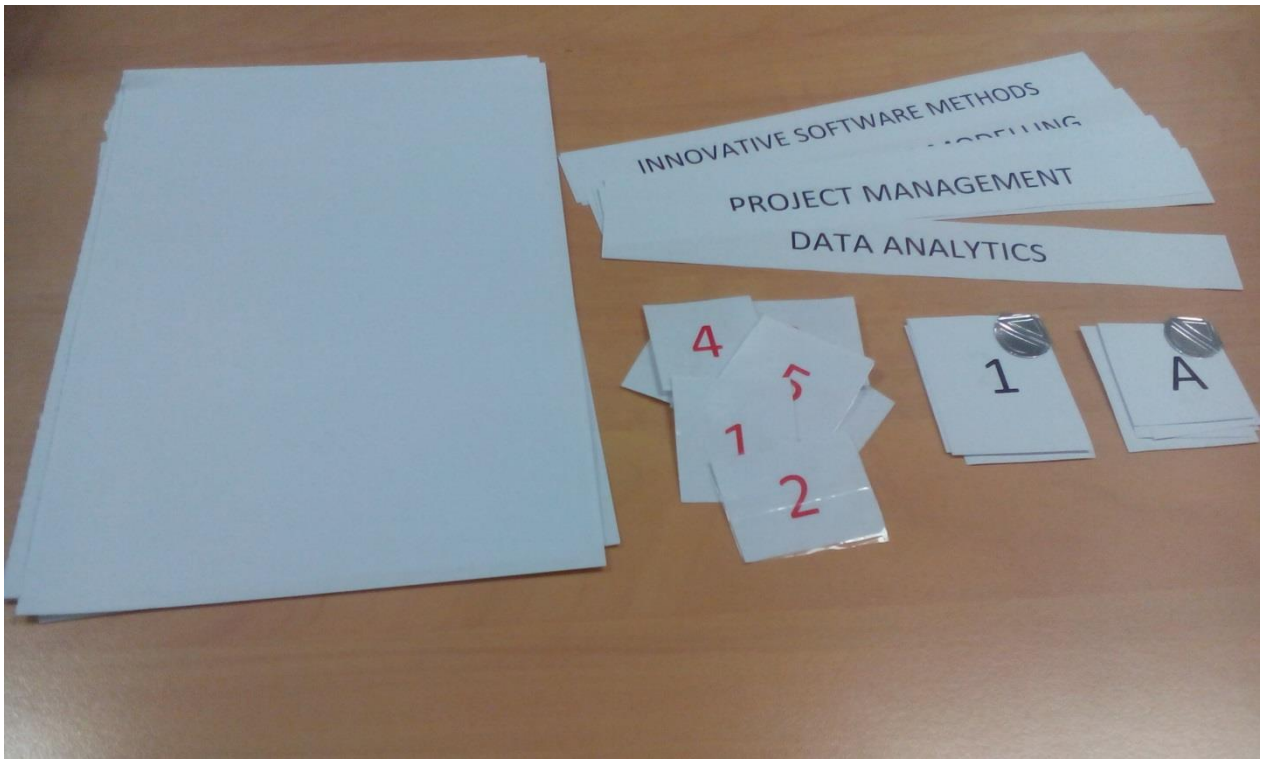
Humanizing Matching Algorithms

Gale-Shapley (Deferred Acceptance Procedure)

Material

- A piece of paper for each student
- *X* pieces of paper with names of course subjects (where *X* = #students/2), even better if they are actual courses the students are taking ☺
- *X* badges with numbers (1, 2, 3, …, *X*) and *X* badges with letters (A, B, C, …)
- *X* red coins with numbers (1, 2, 3, …, *X*)



Procedure

- Divide the students into two groups of equal size (the organizer can participate if the number is odd, so that everyone will be matched)
- One group is the **teaching assistants (TA)**, the other group is the **teachers**
- Each **teacher** is given one course subject, and one badge with a letter

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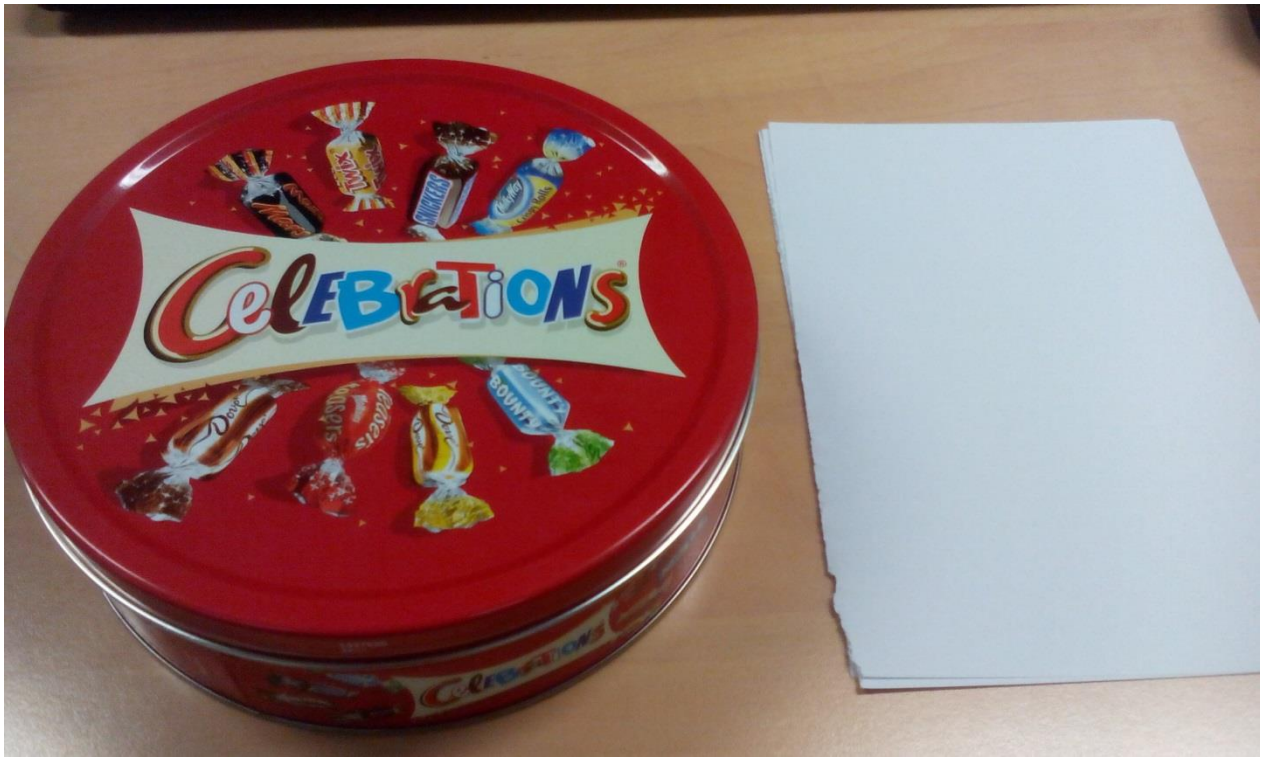
- Each **TA** is given one badge with a number, and its corresponding coin
- All students (**TAs and teachers**) write down their individual preference ranking over the agents in the other group on their piece of paper
- Each **TA** gives their coin to their most preferred teacher
- Each **teacher** chooses, among the coins they have received, the one that they like the most, and give back the other coins to their owners
- Each **TA** that still has their coin chooses the next best teacher in their ranking (who did not reject them already) and gives them the coin, and so on, until all teachers have a coin

Top-Trading Cycles

Material

- A box of candies or chocolates of *Y* different types (e.g., Twix, Bounties, Mars, Snickers, …)
- A piece of paper for each student



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Procedure

- Divide the students into some groups of size *Y* (each group will be an independent market, and they will work in parallel)
- All students write down their individual preference ranking over the *Y* types of candies on their piece of paper
- The organizer gives to each student one candy randomly chosen from the box, in such a way that in all groups the *Y* different candies appear once
- Each student looks at the candy they were given and at their preference ranking and they point with their hand to the person (possibly themselves) who owns their favorite candy
- Whenever there is a cycle, the students swap their candies. If the cycle involves more than 2 people they go "backwards" with respect to their hands: they *receive* the candy of the person they are pointing to
- Students who were in cycles leave the group/market, with their candies
- Students still in the market delete from their rankings the candies that left, and they point to their new top choice, and so on, until everyone leaves

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