Week 3: Social Skills and Competence

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Summary: Artificial social intelligence refers to the domain of research to understand human intelligence specifically adapted and applied to social interactive scenarios and to engineer artificial agents that mimic similar cognitive and behavioral actions in the process. Among relevant constructs, social skills and social competence top the list of attention for relative ease in definitive clarity and measurement. They constitute an applied embodiment of the abstract concept of social intelligence in specific contexts, but are also complex integration of various declarative and procedural knowledge. Therefore, it is comparatively easier to devise response-eliciting event-specific tests for measurement, and the results indirectly reflect the level of social intelligence in return.

During Week 3's discussion session, the class extends a broad discussion on the definition of social skills and competence, the relation and difference between them (specifically against social intelligence), how to generalize relevant constructs into Artificial Social Intelligence (*abbreviated as ASI* hereafter), as well as the challenges in relevant research, measurements and ethical consideration.

Research and Discussion Probes It is encouraged to cover the following probes for both reading and discussion on this topic:

- How would define the concepts of social skills and social competency? How does social intelligence relate to these concepts (social skills and competency)? What aspects of the proposed definitions most resonated with you? Will these definitions of social intelligence generalize to artificial social intelligence?
- Would it be best to study "artificial social skills and competency", instead of "artificial social intelligence"? Do you see both concepts working together? What are the main differences? Which one should we prioritize?
- Can someone create a list of all social skills? What would this taxonomy look like and how can we validate it? Will the same taxonomy of social skills also apply to artificial social intelligence technologies?
- Social skills and competency are often discussed in relationship with human personality traits. Should we think of social skills as long-term traits, or more shorter-term? More contextualized? Are they learned or innate?
- Start thinking on how we can build a framework that integrates social intelligence, social skills and social competency? How to evaluate such a framework? How to study this very large problem of artificial social intelligence systematically, over many years? What would be your proposed research agenda?

Relevant Readings

1. (Required) Social Intelligence and Competency [Weis and Conzelmann, 2015]: While social intelligence was already discussed in Week 2, it is a useful paper to relate social intelligence and social competence, also related to social skills.
2. (Required) Two Meanings of "Social Skills": Proposing an Integrative Social Skills Framework [Heggestad et al., 2023]: Read the Social Skills Framework with open-mind, knowing that this is a very recent framework, not yet fully validated. But this framework addresses many important issues related to social skills.
3. (Suggested) Taking Skills Seriously: Toward an Integrative Model and Agenda for Social, Emotional,

and Behavioral Skills [Soto et al., 2021]: Discusses the importance of studying social, emotional and behavioral skills. Relationship to personality traits should be noted. Table 1 nicely summarizes the main message of the paper.

4. (Suggested) Social Effectiveness in Organizations: Construct Validity and Research Directions [Ferris et al., 2002]: While the umbrella term "social effectiveness" may not be broadly used, this paper does a great job of discussing many topics related to social intelligence, including social skill, social competence, and interpersonal intelligence.

5. (Suggested) Towards an Integrative Taxonomy of Social-Emotional Competences [Schoon, 2021]: This paper is an example of an effort to create a taxonomy of social-emotional competencies. This paper comes from a more developmental perspective (children development).

We have selected a number of articles that extend the discussion with technical modeling and experimentation from the scouted materials list:

1. Social Interactions as Recursive MDPs [Tejwani et al., 2022]
2. Giving robots social skills [Zewe, 2022]
3. Challenges in Building Intelligent Open-domain Dialog Systems [Huang et al., 2020]
4. Can a Robot Lie? Exploring the Folk Concept of Lying as Applied to Artificial Agents [Kneer, 2021]

1   Social Skills and Competence: Definitions and Comparison

Both required readings offer distinct perspectives in defining social skills and social competence. Summed up briefly, **social skills** are *concrete actions or applications of cognitive operations on concretely defined problems.* From an enactment perspective, social skills refer to how motivated subjects (the actor) *chooses social goals and engages in behaviors in pursuit of those goals*, while from a reputation perspective, engaged subjects (the other) *hold views about the Actor's social skills* which form the social skills reputation. For **social competencies**, though the term is often used interchangeably with *social intelligence*, it stresses more on *context-specificity*, and is considered *more subject to modification and learning*, compared to the relatively *more stable and hereditary* intelligence.

There was a mixture of agreement and supplementation to the current definitive structure. Skills and competencies are interrelated concepts and provide fundamentals to what it means to be socially functioning. It is difficult to make clear boundaries between the concepts since they are innately dependent on each other. In our discussion, we try to differentiate the two concepts in an attempt to shed light on understanding the building blocks of human society.

General comparison   The group agreed on the definition of social skills as the concrete application of context-specific social knowledge. This definition stresses the actionable nature of the skills. What is valued is the ability to use social skills instead of being knowledgeable about social situations. Competence is related to skills in the sense that it is also context-dependent. However, it differs from the skills in that it can change over time.

Specific attributes of social skills   When further enriching the definition or enumerating specific examples of social skills, the class finds the following attributes helpful to consider: (1) temporal duration; (2) whether and how is the skill object-driven; (3) complexity of interaction; and potentially (4) how easy to achieve corresponding goals, etc.

It can also be helpful to build from the "social cognitive abilities, knowledge, behavioral and cognitive skills" breakdown of intellectual resources [Weis and Conzelmann, 2015], which switches the lens to a bottom-up logic that clearly illustrates atomic abilities categorized from the knowledge view of social intelligence.

Differentiating and uniting the enactment vs. reputation perspectives   Based on the Social Skills Framework (abbreviated as SSF hereafter) [Heggestad et al., 2023], the class mostly agrees that the difference can be drawn from the *source of motivation*: Social skills enactment considers the Actor to be more driven by personal goals (which tend to be more individually facilitated and less focused on social contexts), while social

skill reputation offers feedback to the Actor from all the Other (social agents) involved in the same social context that indirectly facilitates the Actor to adopt certain decisions just to ensure an aimed achievement of personal image in certain social relations. In this sense, social skills enactment may be regarded as a subset of social skills reputation where the Actor considers internal feedback as its target audience.

2 Relation to Other Social Constructs

2.1 Social Intelligence

The characteristic of social intelligence that is different from skills and competences is that it is a general and cross-context ability. The consistency across contexts makes it a person's trait that resides in individuals. It is something that cannot be manipulated through interactions.

Intelligence vs. Competencies When differentiating intelligence and competency, people have approached similarly as they did when differentiating skills and competencies: figuring out the hierarchical relationship between the concepts. One person pointed out that competency constitutes intelligence. In this sense, intelligence is a meta-level ability to detect and switch competencies depending on the situation. This point was extended to the question of learnability. It is mentioned that social intelligence is a teachable concept. An example could be found in children with an autism spectrum disorder or ADHD learn how to respond to diverse situations. The fact that they perform well in the learned social situation reveals that social intelligence is teachable. One refutation was that not social intelligence consists of many different parts such as knowledge and perception, and it is only a part of it which is learnable. This discussion led to categorizing the constituents of social intelligence. Social intelligence has two categories: fluid and crystallized. The fluid part refers to the malleable and teachable part and the crystalized not-learnable part like the meta-level ability to adapt to new situations. Some people raised concerns about the dichotomy by staying that the crystalized knowledge could also change over time.

2.2 Personality

Another related concept that was brought up to the discussion is personality. It is briefly mentioned that personality should be thought of a concept that is latent in people and should not be evaluated solely one what is revealed on a surface level. As it is too difficult to give a direct definition of personality, people started to think about this concept in relation to robots and artificial intelligence. One person mentioned the process of forming a personality from social interaction. It is mentioned that by having people giving different feedbacks to different robots (i.e. treating them differently), we could observe how different personalities emerge in different robots. One problem with this machine learning based approach is that the machine learning algorithms tend to pick up the average statistics of the data. Depending on the characteristics of the algorithms, the variation of personalities picked up by robots could be minimal.

2.3 Social Context

The discussion also elicits the concept of *social context*, to unite the Actor and the Other agents in SSF.

Group Personality In a specific social context, participants interact constantly to form what may be called *group personality*, (or *group dynamics*) that not only evokes Actor's self-regulatory process, but also dynamically adjusts Actor's social behavior and Other's social reputation update. This leads to an analogy of the general reinforcement learning structure, inspiring ASI to consolidate both Actors' and Others' social skills as policy, and the overall responses from the social context as the rewards from the environment. Simultaneously, group personality implicitly reflects the commonly accepted social norms, which can be crucial to Actor's goal formulation, social behavior decision and practical execution.

Social Behavior Some also argue that it is the social context that transforms the abstract social skills into concrete social behavior. In comparison, social skills reflect more about the *expected capacity and overall tendency* of fulfilling certain tasks, while social behavior stresses more on *exact execution of provisioned solutions in specific situations*, and is more prone to impacts from external factors.

Social Norms   Additionally, a specific social context facilitates the dynamic interaction of Actor and Other agents, hence forming the *social norms* as integrated behavioral regulations implicitly agreed by the majority. Weak situations allow free expression of Actor behavior, while strong situations indirectly prompt the Actor to adjust their enactment to conform to consensual behavioral constraint, in a way resembling the *gradient clipping* process.

3   ASI: Intelligence, Skills, and Competence

Upon understanding human social skills and competence as a down-to-event embodiment of general social intelligence, what are some research directions in ASI that leverage our understanding of social skills, competence, and intelligence?

3.1   Suggestions towards ASI research

Among relevant constructs, declarative skills are preferred to procedural skills due to descriptive clarity, but the measurements still remain hard because of subjectivity in human-labored assessment. In brief, the class comes up with the following suggestions:

1. Specify social skills as certain responses and actions in concrete situations;
2. Go from pure-machine simulation, to small-range beta tests within human participants, finally to broader applications within larger human audience;
3. Gradually expand the scale and modality of data upon achieving ideal outcomes with small-scale unimodality agents;
4. Artificial social skills can be indirectly reflected by human reactions from endorsement of atomic action to overall reputation ratings; it can be helpful to utilize counter-ratings (eg. *how bad an ASI agent's response or action is to human evaluators*) when direct positive ratings are too trivial to differentiate.

3.2   Understanding AI and human differences in social skills

Another interesting experiment is brought up over the comparison between AI-only, AI-human and human-only collaboration. In a collaborative game setting, AI agents seem to form certain collaboration tactics and perform noticeably better than the human-AI counterparts, both outpacing human-only players. This result not only partially proves the existence of ASI agents' collaborative skills, but also draws attention and challenges to interpret the disparity of social skills developed in humans and those embodied in AI.

3.3   Role of developers

Meanwhile, the class points out that the role and responsibility of AI developers can never be neglected, since they might introduce noticeable inductive bias, restrict the learning patterns of ASI agents or even steer ASI agents away from the anticipated and morally acceptable direction. The class agrees that such external impact is inevitable, as datasets used in training ASI are in nature an ensemble of the general public's ideology and ethics. Still, efforts are required to reduce relevant impacts.

Additionally, developers are expected to take into account the *average* user's expectation of ASI agents and beware of the *uncanny valley effects* when periodically reflecting on how powerful and vivid such agents are desired. In general, the class summarizes a few expectations for developers to consider when promoting the research and application of ASI:

1. Always consider the questions: How much social intelligence does an ordinary target user want out of my agent? Will it be too overwhelming if my agent becomes frighteningly human-like? Is a plain but functioning agent already acceptable to the majority of target users?
2. Answer such questions in a case-specific manner with consideration of cultural, social and economical status quo, as well as target users' mental stability, decision-making reliability and self-discipline level.
3. Stay neutral and appropriately optimistic before concretely trying out ASI products, and most vitally, be ethically and legally prepared for relevant liability issues when ASI agents make critical mistakes.

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