Please answer the following questions for the Reflection on Milestone 1 by replying to the thread.

* **When computer science meets economics**: Who do you truly want to become? Pick one of your favorite Nobel Prize winners (<https://www.nobelprize.org/>) and Turing Award winners (<https://amturing.acm.org/>). How do you want to contribute to the intersection of the two north stars to advance human civilizations?
* **CS&Econ for a Better Future**: How do you perceive the synergy between computer science and economics as a catalyst for steering innovation toward a brighter future? Please present a foundational assertion, followed by multiple specific instances that support your claim, including a reference to a topic discussed at the colloquium on Friday, March 22.
* **Beyond CS & Econ**: How are aspects of human nature, like bounded rationality, and pioneering technologies, such as generative AI, reshaping the dynamics between humans and AI agents in strategic contexts? Additionally, how might this interplay be perceived and conceptualized distinctively from current models? Address this inquiry by drawing upon the literature covered in our lectures and supplementary scholarly works, ensuring to include in-text citations and a comprehensive bibliography.

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I want to become someone who conducts original and inventive research that pushes the edge of a field of knowledge and breaks boundaries. Specifically, I want to develop economic and computational strategies to help people be more wise with their money. One of my favorite Nobel Prize recipients is Richard Thaler, as his research on the social and economic impacts of nudging have greatly reshaped how I think about setting routines and conditioning myself in daily life. While Richard Thaler’s research has profound impacts on economic theory and the impacts of markets, my takeaways were more focused on the subtle effects that I can make to encourage myself to be better. For example, a nudge that I often do is leave my gym shoes by my desk to encourage myself to workout or automatically deposit money into my bank account to save. One of my favorite Turing Award winners is Geoffery Hinton, as his research into the development of artificial intelligence (AI) is truly groundbreaking and has massive impacts on the world. In addition to designing the foundations of neural networks that held developed AI, Geoffery Hinton has become acutely aware of the social impacts from his technological development, and he has publicly warned about the risks associated with the rapid advancement and development of AI. Geoffery Hinton is a computer scientist with a strong moral consciousness, something that society needs as the impacts of technology grow increasingly more powerful. Modeling these two great thinkers, I want to use economics, social theory, and computer science to create a world where computers and the economy works to support society, rather than hinder it, and facilitate positive development around the world.

I see the overlap of computer science and economics as fundamental to the development of society, since the advancement of computers rely on economic rationality and computers are vastly reshaping the world. The most evident example of the overlap between computer science and economic rationality is the advancements in AI. As computer science has become advanced in simulating human behavior, core components of game theory have become essential to developing AI that can think and model human decision making (Shoham, 2008). In addition to game theory being the most advanced method of modeling human behavior, its quantifiable decision making calculus enables game theory logic to be programmed into AI systems. The synergies between game theory and computer science have existed historically, as the development of computer science and economics developed jointly occurred under the leadership of John von Neumann at Princeton (Shoham, 2008). At the panel, Greg Sun from Microsoft explained the interdependent relationship between the development of technology and economics, saying that innovation is necessary for business success. He gave examples of how breakthroughs in deep learning have macro and micro economic implications, providing a deeper understanding of customers and their needs. Innovation and computational advancements are necessary to maintain the competitive edge.

The use of game theory is paramount to the development of AI and cutting edge technologies. AI research involves multiagent learning, which is a concept derived from game theory, about how to optimize the learning/teaching process with multiple different variables (Conitzer, 2010). Furthermore, computer science and economic game theory can be used to test the epistemic assumptions of each model (Shoham, 2008). For example, a simple computer game automated character performs the same as basic rationality under the finite prisoner’s dilemma situation (Shoham, 2008). However, there are some instances in which Nash equilibrium from game theory is not reflected in computational models, such as multi-agent trading models. Therefore, the use of computer science and game theory can be reiteratively applied to test the validity of either theory.

Bibliography:

Conitzer, Vincent. 2010. “Making Decisions Based on the Preferences of Multiple Agents.” *Communications of the ACM* 53, no. 3 (March): 84–94.<https://doi.org/10.1145/1666420.1666442>.

Shoham, Yoav. 2008. “Computer Science and Game Theory.” *Computer Science Department, Stanford University,* April 18