

Main Semester-Long Project

Teams of three students

Combinations across sections are OK

- ▶ Problem
 - ▶ Interesting to you
 - ▶ Some prospect of being useful broadly
 - ▶ Needn't be new but may have a new twist on an old problem
- ▶ Envisioned software artifacts
- ▶ Underlying sources of knowledge
 - ▶ Lexicons or location services
 - ▶ Software libraries
 - ▶ Datasets for evaluation
 - ▶ Way to have humans help evaluate
- ▶ What you will contribute to the world's body of knowledge?

Software Artifact

Not needed in detail in the early report

- ▶ High-level view of your method
 - ▶ Identify what knowledge is needed to carry out the method
 - ▶ Identify what knowledge is available
- ▶ Processing “pipeline” or graph
 - ▶ Main components, ideally mostly based on existing libraries
 - ▶ What *you* will *add* to complete the artifact
- ▶ Don't get stuck in product-like details

Scientific Thinking

Critical thinking going beyond the artifact

- ▶ What do we learn from the exercise?
- ▶ What reusable knowledge will you create?
- ▶ State hypotheses that relate to the main topic
 - ▶ One or more about the quality of your solution
 - ▶ One or more about the effectiveness of specific components in your approach
- ▶ Describe how you will evaluate these hypotheses

Hypotheses and Evaluation

The nature of the evaluation depends on the specific hypothesis being evaluated

Hypothesis \neq assumption

- ▶ Should be interesting in that an answer would affect how future developers would solve their problems
- ▶ Should nontrivial and nonobvious
- ▶ A comparative framing helps
 - ▶ Vary the nature and amount of input (data or supervision)
 - ▶ Vary the methods
- ▶ Good to identify one or more baselines (\approx prior methods)
- ▶ In typical artifacts, multiple components (or capabilities) make it difficult to figure out the relative importance
 - ▶ Ablation studies: consider the components and capabilities separately

Immediate Actions for Students

- ▶ Look ahead in the course schedule
 - ▶ You don't need to read up in detail
 - ▶ Try to get a sense of what topics are relevant to this course
- ▶ Look at what kinds of research are showing up
 - ▶ Google Scholar may be easiest to search
- ▶ Identify some themes that you find interesting
- ▶ Identify project partners
 - ▶ Use the themes to find like-minded people
 - ▶ Discuss working styles and schedules for compatibility
 - ▶ Discuss how hard they and you will work on the project
- ▶

Project Topic Ideas for Social Computing

Just meant to stimulate your imagination

- ▶ Social computing technologies to identify and promote
 - ▶ Emergence of or changes in social norms
 - ▶ Diffusion of ideas and innovations
 - ▶ Identifying proximal social activities from phones (and sensors)
- ▶ Swarms
- ▶ Negotiation
 - ▶ Especially, from a human angle
- ▶ Social apps or agent-based social simulations
 - ▶ Social distancing, e.g., in park usage
 - ▶ Health behaviors
 - ▶ Cooperative ride sharing or electric vehicle charging
 - ▶ Promoting proximal social activities such as walking or eating
- ▶ Competitions relating to multiagent systems technologies
 - ▶ Negotiation: look for ANAC
 - ▶ Robocup soccer teams