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#### Introducing: Classroom Salon

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# Introducing Classroom Salon

#### Ananda Gunawardena

School of Computer Science
Carnegie Mellon University
Pittsburgh, PA

http://www.classroomsalon.org



# Tone matching dictionaries Expert humanist Usability



Semantic similarity algorithms Adaptive Book technologies Scalability and performance

The Team



Alex Cheek Interaction design Information design



Joanna Wolfe Reading and Annotations

#### Talk outline

- Concept of social Learning
  - Theory
  - Applications
- Introducing Classroom Salon
  - concept
  - Register, join, participate
  - Results (later)
- Use cases of Classroom Salon
  - Examples
  - helping students master critical skills
  - Encouraging transparency and collaboration
  - Results
- Conclusion
  - What we are working on
  - Q & A

# The concept of social Learning

### What is Social Learning?

- Learning within a social context
  - In an Institution
  - In a Study group
  - Online study group
- Learning by observation
  - Observing what other's do
  - Observing what other's do not do

"Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action."

-Albert Bandura, Social Learning Theory, 1977

## **Social Learning Theory**

"Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action."

-Albert Bandura, **Social Learning Theory**, 1977

#### Technologies that supports (some sort of) social Learning

- Twitter
- YouTube
- Google Docs
- Ning
- Facebook
- Discussion forums
- Blogs
- etc... etc

Each app is NOT designed for social learning. But some learning can occur. No data to support the impact on these technologies on learning

### Ingredients for social learning

- Develop a Model of engagement
  - Voluntary or directed
  - Immediate/short term benefits
  - long term benefits (grade)
  - transparency

#### Establish benefits to student

- Important formula
  - choice = P(success)\*value cost
- Articulate the Impact on Grade
- Encourage Learning by observation
- Encourage Knowledge organization

### Ingredients for social learning

- Encourage Transparency
  - Openness (limited privacy)
- Develop Trust
  - Through Small salons (6-10 people)
  - Encourage get to know first activities (bio)
  - Follow and become thought leaders in the learning circle (salon)

### **Enabling Technology**

- Technology
  - Pull technology with notifications
  - Quick access to tasks thru tags, and search
  - Recommendation systems
  - Short and focused activities
  - Tasks (reading, homework..) based activities
  - web and mobile enabled (easy access)

# Introducing Classroom Salon

## Learning Environment

- Classroom is a community (a group/a salon)
- Special interest groups (salons) can form within communities
- Salons extends beyond the walls of the classroom (blended learning)
- Learning can happen, anytime, anywhere
- Salons must be transparent (with some privacy rights)
- Salon's must track user interactions like no other software

#### The Idea

integrate context and interpretation

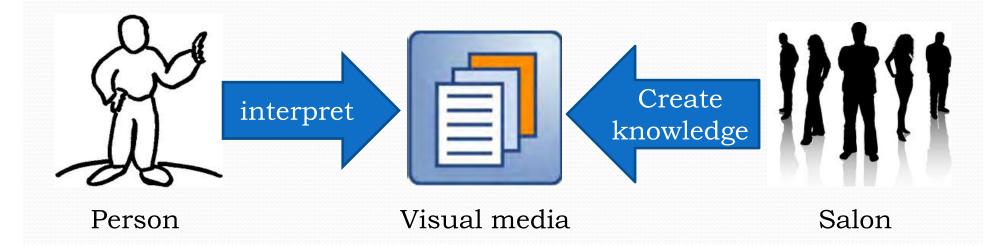
#### How?

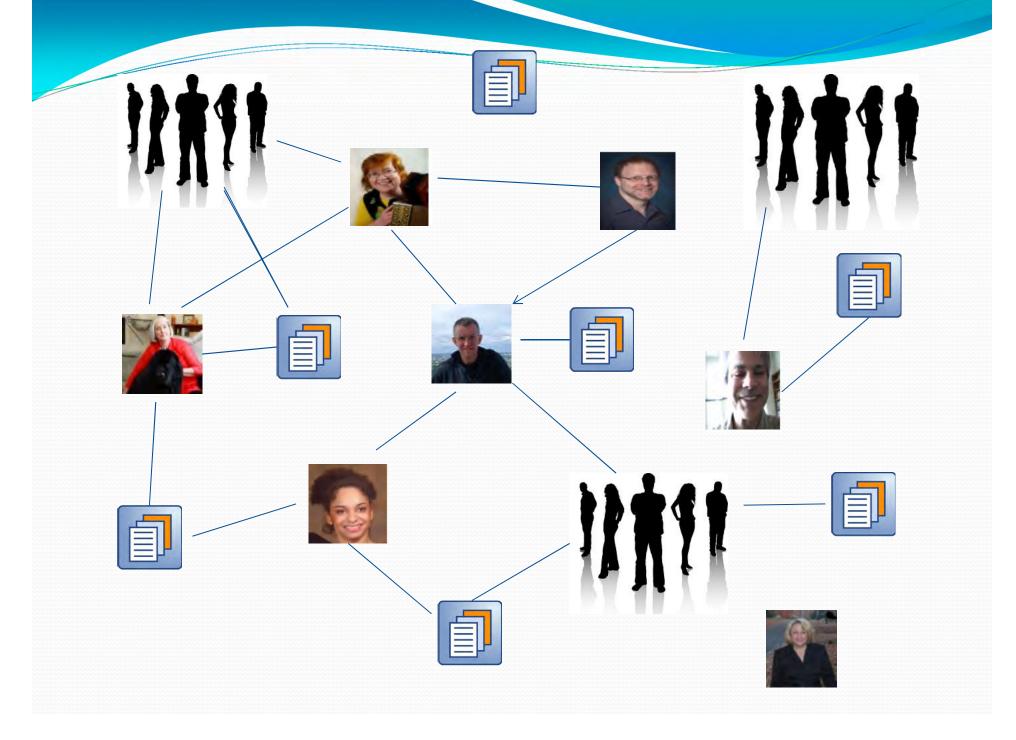
Use documents, tags, questions, annotations and comments to design, deploy, track and analyze learning tasks

#### The Product

A web-based, mobile enabled learning management platform that transforms individual work like annotations and comments into dynamic communities using data aggregation, clustering and rich visualizations.

#### Salon Abstraction





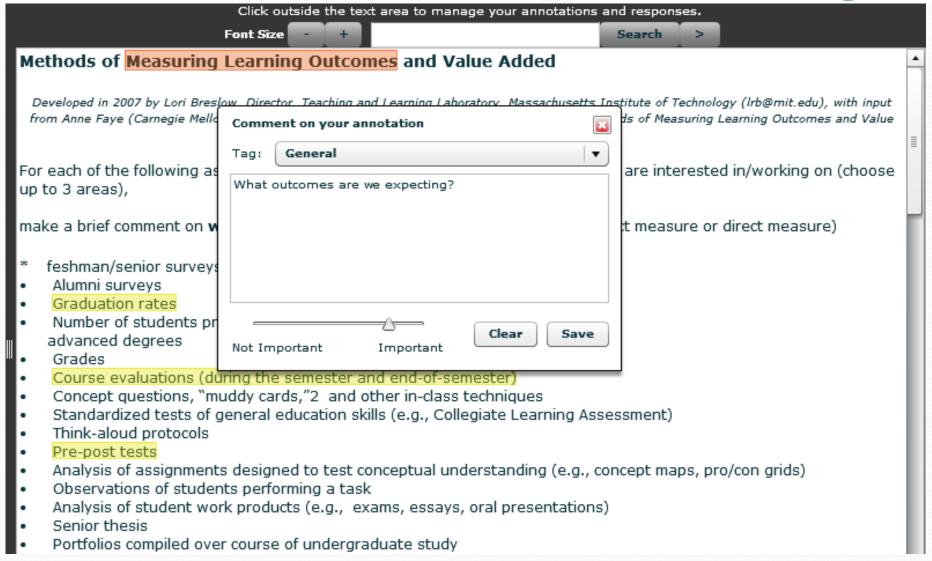
## 5-minute pause

Audience Participation Set up activities

# Use cases of Classroom Salon

# Active Reading

# Active and Deep Reading



## Reading Guidelines

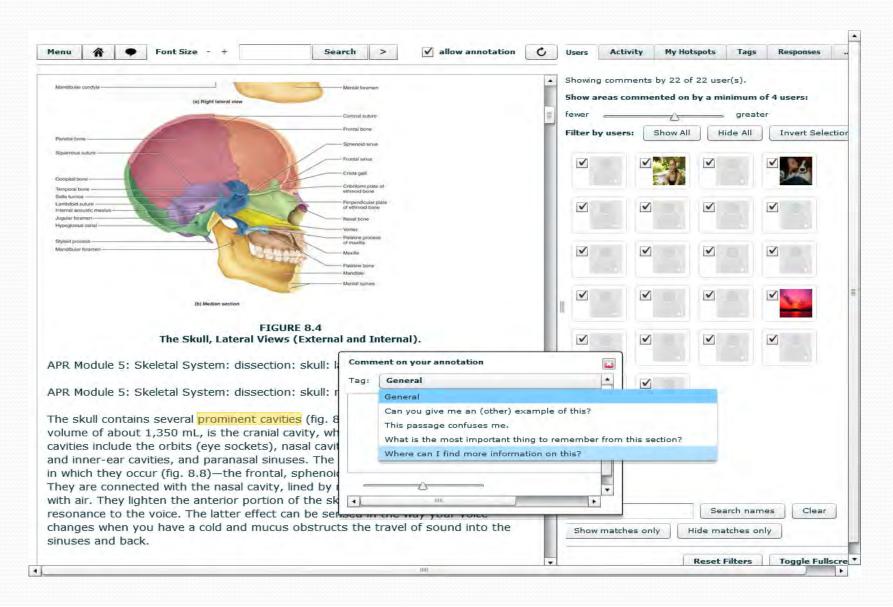
Read all chapters

Make at least 5 comments per chapter

Ask at least 3 questions per chapter

Choose tags (if necessary)

## Customized Tagging



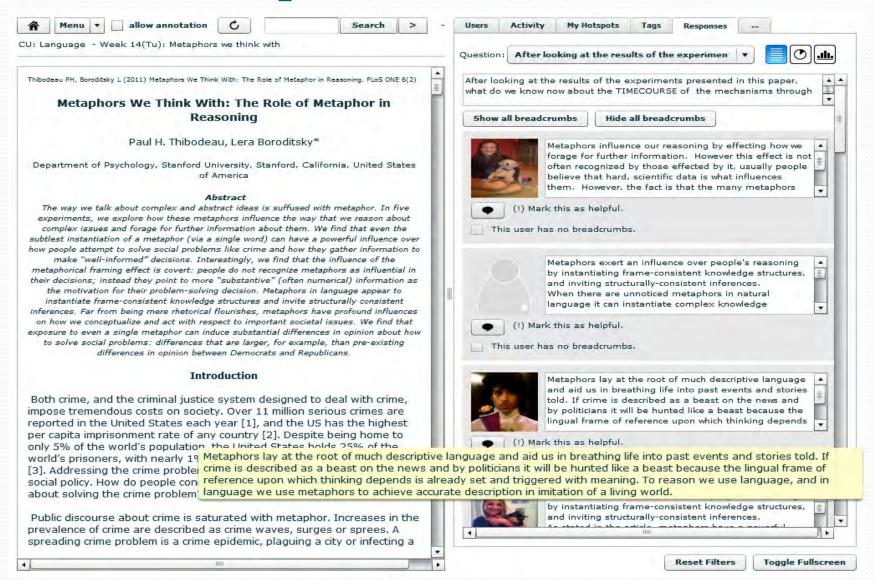
#### Examples from University of Wisconsin-Milwaukee

- Login as a student
  - Jenny Albert
- Show how a student interact with the system
  - Participation annotations and comments
  - Questions raised
  - Examples requested
  - Important: All questions raised in "context"

```
C:\Users\Ananda Gunawardena\Desktop\Perl and Salon>perl jenny_analysis.pl
Number of comments : 175
Number of questions : 109
Number of examples requested : 40
The ratio of commenting to annotations: 1.0187625171287
```

# Global Responses

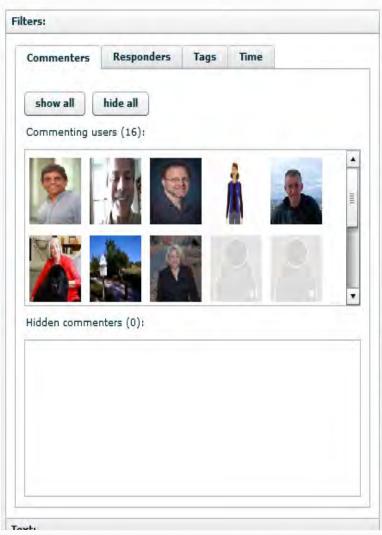
#### Global responses with breadcrumbs

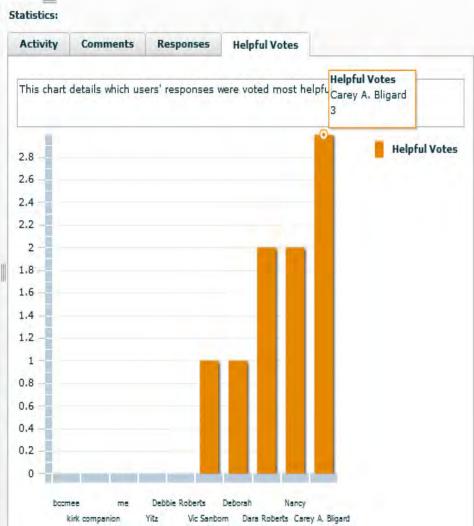


#### **Examples from University of Colorado**

- Show how a student interact with the system
  - Participation
  - Analysis of data

# Helpful votes





## Find "experts"

#### CLASSROOM SALON

SALONS DOCUMENTS

ME

search titles and authors

search »

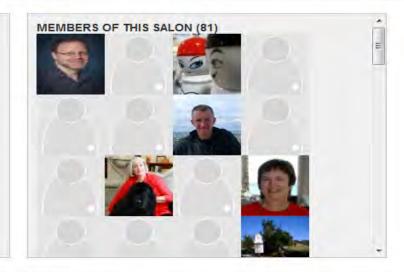
#### JOIN THIS SALON

name: Sense and Sensibility description: Jane Austen (1811)

owner: Yitz id: 172

access: This Salon is open to all

Join »



DO	CUME	NTS IN THIS SALON			*
		Title	Author	Date Created	П
i	10	Sense & Sensibility Full Text	Jane Austen	2011/07/13	
i	10	Chapter 8 Sense and Sensibility	Jane Austen	2011/05/15	
i	10	Chapter 7 Sense and Sensibility	Jane Austen	2011/05/15	
i	10	Chapter 6 Sense and Sensibility	Jane Austen	2011/05/15	
i	10	Chapter 5 Sense and Sensibility	Jane Austen	2011/05/15	
i	10	Clasroom Salon Instructions, Hints, Help	Yitz	2011/05/08	
i	10	Chapter 3 Sense and Sensibility	Jane Austen	2011/04/14	H
i	10	Chapter 4 Sense and Sensibility	Jane Austen	2011/04/13	
i	10	Chapter 2 Sense and	Jane	2011/02/20	-

#### SHARE THIS SALON

Give the following link to anyone you wish to invite to join this Salon:

http://www.classroomsalon.org/redirect /redirect.aspx?action=viewSalon&id=172

# Follow the "experts"



#### **Gary Miller**



#### Social...

Follow documents or people

#### QUICKSTART

Choose an Activity:

Create a Document »
Join a Salon »
Start a Salon »
Edit my Profile »

Choose your Workspace:

My Salons » My Documents » My Recent Documents »

See Documentation:

Using Salon in the Classroom

See Video Guides:

Video Guides



Prof. Guna guna@andrew.g..d.edu

Feeds Salons Following Followers

▶ 🛅 Jan 0 NaN 12:00 AM: Ji Hye Lee responded to question 524



selection sort takes more time to do comparrisons and sometimes requires more memory for sorting and so takes longer.

▶ 🛅 Jan 0 NaN 12:00 AM: Jason Kohlburn responded to question 524

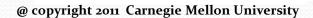


Insertion sort is more adaptable than selection sort, meaning that on lists that are more sorted, selection sort will perform better. Selection sort is inefficient even if the list is almost sorted

> July 10, 2011, Mark Vehak Joined the Carlow University Salon

Bio: Mark is a technology evangeist at Carlow University

He is passionate about new technologies



# Encouraging Transparency

#### ABOUT THIS SALON

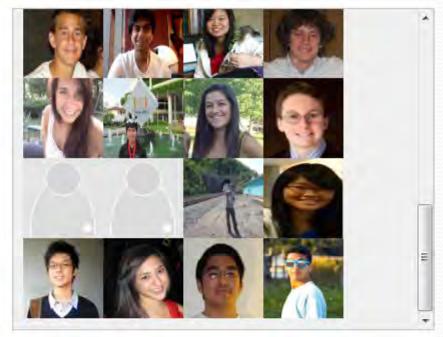
name: 15-122F11-Challenging Questions

description: About this Salon

owner: Prof Guna

ID: 464

access: This Salon is open to all



#### DOCUMENTS IN THIS SALON

Date Title Author Created Lecture 01 questions Prof Guna 2011/08/30 Matt **HWO Questions** 2011/09/04 Sarett About loop invariants Prof Guna 2011/09/18 15-122F11 - Ints Prof Guna 2011/09/23 15-122F11 - Contracts Prof Guna 2011/09/23 15-122F11 - Midterm 1 - Practice Prof Guna 2011/09/26 Seemingly identical code failing @ecopyright 2011 Carnegie Mellon University 2011/09/26

#### MANAGE THIS SALON

Name: 15-122F11-Challenging Questions

About this Salon

Description:

(default) Anybody can join this Salon.

Socurity: Nobody can join this Salon without your

## Improve Communication

☐ William Lovas	Jun 22, 2011		Re: Virtual machine memory operations
☐ William Lovas	Jun 22, 2011	×	Some hw8 test cases
☐ William Lovas	Jun 21, 2011	<b>∠</b>	allocating stacks [Re: Quiz 3 coming Monday wha
☐ William Lovas	Jun 20, 2011	×	Re: Header Files
Alexandra Falk	Jun 20, 2011	M	Header Files
■ William Lovas	Jun 20, 2011	<b></b>	Re: Quiz 3 coming Monday what to study
☐ William Lovas	Jun 17, 2011	<b></b>	Quiz 3 coming Monday what to study
■ William Lovas	Jun 16, 2011	<b></b>	Assignment 8 released!
☐ William Lovas	Jun 16, 2011	<b></b>	Re: compiling c
☐ Zachary Sparks	Jun 12, 2011	×	Creating Data Structures
☐ William Lovas	Jun 12, 2011	$\sim$	Re: Example vs. Implementation
Sam Eisenhandler	Jun 11, 2011	×	Example vs. Implementation
☐ William Lovas	Jun 10, 2011	$\sim$	Homework 6 available
☐ William Lovas	Jun 9, 2011	<b></b>	Exam 2: BSTs
☐ William Lovas	Jun 9, 2011	$\sim$	Homework 5: typo in solving algorithm
☐ William Lovas	Jun 8, 2011	×	Homework 5, Exercise 2: circularity checking
Zachary Sparks	Jun 8, 2011	<b></b>	My office hours moved to Thursday

<u>Previous | Next]</u> [ <u>1 2 3 4 5 6 7 8</u> ... <u>15 16 17</u> ] [Show All] Viewing Messages: **301** to **400** (1624 total)

From:	Ananda Gunawardena <guna@andrew.cmu.edu>   ▼</guna@andrew.cmu.edu>
To:	andyguna@gmail.com
Cc:	
Bcc:	
Subject:	I have a question
Priority:	Normal ▼
Receipts:	□ On Read □ On Delivery
Sig	nature Addresses Save Draft Send

Why is that part 2(b) of the assignment has so many problems?

When context is important in communication use salon...



...focused Salon conversations

# Monitor Students

# Monitoring Individual Students



Thomas Manzini

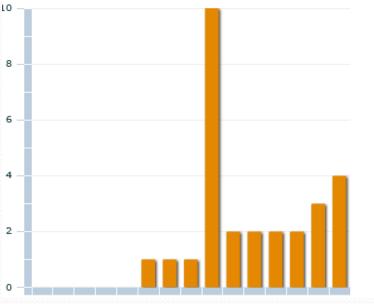
annotations responses

Commenting on others

How time is spent

@ copyright 2011 Carnegie Mellon University

discussions



Performance in each unit

Salons Created: 2

Documents uploaded: 6

Annotations Made: 56

Responses Provided: 40

Commenting on others: 42

Open Discussions: 38

Filter

## Student Dashboard

#### DASHBOARD STATISTICS

#### **Andy Guna**



Made 50 annotations to date.

Last annotation was made on 12/19/2011 10:46:54 AM.

Made 5 responses to date.

2 user liked responses made by him/her.



### Hamid, Asma

Made 22 annotations to date. Last annotation was made on 6/8/2009 4:23:46 AM. Made 4 responses to date. O user liked responses made by him/her.

#### Jim Vanides

Made O annotations to date.

Last annotation was made on .

Made O responses to date.

O user liked responses made by him/her.



#### Norton Gusky

Made 91 annotations to date.

Last annotation was made on 4/22/2012 4:24:26 PM.

Made 4 responses to date.

O user liked responses made by him/her.

#### Junki Nakayama

Made 18 annotations to date.

Last annotation was made on 7/10/2010 4:42:45 PM.

Made 9 responses to date.

O user liked responses made by him/her.



#### nsaphra

Made 54 annotations to date.

Last annotation was made on 7/31/2010 12:38:01 AM.

Made 18 responses to date.

1 user liked responses made by him/her.

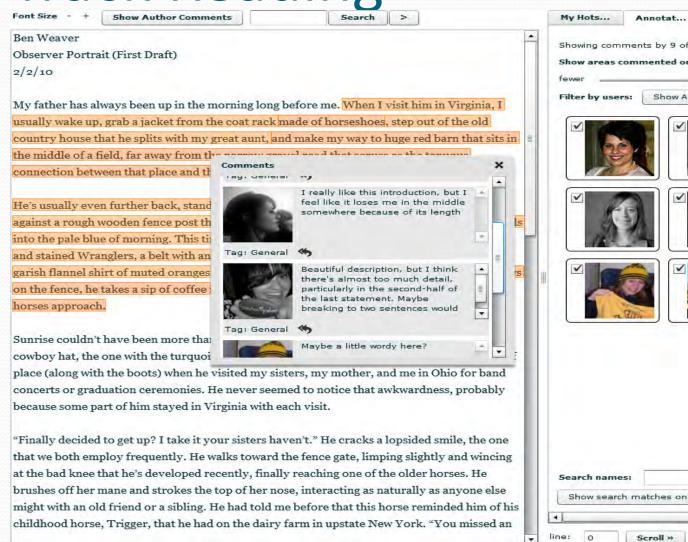
# Cluster users

# Tone and Semantic Mapping



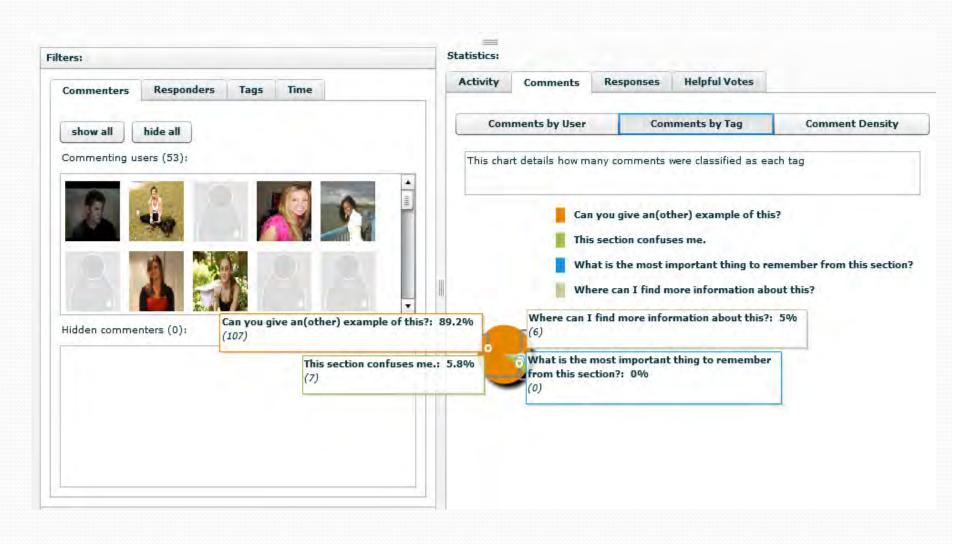
# In summary

# Track Reading

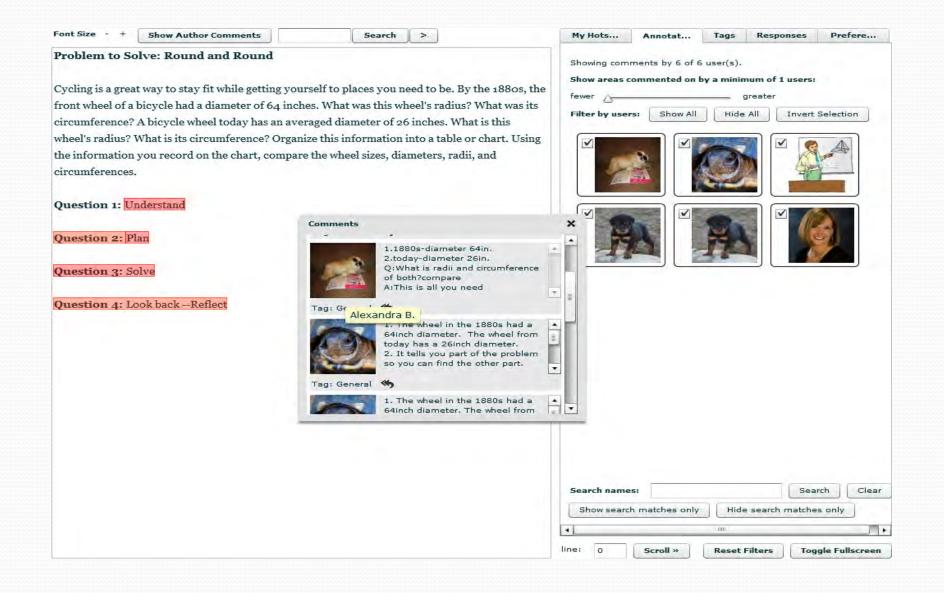




# Guide Teaching



## Crowd-source homework



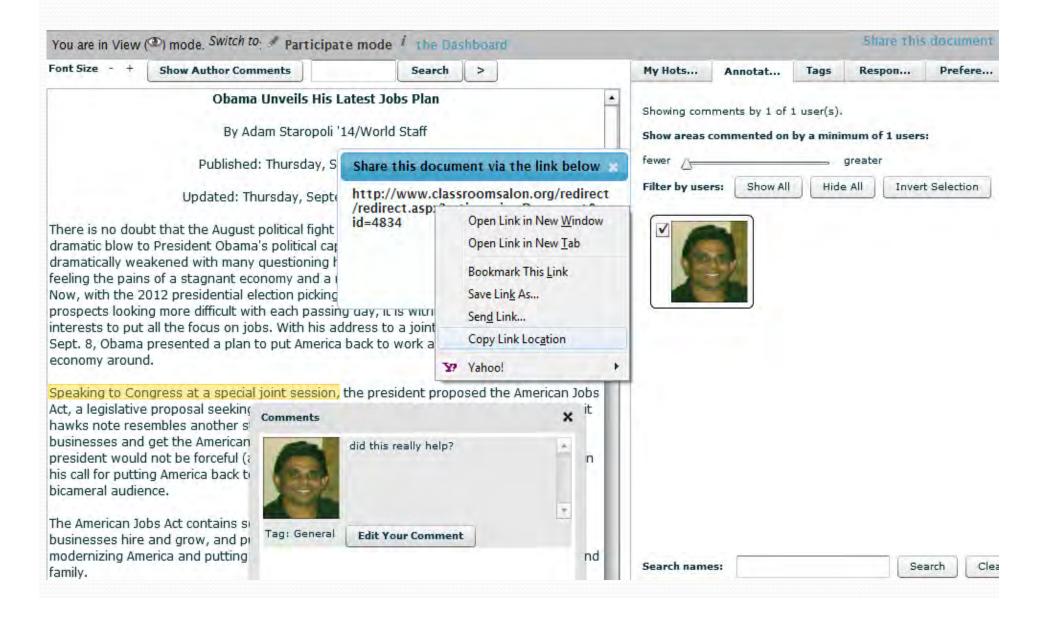
## Clarify Assignments

Font Size **Show Author Comments** Search > A Simple Bitmap Image Manipulator Individual Portion Due Date: Friday, July 1 @ 11:59 pm Group Portion Due Date: Sunday, July 3 @ 11:59 pm In this assignment, you will write a Java program that reads and writes the 24-bit Bitmap image format and performs a few basic manipulations on an image, such as removing color, flipping, rotating, and applying a mask. The Assignment The starter code contains skeletons of functions that you must implement. You will be graded on the functionality and style of your implementations of the follow n are given below. Comments :Image, indexRed, indexGreen, indexBlue, removeRed, flip, \* Individually (in BMPMa Tag: General rotate. The starter code is now posted on \* As a group (in BMPMar my mini course website at http://www.andrew.cmu.edu/user/r The 24-bit Bitmap Image memon/121/, However, make sure you also regularly check the \* The first 54 bytes of a f but the image. Most of the data can be ignored, however Tag: General 🤲 we are interested in extractii ader. If the header is stored as a 0-indexed array of bytes, Where can we find the starter the width is stored in bytes ou will notice that these values are stored in little-endian code? The refrences to byteToInt form (least-significant-byte f m as integers, you must convert them to big-endian form make me think that it's more than (most-significant-byte first). just the given skeleton. it to do this for you. Apart from this, as far as the header goes, essentially all that you iting it without any modifications. \* The remaining bytes in each pixel. These values are integers in the range 0-255, Tag: General so only one byte is needed t o store the complete information for one pixel. We will consider these bytes stored as a one-dimensional byte array. The first red-green-blue tuple is the lower left pixel of the image. Then, the pixels are given from left to right and in ascending rows so that the last tuple is the upper right pixel of the image. \* There is one important subtlety with the bytes storing the red-green-blue values of each pixel. Due to data alignment issues (take a systems-level class for more explanation), if the number of bytes storing the pixel data for one entire row is not a multiple of 4, padding bytes are added at the end of each row so that it is the next higher multiple of 4. After these padding bytes, the bytes for the next row are given in the same manner. This is extremely important to understand so that you modify the correct pixels of an image. \* This should be all that you need to understand of the file format. If you are confused, we recommend that you contact the TA, but feel free to also consult other sources, such as Wikipedia. However, be careful to not get confused by more complicated Bitmap formats.

#### Image Masking

\* Image masking is a concept that we will use to perform special manipulations on a Bitmap image. A mask is an n-by-n twodimensional array of doubles that represent weights (we will only consider odd n in our cases). The process of applying the mask is as

## Improve communication

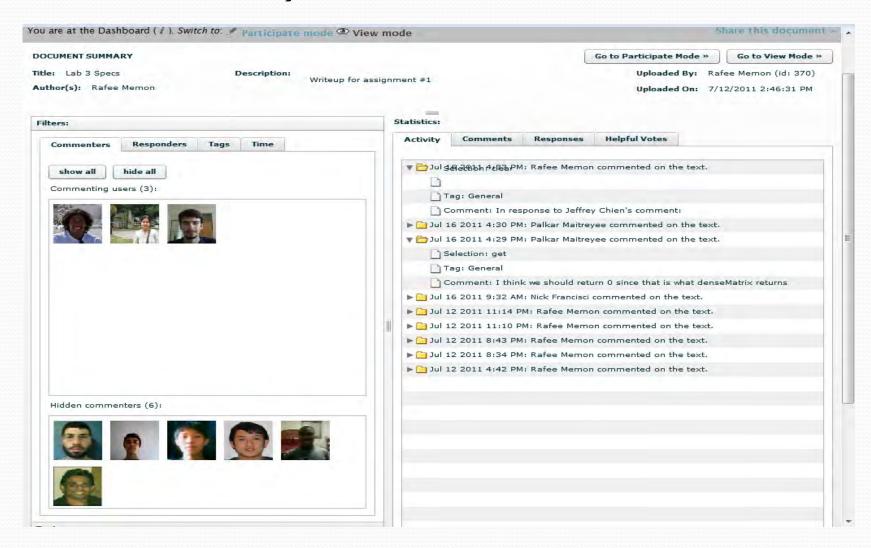


# Measure Prior Knowledge



## Track student activities

Dash board is a way to track activities of each/all student(s)



# Salon Results (so far)

## Uses of Salon

- Over 10,000 registered users
- Over 15,000+ uploaded tasks documents
- Multiple uses of Salon
  - Textbook reading and annotations
    - 600+ students, 1000+ annotations / day
    - 200+ questions / day (filter)
- Crowd-sourcing work
- Reading and peer review
- Open homework
- My Notebook

#### /remove-red -i images/g5.png -o images/g5nored.png

If you have any problems compiling or running your code as described here, you should contact the course sta?. Submitting. Once you 've completed some ?les, you can submit them by running the

#### handin -a hw1 <file1>.c0 ... <fileN>.c0

You can submit files as many times as you like and in any order. When we grade your assignment, we will consider the most recent version of each file submitted before the due date. If you get any errors while trying to submit your code, you should contact the course staff immediately.

Comment on your annotation

i really don't understand this???

Not Important

Annotations. Be sure to include //@requires, //@ensures, and //@loop invariant annotations your program. You should w documenting your code as y help you write code that is b

Style. Strive to write code descriptive variable names, etc. If you ?nd yourself writing handle that computation and good style is sure to earn ou or in salon if you're unsure o

#### **Image Manipulation Ov**

The three short programmin ulating images. An mage will be stored in a one-dimensional array of integers, where each integer is a 32-bit value representing one pixel of the image. Pixels are stored in the array row by row, left to right starting at the top left of the image. For example, if a 5 × 5 image has the following pixel "values":

Important

Location specific questions

Personalized and precise responses

You can submit files as many times as you like and in any order. When we grade your assignment, we will consider the most recent version of each file submitted before the due date. If you get any errors while trying to submit your code, you should contact the course staff immediately.

Annotations. Be sure to include //@requires, //@ensures, and //@loop invariant

annotations in your program. You should than after you're done: documenting you what it should be doing, and thus help y

e level, use

Clear Save

e with comments,

arate function to

hen we grade it, and

cademic.cs.15-122)

tyle, Strive to write code with good st ve variable names, ke should write a separate function to hance it. We will read your code when we grad graces. Feel free to ask on the course bt unsure of what constitutes good style.

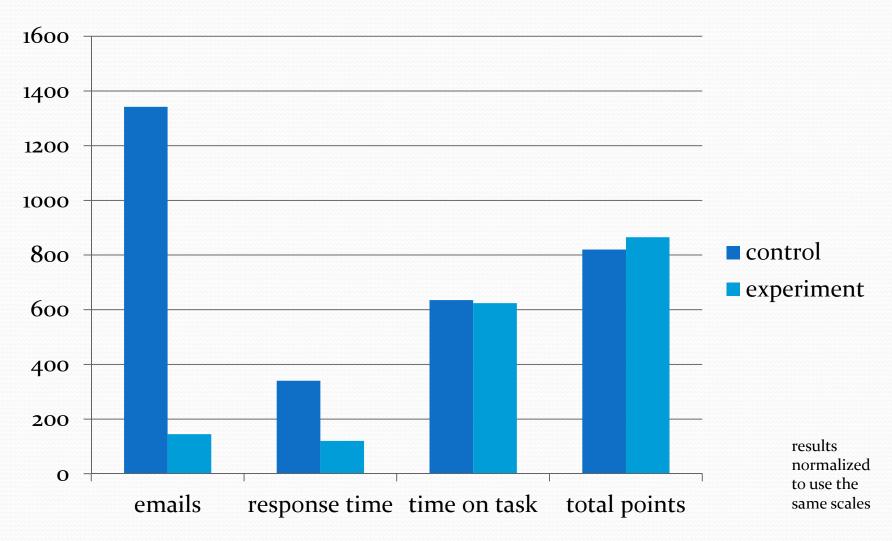
#### **Image Manipulation Overview**

The three short programming problems y manipulating images. An image will be st each integer is a 32-bit value representii array row by row, left to right starting at the top left of the image. For example, if a  $5 \times 5$ 

i really don't understand this??? this means you have to write contracts Tag: General Edit Your Comment



# Early results



Studies partially funded by National Science Foundation and Gates Foundation

# Data from S12 pilots

- 1500+ students
- 1000 annotations/comments per day
- 60% of the comments are questions
- 20%-40% of students use tags to communicate with instructor
  - This passage confuses me
  - Can you give another example of this
  - Will this be on the test
  - Where can I find more information on this

# What we are working on...

## Research based evidence

## Evidence for a Collective Intelligence Factor in the Performance of Human Groups

Anita Williams Woolley, 1\* Christopher F. Chabris, 2,3 Alex Pentland, 3,4 Nada Hashmi, 3,5 Thomas W. Malone 3,5

Psychologists have repeatedly shown that a single statistical factor—often called "general intelligence"—emerges from the correlations among people's performance on a wide variety of cognitive tasks. But no one has systematically examined whether a similar kind of "collective intelligence" exists for groups of people. In two studies with 699 people, working in groups of two to five, we find converging evidence of a general collective intelligence factor that explains a group's performance on a wide variety of tasks. This "c factor" is not strongly correlated with the average or maximum individual intelligence of group members but is correlated with the average social sensitivity of group members, the equality in distribution of conversational turn-taking, and the proportion of females in the group.

s research, management, and many other kinds of tasks are increasingly accomplished by groups—working both faceto-face and virtually (*I*–3)—it is becoming ever more important to understand the determinants of group performance. Over the past century,

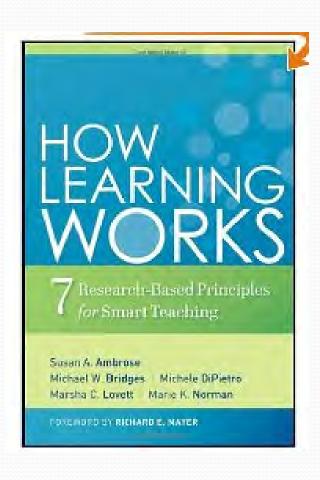
psychologists made considerable progress in defining and systematically measuring intelligence in individuals (4). We have used the statistical approach they developed for individual intelligence to systematically measure the intelligence of groups. Even though social psychologists and others have studied for decades how well groups perform specific tasks (5, 6), they have not attempted to measure group intelligence in the same way individual intelligence is measured—by assessing how well a single group can perform a wide range of different tasks and using that information to predict how that same group will perform other tasks in the future. The goal of the research reported here was to test the hypothesis that groups, like individuals, do have characteristic levels of intelligence, which can be measured and used to predict the groups' performance on a wide variety of tasks.

Although controversy has surrounded it, the concept of measurable human intelligence is based on a fact that is still as remarkable as it was to Spearman when he first documented it in 1904

<sup>&</sup>lt;sup>1</sup>Camegie Mellon University, Tepper School of Business, Pittsburgh, PA 15213, USA. <sup>2</sup>Union College, Schenectady, NY 12308, USA. <sup>3</sup>Massachusetts Institute of Technology (MIT) Center for Collective Intelligence, Cambridge, MA 02142, USA. <sup>4</sup>MIT Media Lab, Cambridge, MA 02139, USA <sup>8</sup>MIT Sloan School of Management, Cambridge, MA 02142, USA.

<sup>\*</sup>To whom correspondence should be addressed. E-mail: awoolley@cmu.edu

## Applying what we know about learning



How Learning Works: Seven Research-Based Principles for Smart Teaching (Jossey-Bass Higher and Adult Education) [Hardcover]

Susan A. Ambrose (Author), Michael W. Bridges (Author), Michael DiPietro (Author), Marsha C. Lovett (Author), Marie K. Norman (Author), Richard E. Mayer (Foreword)

Eberly Center for Learning Carnegie Mellon University

# What we are working on...

- Develop and integrate task models for salon
- Develop and integrate engagement models in learning
- Simplification of UI
- Custom task based interfaces
- Custom "analytics" modules

## Thanks to

- National Science Foundation
- Bill and Melinda Gates Foundation
- Innovation Works
- Heinz Foundation
- Department of Labor
- Carnegie Mellon University
- University of Wisconsin Milwaukee
- Ithaca College
- Grove City College
- And many others

## Thank you

## http://classroomsalon.org

registration code: popcity

guna@cs.cmu.edu