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Title of Thesis: **A Web Based Framework for Talent Identification, Selection and Enhancement**

ABSTRACT

The research work embodied in this thesis is aimed at helping those common people who aspire to become professional cricketers by enabling them and others assess their talent class. Traditionally, coaches and experts perform this activity, which relies heavily on their instinctive intuitionist skills. However, the approach is constrained due to non-availability of quality coaches/experts and several other reasons including biasness, lack of visibility/opportunities, corruption etc. In pursuit of finding an alternative approach many efforts have been made in the past. The thesis summarizes all notable contributions made in this direction so far.

Cricket is an immensely popular sport in India. About a million players play cricket daily and aspire to become professional cricketers. With extremely limited opportunities at professional level, they compete against the odds. A sizable number of players even do not have the requisite talent but persists with the game. This leads to wastage of time and resources. Also, the process of selection/short-listing of players has serious limitations that affectively curtail already meager chances of short-listing for players living in remote-rural areas. As approximately 68% of the population still resides in such areas, the problem becomes even more significant. Another challenge is limited availability of quality coaches and high cost of coaching which makes it difficult for young players to identify and work upon their weaknesses.

To address these issues, in this thesis, we have shown implementation of a web-based system viz. Cricket Talent Identification, Enhancement and Selection (C-TIES). The C-TIES comprises three core sub-systems viz. Talent Identification, Talent Enhancement

and Talent Selection/Short-listing. The system helps the prospective players in gauging their talent level based on the results of certain identified tests performed by them. Data about such tests for all aspirants is stored in a centralized database - Cricket Talent Knowledgebase (CKTB). The centralized database may be effectively utilized for answering queries related to availability of talent across the country or identified geographical region. Early identification of talent would help young enthusiasts decide if they should pursue cricket or try some other sports as a career option. Other benefits have been discussed in detail in the thesis. The Talent Enhancement module enables a cricketer to discover his weaknesses and improve upon them. As this does not require availability of coaches/experts, it again is a significant contribution of this work. The Talent Selection Module helps Cricket Academies/Coaches while short-listing appropriate players for further training/coaching or forming a team. The module works transparently and thus can potentially reduce biasness, and corruption.

The system essentially utilizes an Expert Database that has been specifically created for storing Cricket Talent Knowledge. For this purpose, we have used the Ordered Weighted Averaging (OWA) aggregation operator. A Talent classifier using Normalized Adequacy Coefficient (NAC) has been designed enabling classification of players into five pre-defined talent classes. Algorithms for talent enhancement and selection have also been designed using OWA operator and use the Talent Knowledgebase for producing the results.

Validation of the system using statistical t-test shows that the system performs at par with coach while classifying cricketers into their respective talent classes. The accuracy of 86.67%was noted while uncovering the weaknesses of cricketers. The system also performs at an accuracy of 81.8% during talent selection/short-listing process.