PRJ566 NBB

Business Proposal

SmartMatch – Student Team Project Matching Platform

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1-18-2026

1. Executive Summary

- Project title and team name
    - Student Team Project Matching Platform
    - **SmartMatch**
- Brief summary of the problem
    - Team projects are an important part of university education. However, many students are randomly assigned to teams, which means they start projects without knowing their teammates at all. This leads to high stress from the beginning, reluctance to take on leadership roles, unbalanced distribution of work, and free-rider problems. SmartMatch is a student team matching platform designed to solve these issues. It forms teams by considering students' skills, availability, collaboration styles, and preferred roles. The goal is to create balanced teams through better team formation methods and provide a healthy collaborative environment from the start of projects.
- One-sentence value proposition
    - **SmartMatch** enables structured and transparent team formation for student projects by matching participants based on relevant attributes instead of random allocation.
- Names of team members and their roles
    - Seulgi Lee – Project Manager / Frontend Developer
    - Moe Thet Paing – Backend Developer / UI-UX Designer
    - Seulgi Lee & Moe Thet Paing – Quality Assurance / Testing

2. Project Overview & Background

Team-based assignments are a core component of many university programs, particularly in disciplines such as business, engineering, and computer science. These assignments are intended to simulate real-world collaborative environments and help students develop professional teamwork skills. In practice, however, team formation is often constrained by administrative simplicity, large class sizes, and limited instructor time. As a result, random or self-selected grouping is commonly used.

Existing approaches have clear limitations. Random assignment ignores individual differences in skills, schedules, and working styles, while self-selection can reinforce social clustering and exclude less-connected students. Although some learning management systems support group creation, they typically provide limited insight into team composition and do not explain how teams are formed.

SmartMatch is proposed as a response to this gap. The platform focuses specifically on the team formation stage rather than attempting to manage the entire lifecycle of a course. By concentrating on structured matching and transparency, the project

addresses a narrow but impactful problem while remaining feasible within an academic project management context.

3. Problem Statement & Need

- Market Gap:
    - Most student team projects assign teams randomly at the beginning of the semester. At this point, students do not know each other at all. Therefore, when forming teams, individual students' abilities, working styles, schedules, and preferred roles are not taken into account. This leads to several problems: reluctance to take on leadership roles, unclear role distribution, and the emergence of free-riders who do not contribute. These issues negatively impact both project outcomes and students' learning experiences.
- For Who?
    - This problem affects both students in team-based courses and their instructors. Students often feel stressed and frustrated when teams don't work well together, and some students end up doing more work than others. Instructors have to deal with team conflicts, complaints about unfair workloads, and difficulty grading fairly. Since team projects are used in many classes, these problems hurt the quality of team-based learning.

      Evidence or logic that supports this need (e.g., real-world examples, trends)

        - These problems appear repeatedly across multiple courses and majors. This is not a matter of individual attitudes, but rather a problem with the team formation process itself. Many students have similar experiences after being randomly assigned to teams. There is no leader, there is a significant gap between those who work and those who don't, and conflicts arise among team members. These patterns suggest that forming teams well from the start can greatly reduce problems that occur later. Therefore, a systematic approach to matching teams based on student data is needed.

4. Objectives

- Our Vision & Goals:
    - This project will make student team formation better by using student information to create teams instead of randomly assigning people. The goal is to reduce stress when projects start, help everyone participate fairly, and match students who have similar skills, schedules, and ideas about their roles.

    - Create a platform that helps students form better teams
    - Match students based on their skills, schedules, work styles, and what roles they want
    - Form teams thoughtfully instead of randomly putting students together
    - Fix common problems like students not wanting to lead and some people doing more work than others
    - Show students clearly how their teams were created
- **MVP**
    - A website where students can find teammates for projects
    - A way for students to create and update their personal profiles
    - A system that puts students into fair and balanced teams
    - A page that shows students their team and explains why they were matched together

5. Why This is a Substantial Two-Semester Project

This project will build a basic working version first. But it needs several steps that take time to do well. These steps are: understanding what users need, organizing the data, deciding how to match students, building the matching system, and testing it. Each step needs careful work and improvements, so the project needs two semesters to finish properly.

Focus on the key features and capabilities the team plans to deliver across the two semesters

Semester 1 – Core System Development

The first semester will focus on building a stable minimum viable product (MVP) that demonstrates the core purpose of the platform: structured student team formation.

Key deliverables include:

- A student profile system where users can enter:
    - Technical and non-technical skills
    - Availability and scheduling constraints
    - Preferred team roles (e.g., leader, developer, researcher)

- A rule-based team matching engine that:
    - Groups students based on compatible skills and availability
    - Avoids obvious conflicts (e.g., mismatched schedules)

- A basic results interface that:
    - Displays team assignments clearly
    - Allows instructors or students to review team composition

By the end of **Semester 1 ,** the system will be usable in a limited classroom setting, demonstrating that structured team formation can be achieved more effectively than random assignment.

Semester 2 – System Enhancement and Expansion

The second semester will focus on improving robustness, usability, and adaptability, transforming the MVP into a more complete and realistic software solution.

Enhancements will include:

- Refinement of the matching rules to handle more complex scenarios, such as:
    - Uneven skill distribution
    - Partial availability conflicts
    - Varying team size requirements

- Enhanced role-assignment logic, with particular attention to:
    - Identifying suitable team leaders
    - Balancing leadership and technical responsibility across teams

- Improved user experience (UX), including:
    - Clear explanations of why matches were made
    - More intuitive navigation and feedback

- Scalability testing and extension planning, such as:
    - Supporting larger class sizes
    - Preparing the system for additional features (e.g., instructor overrides, re-balancing teams)

This phase emphasizes validation, optimization, and maintainability rather than introducing entirely new concepts.

Anticipated Complexity & Innovation

The challenge is to consider many different things about each student (like their skills, schedule, and role preferences) while keeping the matching fair, clear, and simple. This project doesn't use complex AI technology. Instead, it creates a practical system based on clear rules designed specifically for student team projects. The hard part is making a matching system that actually works and helps students learn better, so teams are created with a clear purpose instead of randomly.