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Racket Guru: A Personalized Racket Recommendation using Content-Based Filtering

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ABSTRACT

The Racket Guru system addresses a well-known issue that beginner and intermediate badminton players have when they cannot find the right racket because of the lack of expertise in the store and generic recommendations online. To address this issue, the system aims at creating a more intelligent and easier to use system that will provide the personalized guidance that matches the skill level, playing style, and personal preferences of the player. To this end, it implements a Content-Based Filtering system where the user inputs are compared to a selected database of racket specifications to produce personalized recommendations. It also includes sophisticated search and filtering, side by side comparison of rackets, and product description aimed at making informed decisions. It was developed using the Iterative Waterfall Model that implied thorough analysis of requirements, designing, implementation, and usability testing using the System Usability Scale (SUS). The outcome is a web-based application that has a clean responsive interface that makes it easy to interact with. The results of usability testing show a great level of user satisfaction and better confidence in making decisions. The key differentiators of the project are that it combines content-based recommendation methods with interactive features like questionnaires, comparison features and detailed product descriptions, which are not present on most commercial websites. Finally, the case of Racket Guru shows that smarter, people-focused design can reduce decision fatigue, increase player engagement and help beginner and intermediate players make the right choice about rackets, thus promoting the expansion and accessibility of the badminton community.

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CHAPTER 1

INTRODUCTION

The chapter starts by discussing the global expansion of badminton playing and highlights that players struggle to select appropriate badminton items since physical retail stores lack sufficient expertise and online recommendation tools provide insufficient solutions. This report outlines two core objectives for the project. The first involves creating an online system that depends on player input for customized recommendations and secondly enables better player interaction through powerful searching and filtering and comparison functionalities. A detailed analysis of the system outlines its breadth and importance alongside its boundaries, particularly to serve beginner and intermediate players and provide value to internet sports providers. The system uses user-centered design to enhance sporting gear shopping by improving player satisfaction alongside sport engagement while demonstrating the utility of this method.

1.1 Background of Study

Badminton has experienced significant growth in recent years, solidifying its status as one of the world's most popular sports. As of 2022, badminton is ranked as the third most followed sport globally, engaging approximately 16% of people across over 20 countries (BWF Corporate, 2023). The popularity of badminton has grown significantly in recent years, particularly in Asia. The increasing number of badminton leagues and tournaments has further contributed to the sport's expansion, fostering a vibrant and active community (Mikkelsen, 2023).

Selecting the appropriate badminton racket is crucial for players, as it directly influences their performance and overall experience on the court. Key factors such as grip size, balance, flexibility, and string tension must align with a player's skill level and playing style to optimize gameplay (STIGA Sports, n.d.). For example, singles players often prefer heavier rackets (3U: 85-89g) to generate more power, while doubles players may opt for lighter rackets (4U: 80-84g) to enhance speed and handling (Badminton HQ,