topic Discussion (1:00pm - 2:00pm):

Each student will lead ONE topic discussion each week during this semester. A sign-up sheet will be provided on the first day of this course. Students will be evaluated based on your leadership during the discussion, the ability to engage other students, organization and presentation skills, and any supporting material (i.e., PowerPoint slides, animations, demos, movies, or handouts).

Short Break (2:00pm - 2:10pm)

Web Mapping and Social Media Technology Workshop (2:10pm - 2:30pm): demonstration of ArcGIS online, Google Map APIs, Foursquare, etc., and Mashup applications.

TWO Technical Demonstration Sessions by Students (2:30 - 3:40): Session A: 2:30pm-3:05pm, Session B: 3:05pm-3:40pm. Each student will prepare TWO technical demonstrations during this semester in two different weeks. A sign-up sheet will be provided on the first day of this course. Students can select related web GIS applications, social media apps, GIS tools, or related software to demonstrate the value of web mapping and social media. The selection of applications, tools, or software should be unique and no overlapped with others (previous weeks). Students will first introduce and demonstrate the tool or the application, and then **explain their major functions, target users, web technology, and software cost** (10 minutes). After the introduction, the demonstrated software or tools will be reviewed and tested by all class members in two or three small groups (15 minutes). Then we will have a final discussion together (10 minutes).

Students should submit a final research proposal or a technical white paper (at least 10 pages, 1.5 line spacing, in Word) by May 13, 2015 on Blackboard. The final paper should be based on student's own areas of interest and the knowledge gained in the class. The topic of research proposal could be a prototype development, original ideas, techniques, designs and experiences in the field of web mapping and social media. The research proposal should follow the NSF DDRI proposal format: <http://www.nsf.gov/pubs/2012/nsf12570/nsf12570.htm> A white paper could focus on one specific application (software) domain of web mapping or social media (such as navigation/traffic, LBS, social networking, public health, weather, etc.).

Each student will submit a **one-page** proposal abstract or white paper abstract articulating the ideas and approach for their final papers **on April 07, 1pm via Blackboard**. The whole class will discuss and review their proposals on the same day and provide some suggestions. Students will make final presentations on **May 05, 2015**. Each presentation will be 15 minutes with 5 minutes Q&A. The final research paper will be due on **May 13, 2015 by 5pm on Blackboard**.

Required Readings: (electronic copies available in the Course Documents in Blackboard).

- **Topic 1. The Fourth Paradigm (Big Data Science)**
- **Topic 2. Volunteered Geographic Information and Crowdsourcing**
- **Topic 3. Social Media and Social Network**
- **Topic 4. Web Map APIs and Social Media APIs**
- **Topic 5. Mapping Social Media Messages**
- **Topic 6. Location-based Social Media Apps**
- **Topic 7. Cyberinfrastructure and Cloud Computing**
- **Topic 8. Mobile GIS and Sensor Web**
- **Topic 9. Privacy, Social Impacts, and Future Development**

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WEEK	LECTURE		
1	27 Jan	Introduction – Mapping Social Media and Big Data	GeoViewer Demo, Web mapping demo,
2	03 Feb	The Fourth Paradigm – Data Intensive Scientific Discovery (Big Data Science)	Mashup, Hacking, and Github Technical Demo-1A Technical Demo-1B
3	10 Feb	Volunteered Geographic Information and Crowdsourcing	OpenStreet Maps and Crowdsourcing Technical Demo-2A Technical Demo-2B
4	17 Feb	Social Media and Social Network (Creating a new connection task)	Social media Apps Technical Demo-3A Technical Demo-3B
5	24 Feb	Late Start (Short class) Class will start at 2:30pm -4pm Web Map APIs and Social Media APIs	ArcGIS online No Technical Demo
6	03 Mar	Mapping Social Media Messages	Gephi and SNA software Technical Demo-4A Technical Demo-4B
7	10 Mar	Location-based Social Media Apps	Google Map APIs and Mobile Apps Technical Demo-5A Technical Demo-5B
8	17 Mar	<u>Guest Lecture (TBA)</u>	No Demo this week
9	24 Mar	<u>No Class (CIU conference I n Japan)</u>	
10	31 Mar	Spring Break (No Class)	
11	07 Apr	Cyberinfrastructure and Cloud Computing (Final paper abstract introduction)	Amazon EC2 and Virtual Servers Technical Demo-6A Technical Demo-6B
12	14 Apr	Mobile GIS and Sensor Web	ArcGIS mobile apps and Arc Collectors Technical Demo-7A Technical Demo-7B
13	21 Apr	No Class (AAG meeting in Chicago)	
14	28 Apr	Privacy, Social Impacts, and Future Development	Emergency Management Apps Technical Demo-8A Technical Demo-8B
15	05 May	Final Project Presentation (15 minutes with 5 minutes Q&A for each student).	
	13 May	May 13 (Wednesday) by 5pm -- Final Report DUE by emails or in the Black board.	