



Language  
Technologies  
Institute

Carnegie  
Mellon  
University

# Artificial Social Intelligence (11-866)

## Lecture 1: Introduction

Louis-Philippe Morency and Paul Liang

## Your Instructors This Semester (11-866, Spring 2023)

---



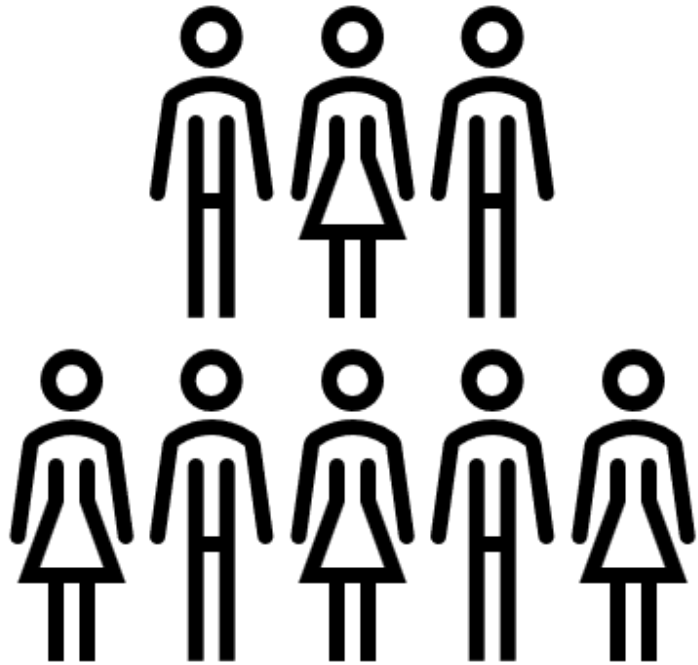
**Louis-Philippe Morency**  
[morency@cs.cmu.edu](mailto:morency@cs.cmu.edu)  
Course instructor



**Paul Liang**  
[pliang@cs.cmu.edu](mailto:pliang@cs.cmu.edu)  
Course instructor

# Time for Introductions!

---



Your name, department and programs

Your previous research experience  
related to *artificial social intelligence*

Why are you interested in this course?

# What is Social Intelligence?

# Artificial Social Intelligence

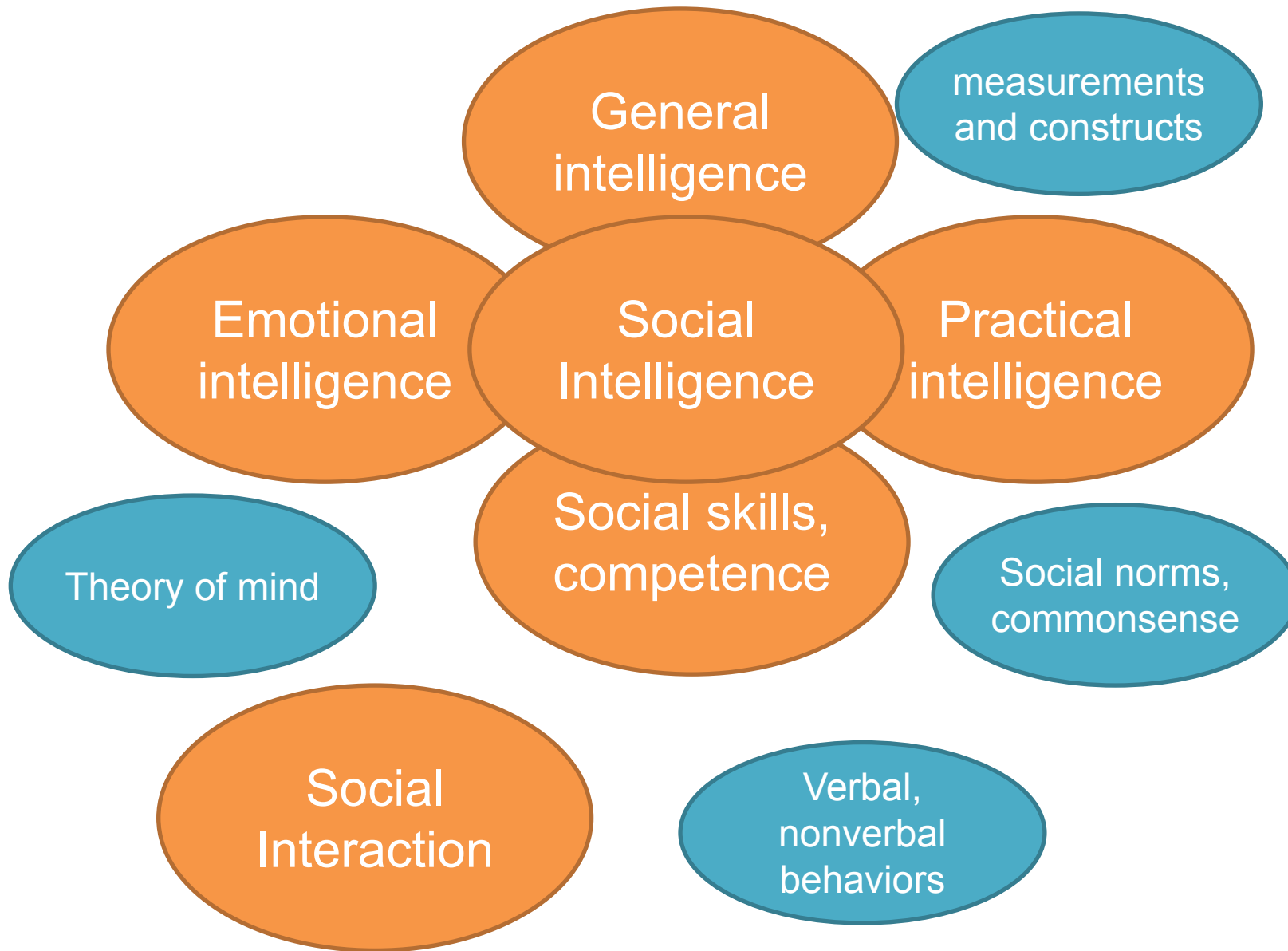
---

What is different between Social Intelligence and Artificial Social Intelligence?

Artificial Social Intelligence same as Social AI?

What are the core technical challenges in Artificial Social Intelligence?

How to make progress towards this goal?  
How to evaluate progress?



Psychology

Philosophy

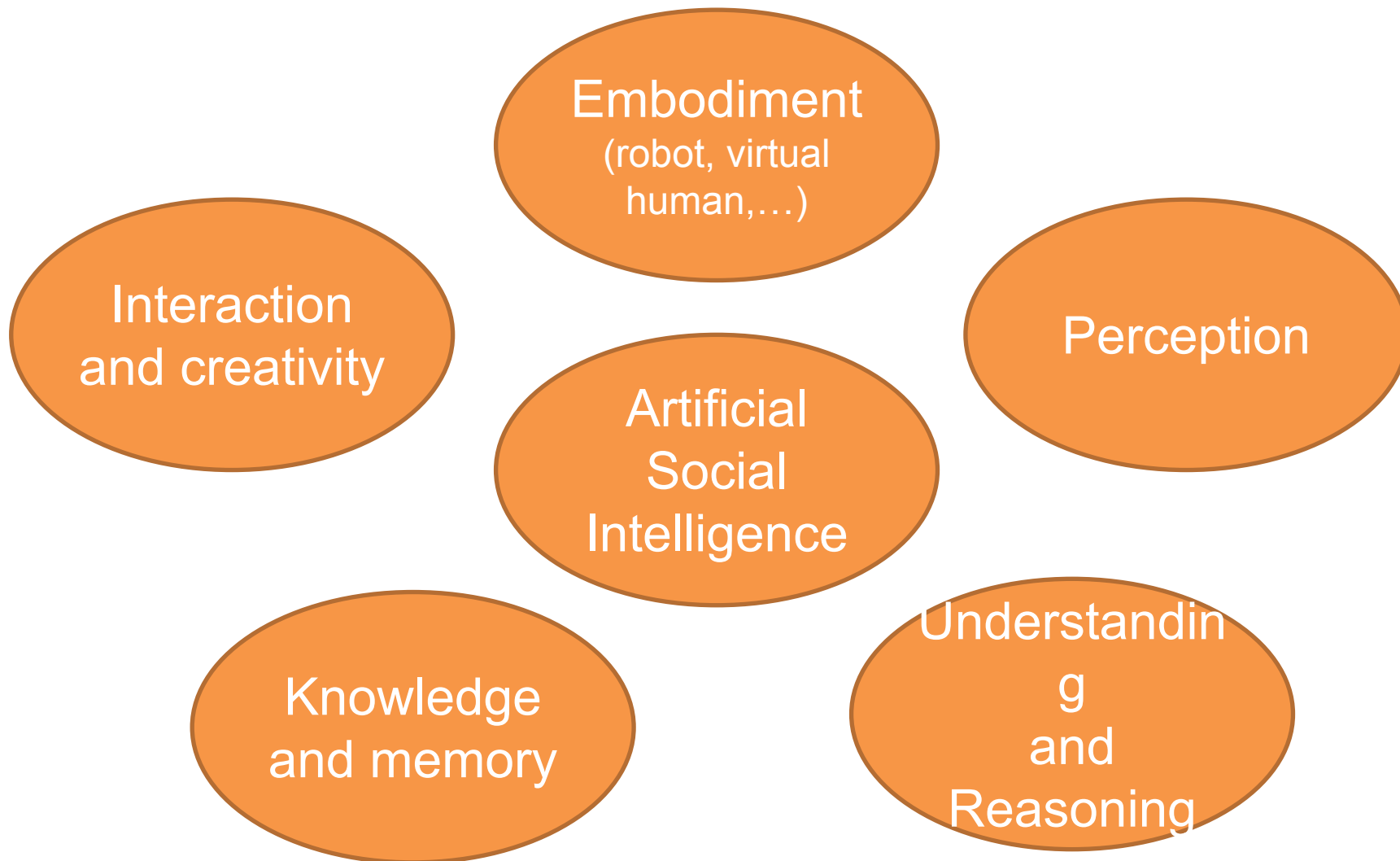
Psychometric

Neuroscience

Psycholinguistics

Communication

⋮



Machine learning

Computer vision

Natural language processing

Robotics

Speech processing



# Course Syllabus

---



# Learning Objectives

---

- 1 Study previous literature related to social intelligence
- 2 Improve critical and creative thinking skills
- 3 Understand future research challenges in social intelligence
- 4 Explore new research ideas in artificial social intelligence

# Course Topics *(subject to change, based on student interests and course discussions)*

---

## Week 2 (1/27): **Social intelligence**

- Intellectual abilities, definitions of SI, constructs and psychometry

## Week 3 (2/3): **Social skills and competence**

- Abilities vs skills, declarative and procedural social knowledge

## Week 4 (2/10): **Emotional intelligence**

- Constructs of emotional intelligence, models of human emotions

## Week 5 (2/17): **Social norms and commonsense**

- Social and cultural norms, moral values, practical intelligence

## Week 6 (2/24): **Social interactions and human communications**

- Verbal and nonverbal behaviors, turn-taking, lens model

## Week 7 (3/3): **Interaction analysis and theory of mind**

- Multiple perspectives, beliefs, intents, dyadic and group interactions

## Course Topics *(subject to change, based on student interests and course discussions)*

---

Week 8: *no classes – Spring break*

Week 9 (3/18): **Artificial social intelligence**

- Social robots, virtual humans, embodiment

Week 10 (3/25): **Modeling social perception**

- Social signal processing, synchrony, multimodal perception

Week 11 (4/1): **Modeling social understanding and reasoning**

- Dialogue systems, multi-party, artificial theory of mind

## Course Topics *(subject to change, based on student interests and course discussions)*

---

*Week 12: No classes – CMU carnival*

Week 13 (4/15): **Modeling social knowledge and memory**

- Multiple perspectives, beliefs, intents, dyadic and group interactions

Week 14 (4/22): **Creativity and generating social behaviors**

- Social signals and actions, trust, relationships, rapport

Week 15 (4/29): **Report presentations**

- Short report (6-credit) and course project (12-credit) presentations

## Two Versions: 6-credits and 12-credits

---

- 6-credit version:
  - Reading assignments
  - Small group discussions
  - Synopsis leads
- 12-credit version
  - Same 6-credit expectations + a high-quality research project:
    - Proposal with literature review
    - Midterm and final reports
    - Bi-weekly updates



# Reading Assignments

---

- Three main parts:
  - **Paper scouting:** Scout for extra papers, blog posts or other resources related to these question probes
  - **Reading notes:** Read the assigned papers and summarizing the main take-away points of each paper
    - Optional: if you have clarification questions about the papers
  - **Discussion points:** Reflect on the question probes related to the reading papers and prepare discussion points.
- 12 readings assignments, with usually 2 required papers and some suggested (but optional) papers

## How Each Weekly Class will Happen

---

- Joint portion (about 15 mins)
  - Short presentation presenting the scouted papers and answering student questions about the required papers
- Separate discussion groups (about 1 hours)
  - Two groups of 8-10 students, one instructor per group
  - Round-table discussions: Discuss the research question probes. Each student is expected to actively participate in this discussion.
  - Two note-takers per discussion groups (alternating note-taking)

# Discussion Roles

---

## Reading leads (1 per discussion group, 2 total per week):

1. Short presentation (10-15 mins)
  - a) Answer questions from other students
  - b) Summarize scouted papers
2. Help with note-taking during discussions

## Synopsis leads (1 per discussion group, 2 total per week):

3. Note taking during discussions
4. Prepare discussion synopsis
  - a) Summarizing the main discussion points
  - b) Overview schema, table or figure



## What Weeks Would you Prefer to Lead?

---

Week 2 (1/27): **Social intelligence**

Week 3 (2/3): **Social skills and competence**

Week 4 (2/10): **Emotional intelligence**

Week 5 (2/17): **Social norms and commonsense**

Week 6 (2/24): **Social interactions and human communications**

Week 7 (3/3): **Interaction analysis and theory of mind**

Week 9 (3/18): **Artificial social intelligence**

Week 10 (3/25): **Modeling social perception**

Week 11 (4/1): **Modeling social understanding and reasoning**

Week 13 (4/15): **Modeling social knowledge and memory**

Week 14 (4/22): **Creativity and generating social behaviors**

# Grading Scheme for 6-credit Version

---

- Reading assignments 40%
  - 4 points per assignment
  - Top 10 scores kept for final grade
- Participation and discussions 40%
  - 4 points per discussion session
  - Top 10 scores kept for final grade
- Reading and synopsis leads 20%
  - Reading leads: 5 points for each presentation (including note-keeping)
    - Top 2 scores are kept for final grade
  - Synopsis leads: 5 points for each synopsis (including note-keeping)
    - Top 2 scores are kept for final grade

## Research Course Project (12-credit version)

---

- ✓ Similar in spirit to a 6-credit independent study project
- ✓ Project teams of 2 or 3 students
- ✓ Final report like a research paper
- ✓ Expected to explore new research ideas
- ✓ Regular meetings with instructors

## Course Project – Potential Directions

---

- ❑ Dataset, evaluation task and baseline models
- ❑ Computational analysis of social data
- ❑ Building a social agent
- ❑ Technical novelty in social intelligence modeling

**But let's be realistic!**

14 weeks, about 6 hours per week, 2-3 teammates

## Bi-weekly Project Meetings and Updates

---

- Required meetings on a bi-weekly basis
  - About 20 minutes per meeting, usually on Thursdays or Fridays
  - Primary mentor (Paul or LP) for each team
- Bi-weekly written updates
  - Either Google Slides (preferred) or Google Docs
  - Due Tuesdays at 9pm before the meeting (due Monday 9pm for reports)
  - Some expectations for each bi-weekly update (see next slide)
- Alternate weeks: optional meetings with either mentor
  - Sign-up website for meetings with either LP or Paul
  - No written update required, but suggested



## Schedule for Bi-Weekly Written Updates and Reports

---

- Week 3: pre-proposal details with initial literature review
- Week 5: **Proposal report:** literature review + research ideas
- Week 7: Initial results for your research ideas
- *Week 8: Spring break (no meetings, no work, relax 😊)*
- Week 10: **Midterm report:** first complete round of results for idea
- Week 12: Updated results for research idea
- Week 14: Error analysis, visualizations and discussions
- Week 15:(Friday 4/28) Poster presentations
  - Tuesday 5/2 at 9pm: **final report**

## Course Project Timeline

---

- **Project preferences** (Due Tuesday 1/24 at 9pm ET) –share your interests about research projects, to help with team matching.
- **Pre-proposal** (Due Tuesday 1/31 at 9pm ET) – You should have selected your teammates, have ideas about your dataset and task.
- **Proposal and Literature Review** (Due Monday 2/13 at 9pm ET)  
–Research ideas, review of relevant papers and initial results
- **Midterm report** (Due Monday 3/20 at 9pm ET) – Intermediate report documenting the updated results exploring your research ideas.
- **Final report** (Due Monday 5/2 at 9pm ET) – Final report describing explored research ideas, with results, analysis and discussion.

## Grading Scheme for 12-credit Version

---

- Grading breakdown of the 6-unit version will be scaled to 50%.
- The second 50% comes from the course project:
  - Proposal report 10%
  - Midterm report 20%
  - Final report 30%
  - Final presentation 10%
  - Bi-weekly written updates 30%
    - 10 points per update, top 3 scores kept for final grade (out of 4 updates)



## Absences and Late Submissions

---

- Lectures are not recorded, students expected to attend live
  - If you plan to miss more than one lecture this semester, let us know as soon as possible.
- Reading assignment wildcards (3 per students)
  - 24-hours extension, max 1 per week
- Project assignment wildcards (2 per teams)
  - 24-hours extension, can be used together

# Course Websites

---

- Piazza
  - For course announcements and assignments  
<https://piazza.com/cmu/spring2023/11866/info>
- CMU Canvas
  - For assignment submissions and grading  
<https://canvas.cmu.edu/>
- Course website
  - A general public version of the course information
    - Discussion synopsis will be posted here  
<https://cmu-multicomp-lab.github.io/asi/spring2023/>

## Assignments for This Coming Week

---

### Week 2 reading assignment (Due Wednesday 1/25 at 9pm ET)

- Detailed instructions will be posted on Piazza
- Only one required paper this week:
  - Kihlstrom and Cantor, **Social Intelligence**, *chapter in Cambridge Handbook of Intelligence*, 2020 [[link](#)]

### For students taking the 12-credit version:

- Project preference form (Due this Tuesday 1/24 at 9pm ET)
  - To help with team matching
  - Google Form will be shared on Piazza