



Graduation Project Proposal **Spark**

Saudi Platform for AI-Driven Recognition & Knowledge

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1 Introduction

The esports industry has emerged as one of the most rapidly growing sectors in the digital entertainment domain, attracting millions of players and audiences worldwide. In Saudi Arabia, esports has witnessed remarkable development in recent years, strongly supported by Vision 2030 initiatives to enhance digital transformation and create a sustainable gaming ecosystem [1].

However, despite this progress, many talented local players continue to face difficulties in gaining visibility and accessing professional opportunities. Teams and organizers also encounter challenges in identifying and evaluating players due to the lack of reliable, data driven platforms tailored to the Saudi context [4]. This gap limits the growth of the esports community and slows the recognition of emerging talents. Addressing this problem through a technological solution is of great significance both locally and globally. Locally, it empowers Saudi gamers, promotes fair opportunities, including women who face additional challenges in visibility [2], and supports the national agenda for digital entertainment and economic diversification. Globally, it contributes to the development of standardized, intelligent systems for player evaluation and fosters cross-border opportunities in the international esports industry.

In this document, we present the overall problem, propose an AI-powered solution, outline the vision and roadmap of the project, define its objectives and scope, and specify the tools, resources, and roles required to ensure successful implementation.

2 The Problem

The esports industry in Saudi Arabia is witnessing rapid growth, supported by national initiatives and the increasing interest of millions of players [1]. Despite this progress, there is still a clear gap between talented players and professional opportunities. Many skilled players struggle to showcase their performance or prove their abilities, as there are no localized platforms that provide fair visibility and recognition [4]. Female gamers, although increasingly active, face an additional challenge of limited exposure compared to male players [2].

A concrete example of this issue is the large difference between the millions of amateur and semi-professional players in the Kingdom and the very limited number of officially recognized professionals—only around 100 full-time players. Reports show that aspiring Saudi competitors often cite a lack of funding, limited local competition, no clear pathway to become professional, and social stigma around esports as a career [3]. While many Saudis participate in esports, only a small fraction succeed in moving to a professional level, which highlights the absence of structured tools that can reliably highlight and evaluate player performance [5].

Our project focuses on this part of the problem: the lack of a local platform that allows Saudi players to fairly showcase their skills and connect with teams and tournaments in an organized and trustworthy way.

3 The Solution

SPARK focuses on addressing this gap by developing a local intelligent platform that allows Saudi players to fairly showcase their skills and connect with teams and tournaments in an organized and reliable manner [5]. SPARK analyzes team composition and predicts the probability of winning after forming a team, enabling teams to try alternative formations and improve their chances before entering competitions. SPARK also provides female players with an equal opportunity to demonstrate their skills and compete on the same level as male players, addressing the issue of limited visibility for women [6]. Additionally, SPARK offers a structured local competitive environment that mitigates the problem of scarce tournaments and helps present esports in a more professional light within the Kingdom [7].

This solution directly contributes to addressing the issue of limited visibility and lack of organized opportunities for Saudi players [7]. SPARK enables both amateur and semi-professional players to gain fair recognition and supports the discovery of new talent by teams and organizers [7]. Furthermore, it enhances societal recognition of esports as a legitimate professional pathway within the Kingdom. In the long term, SPARK strengthens the infrastructure for esports, aligns with the goals of Vision 2030 in the digital entertainment sector, and reduces the gap between aspiring players and professional pathways [7]. In the next section, we'll get deeper into the product vision.

4 Product Vision

Product Vision:

For Saudi esports players, teams, and organizers,

Who seek greater opportunities to gain visibility, join suitable rosters, and participate in professional tournaments,

The SPARK is an AI-powered esports platform,

That helps teams discover the right players, empowers players to showcase their skills, and provides reliable local competitive opportunities,

Unlike other competitors such as saudiesports,

Our product leverages intelligent insights to support decision-making, and richer player profiles, ensuring fair recognition and stronger team formations

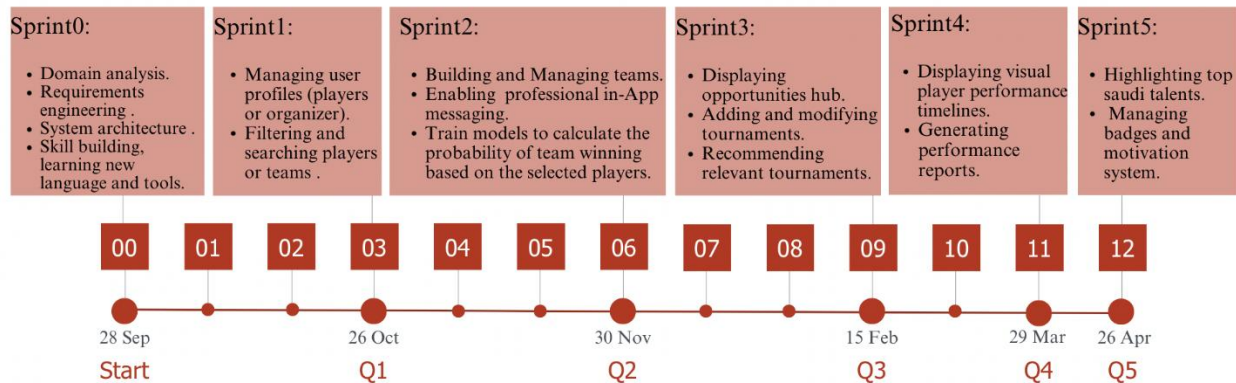
5 Product Roadmap

In this section, we will outline "SPARK" app roadmap. Figure 1-1 shows the product's development and delivery timeline



SPARK Roadmap Tagline

2025-2026



01

King Saud University / SPARK

9.04.2025

6 Objectives

In this section, we will outline the product, project, and learning objectives associated with the development of the "SPARK" platform. These objectives define the key goals and desired outcomes we aim to achieve by the completion of the project.

- **Product (customer focus-value):**

These objectives focus on solving problems and delivering benefits through key features:

- allow both players and organizers to manage their own profiles.
- Facilitate talent discovery and connect Saudi players with opportunities.
- Enable players to create and manage their own teams within the platform
- Analyze players using Artificial Intelligence to calculate the probability of a team winning.
- Launch an Opportunities Hub for tournaments and challenges.
- Provide performance support and motivation tools.

- Highlight local Saudi esports talents.

- **Project (solution focus-plan):**

These objectives define the tasks and stages necessary to complete the project:

- Conduct interviews and surveys with esports players, teams, and organizers to gather requirements and feedback.
- Collect and preprocess player performance data from the **Riot Games API [11]**.
- Analyze and clean the collected data to prepare it for AI model training, then train models to calculate the probability of a team winning based on the selected players.
- Identify user needs and ensure the mobile app features (profiles, teams, tournaments, reports) meet those needs.
- Design user-friendly mobile interfaces using **Figma [17]** for both players and organizers.
- Develop the mobile application in **Flutter [12]**, implementing:
 - Player and organizer profiles.
 - Team building and management.
 - Tournament hub and applications.
 - In-app messaging.
- Create and connect a database (**Firebase [15]/MySQL [16]**) to store user accounts, match history, teams, and tournament details.
- Test the application thoroughly to ensure functionality, usability, and accurate AI predictions.
- Deploy the application on devices and gather user feedback for improvements.

- **Learning (student focus):**

These objectives focus on new skills and tools to be learned:

- Gain hands-on experience in **mobile application development** using **Flutter [12]**.
- Apply **Artificial Intelligence techniques** to real-world esports data to calculate team win probabilities.
- Gain practical skills in **working with external APIs**, specifically the **Riot Games API [11]**, for data collection and integration.
- Strengthen knowledge of **cloud-based databases** using **Firebase [15]/MySQL [16]** for real-time data management.
- Learn how to implement **gamification elements [18]** (badges, achievements) to motivate users in a mobile app.
- Improve **agile project management and teamwork skills [19]** by working in sprints and collaborating on a multi-module application.
- Enhance **problem-solving and critical thinking [20]** by addressing challenges in data preprocessing, AI modeling, and mobile app integration.

7 Scope

In this section, we will define the limitations of our platform and outline what is outside the scope of this project, which may be considered for future development.

The "**Spark**" platform is a mobile application for esports players, teams, and organizers in Saudi Arabia. It allows profile management, team building, tournament browsing and applications, and AI-powered team win probability predictions. The app includes performance reports, visual timelines, and gamification features. It supports **English on mobile devices** using android **Flutter**, with future expansion to additional languages, or other platforms possible. Features like live streaming, web support, or third-party payments are outside the current scope. Data will be limited to the **Riot Games API**.

8 Hardware/Software Tools and Cost

This section outlines the hardware and software resources required to develop and implement the **SPARK application**. It includes all necessary development environments, frameworks, APIs, and supporting tools for building, testing, and deploying the solution. Each tool's purpose and associated cost are summarized in Table 1.

Hardware Tools	
Name and Description	Cost
Computers for software development	Available
An android smartphone for testing a mobile application	500-900 SAR
Software Tools	
Name and Description	Cost
Python - [8] with libraries such as pandas, scikit-learn [9], and NumPy [10] – used for AI model training, data analysis, and feature engineering.	Free
Riot Games API - [11] provides access to player match history, performance data, and statistics.	Free

Flutter - [12] open-source frameworks for building cross-platform mobile applications from a single codebase.	Free
GitHub - [13] a version control and collaboration platform for managing the source code.	Free
Jira - [14] agile project management tools for task tracking and sprint planning.	Free
Database Management System – Firebase [15] / MySQL [16] for storing user accounts, match history, and tournament details	Free
Figma [17] cloud-based design tool for creating UI wireframes and prototypes.	Free

9 Scrum Team

9.1 Skill Set Requirements

This section identifies the technical skills required for developing the **SPARK application**, the team's current proficiency levels, and the plan to address any skill gaps.

Table 2 provides an overview

Technical Skill Required	What is the current level of the team (<i>beginner-intermediate- advanced</i>) for each skill? How will the gap be bridged? (<i>if necessary</i>) Learning plan
Python Programming	Intermediate – The team has prior experience with Python and will continue strengthening skills using documentation and online resources.

Machine Learning	Intermediate – The team will enhance skills through online machine learning courses and tutorials.
Flutter	Beginner – Team members will learn through official documentation, online courses, and self-learning.
API Integration (Riot Games API)	Beginner – The team will practice through tutorials and documentation.
Front-End Development	Intermediate – Team members will enhance their skills through Figma prototyping and learning modern responsive design practices.
Back-End Development	Beginner – team members will be learning server-side programming and database management, practicing open-source contributions, and keeping up to date with backend technologies.
Data Collection & Visualization	Intermediate – the team will apply Python libraries such as Pandas and Matplotlib for analyzing features, and use visualization tools like Tableau.

9.2 Roles and Responsibilities

Scrum Team	
Product Owner:	Dr. Sharefah Alghamdi
Developers:	Nora Fisal Albyahi Raghad Sultan Aldajani Mariam Alahmed Aljwharah Alhwiedy
Scrum Master (SM):	Dr. Sharefah Alghamdi
Stakeholders:	The Examiners Committee at King Saud University, Saudi esports players and teams.

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