1. Students register themselves on the website
   1. They need to select ***Age, Gender, Education Background,*** and ***Final Degrees Obtained***.
      1. *Age, Gender, Education Background,* and *Final Degrees Obtained* should be stored.
      2. *Group size* should be stored.
   2. They need to answer for several questions to examine psychological characteristics that may affect group decision making. [🡪 we need to find some critical factors]
2. Directions about the experiment are provided to the participants (See ***Direction*** in the below)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Human (Peers) | | Human + AI | | | | | |
| W/O Anchors | W Anchors | Fake AI | | | Real AI | | |
| W/O Anchors | W Anchors | | W/O Anchors | W Anchors | |
| W/O Perf Inf | W Perf Inf | W/O Perf Inf | W Perf Inf |
| Exp. No. | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] |
| Hijk | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| AITypeijk | N/A | N/A | 0 | 0 | 0 | 1 | 1 | 1 |
| Ancijk | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| PerInfijk | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

for individual *i*, team *j*, and decision *k,*

Hikj ( 0 = Human only; 1 = Others), AITypeikj (0 = fake AI; 1 = real AI),

Ancikj (0 = without anchors; 1 = with anchors),

PerInfikj (0 = without performance information of team members; 1 = with performance information of team members)

1. Students are assigned to at least 4-person teams. They have the following different experimental conditions, which should be stored in the database:
   * 1. Team membership of individuals (Teami) should be stored.
     2. Real AI recommends the values from pre-designed machine learning coding. These values should be stored.
     3. Experimental condition 1 (**[1], [2], Hijk = 0):** Participants can (or cannot) observe other team members’ decision makings. Once all team members complete their initial decision makings, team average values are shown on the screen.

1) [1] vs. [2] Examining the effects of multiple anchors and herding behaviors (whether participants that suggest later than the other(s) follow others or not)

* + 1. Experimental condition 2 (**[3], [4], Hijk = 1):** Participants can (or cannot) observe other team members’ decision makings. Once all team members complete their initial decision makings, *fake AI* recommendations (+/- 1% difference from team average values) are shown on the screen.

1) [3] vs. [4] Examining the effects of multiple anchors and herding behaviors (whether participants that suggest later than the other(s) follow others or not)

2) [1, 2] vs. [3, 4] Examining the effects of AI framing

* + 1. Experimental condition 3 (**[6], [7], Hikj = 1):** Participants can (or cannot) observe other team members’ decision makings. Once all team members complete their initial decision makings, real AI recommendations are shown on the screen.

1) [6] vs. [7] Examining the effects of multiple anchors and herding behaviors (whether participants that suggest later than the other(s) follow others or not)

2) [1, 2] vs. [3, 4] vs. [5, 6] Examining the effects of AI framing and effects of (dis) confirmation (whether AI not supporting initial group decision makings differentiate final decision makings) from real and fake AIs.

* + 1. Experimental condition 4 (**[5], [8], Hikj = 1):** Participants can observe other team members’ decision makings along with their prior decision performance. Once all team members complete their initial decision makings, real AI recommendations are shown on the screen.

1) [5] vs. [8] Examining the effects of (dis) confirmation (whether AI not supporting initial group decision makings differentiate final decision makings) from real and fake AIs.

2) [4] vs. [5] and [7] vs. [8] Examining the effects of decision makers’ performance information

1. 10 bitcoins (or etheriums) are allocated to each team at the beginning of the session.
   * 1. The time at the beginning of the session should be stored (*T\_Start*).
2. Each participant in a team suggests his/her expected price after and press the SEND button within 3 minutes.
   1. The *Time* (sec) to spend making each initial decision *j* (*T\_ IDijk*, for instance T\_ID*1..*) and the Price that the participants initially suggest should be stored (*SP\_IDijk*, for instance SP\_ID1..).
   2. *What if individuals miss their chance? Penalty at the individual and the team level!*
      1. Individuals will get a penalty per a missing decision when their teams are a winner and receive a bonus (their contribution will not be counted)
      2. If all participants within a team fails to predict and suggest initial prices, the team’s coin will not be sold (*Acq\_Dj = 0).*
3. Focal participants can identify ...
   1. Other team members’ **(individual)** value whenever other team members suggest **their values** to the system
   2. (For Experimental Condition 1 Only) Average recommended price of team should be calculated and presented, as soon as the last answer within a team per decision is suggested (*SP\_TIDjk*for instance SP\_TID1.).
   3. (For Experimental Conditions 2 ~ 4) AI recommendation should be presented, as soon as the last answer within a team per decision is suggested (*SP\_TIDjk*for instance SP\_TID1.).
4. Focal participants will have a chance to change their initial suggestion **within 30 seconds**.
   1. The YES/NO button should be **activated** once the last answers within a team are suggested, and team average (AI suggested) values are presented. (The team members that select NO should wait till other team members complete their pricing)
      1. Yes (*Swit\_Dijk* = 1) / NO ( = 0) should be stored.
      2. The Time (sec) that students spend for deciding and pressing the YES/NO button after starting this competition should be stored (*T\_SDijk*).
      3. Only if the participants who have pressed YES button, a final price text bar is activated.
   2. Individuals suggest a second price, and then press SUBMIT button
5. The *Time* (sec) elapsed for completing final decision *j* (*T\_ FDijk*, for instance T\_FD1..) and the Price that the participants initially suggest should be stored (*SP\_FDijk*, for instance SP\_FD*1..*).
6. For individuals that select No in 7-i (*Swit\_Dijk* = 0), *SP\_IDijk* = *SP\_FDijk*
7. In case that individuals miss their chance to revise their initial prices, the initial one will be used to calculate the team final prices (*SP\_IDijk* = *SP\_FDijk*)
8. Once all team members finalize their pricing, final average recommended price of team should be calculated and presented
   1. The Price that the teams finally suggest should be stored (*SP\_TFDj*for instance SP\_TFD1)
   2. If the final TEAM price (*SP\_TFDj*) is within a range of +/- 5% of the real price, the coin will be sold at the price (*SP\_TFDj = Acq\_Dj).* However, if the TEAM price is outside the range, the coin will be unsold (*Acq\_Dj = 0).*
      * 1. *SP\_TFDj* and *Acq\_Dj* should be stored.
   3. *Sum of Acq\_Dj* should be presented in The Amount of Cash You Have
   4. The number of bitcoins sold will be automatically deducted from the number of coins.
9. Once all team members completed the experimental session, participants need to answer for several questions that measure attitudes toward themselves, their decision, AI recommendations, and group decision makings.





**Direction**

Individuals in a team participate in a game in which they need to sell 10 bitcoins given to each team at a price agreed by team members (team average). They can sell only one coin at a time. Accordingly, they have 10 chances to sell their coins. In the game, individuals can suggest expected and desired prices two times: before and after recognizing their teams’ average price or AI suggested price.

Individuals need to suggest their own expected price based on their understanding of the market within 30 seconds. Once all team members complete to suggest their prices, individuals can see team average prices and/or AI suggested prices. Then, within a minute, they have a chance to revise their initial expected prices by clicking YES for the question “will you change your initial estimate?” on the screen and then they can suggest final expected prices. If individuals click NO on the screen, their initial expected price will used for the calculation of team average price.

When all team members complete to suggest their final expected prices, team average value will be calculated. If the team value is in the range of +/- 5% of the price at the time when team average values are calculated, the coin will be sold with the suggested price. If the price is outside the range, the coin will not be sold and teams’ cash settlement will fail. Over the 10 chances, the amount of cash only for the successful deals will be accumulated. Team performance will be counted based on the amount of cash that the team obtained. Based on the performance, team members can share their profits (accumulated cash they gain from selling the coins, divided by 1,000 and by the number of contributions (when participants miss their chance to suggest, the contributions will not be counted).

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of Document \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*