

# TeamMaker

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## Introduction

Our project, TeamMaker, aims to simplify and streamline the team formation process. Throughout this summer, we have dedicated our efforts to developing match-making software that will greatly facilitate this process. When it comes to forming a good team, there are several factors to consider. Firstly, the size of the teams plays a crucial role. Secondly, it is important to take into account the skill level of each individual. Thirdly, it is beneficial for everyone's experience to collaborate with different people, as working with the same individuals repeatedly can become monotonous. Lastly, we must be mindful of the fact that sometimes individuals may not want to work together in order to avoid potential conflicts. With TeamMaker, we aim to address these considerations and make team formation a more efficient and harmonious process.

## Unique Features

TeamMaker empowers individuals by providing a range of features that make team formation effortless and effective. TeamMaker enables people to:

- **Customize Team Size:** TeamMaker allows users to tailor team sizes according to their specific needs, ensuring optimal collaboration and efficient task allocation.
- **Harness Individual Skills:** With TeamMaker's skill profiling capabilities, users can leverage the expertise and proficiency of team members, ensuring a well-balanced and capable team. This can be accomplished with one of three algorithms that maximize for (a) ranking similarity within groups, (b) average ranking between groups, or (c) matching highly ranked participants with groups that can benefit from their expertise.
- **Embrace Diversity and Fresh Collaborations:** By tracking past partnerships, TeamMaker avoids old pairings and actively encourages new partnerships, fostering a dynamic and diverse team environment. By continually interacting with new people on new projects, participants learn flexibility, understanding, and perspective in team environments from a broad set of angles.
- **Conflict Mitigation:** We understand that conflicts can arise in team settings. Therefore, TeamMaker provides a feature to address and mitigate conflicts, which allows the user to preempt specific partnerships from being made in the event that two participants find they can no longer work together. This ensures a discrete way to facilitate smoother team interactions.

By utilizing the features of TeamMaker, individuals can easily navigate the complexities of team formation and achieve remarkable results through seamless collaboration and effective teamwork.

## Tool Comparison Overview

Tools	Group Flexibility	Rate-based Pairing	Partnership Tracking	Special Cases
TEAMAKER	✓	✓	✓	✓
keamk	✓	✓		
COMMENT PICKER RANDOM TEAM GENERATOR	✓			
Picker Wheel	✓			
Random Lists	✓			

Figure 1. Comparative Assessment of Team Generating Tools

## The Website



Figure 2. The typical workflow of building teams using the web interface.

## Algorithms

### Equal Team Member Rankings

Group participants with others who fall within a similar ranking category (a 5-rank person may be paired with a 3-rank person, but not a 1-rank person).

### Balanced Rankings

Group participants by balancing their rankings (all groups have a very similar average ranking among their members).

### Leaders

Groups are built by distributing high-ranking participants as evenly as possible across the specified number of groups.

## Algorithm Basics

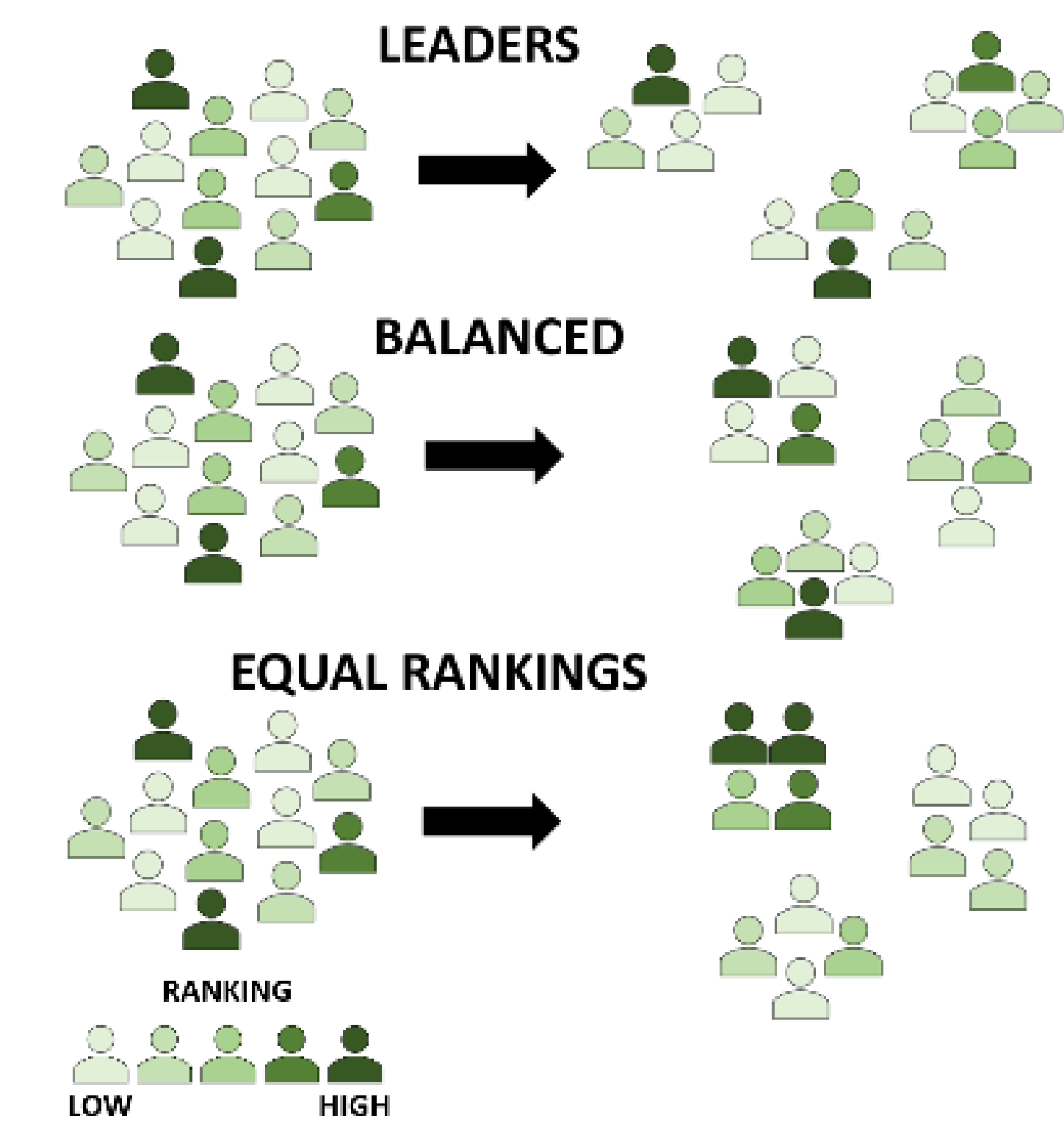


Figure 3. Each algorithm maximizes for a different objective. **LEADERS** splits the highest-ranked participants among groups. **EQUAL RANKINGS** groups participants with others of a similar ranking. **BALANCED** assigns groups such that there is little deviation between the within-group average rankings.

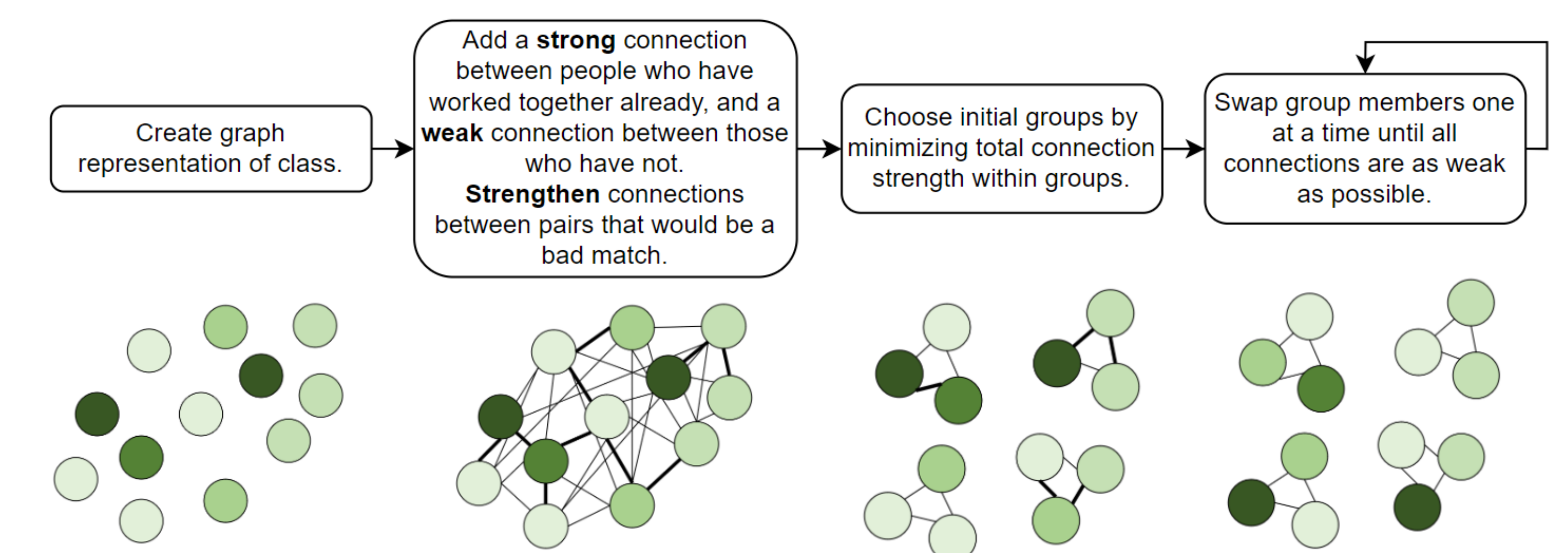


Figure 4. This work is about **strengthening connections between people**. The algorithms work by determining the 'quality' of a partnership between each pair of people, and then make groups of those with connections that most need to be strengthened.

## Challenges and Lessons

- My primary challenge was familiarizing myself with the tools to build the web interface. Since it was my first time using most of the tools, I had to learn them while working on the project. This was my first time building a large-scale full-stack website, and I have learned a lot in terms of technical skills and teamwork.  
- Tojo
- My primary challenge was to balance speed and effectiveness in algorithm development, as the perfect solution has no solution. This internship taught me valuable teamwork and project management skills through collaboration with Tojo, Zaki, and Dr. Shepherd's exceptional leadership.  
- Silas
- This experience was truly invaluable as I immersed myself in the world of programming. Throughout the program, I acquired a multitude of skills, including a deep understanding of database systems and a profound appreciation for the significance of teamwork and collaboration.  
- Zaki