SKILLFULL SYSTEM FOR COLOR COMMENTARY IN CRICKET

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***Abstract*— A system is presented that can indorse stories mechanically for interpreters to be told for the period of games. The stories would contain statistics from the preceding related games. This statistics would consist of data that match the present-day game statistics with the earlier game statistics, some connected facts about the players and teams involved. Commentating in sports generally involves two people – a play-by-play commentator and a color commentator. Play-by-play commentating comprises of transmitting to the onlookers what is actually happening in the pitch of play. Beyond reporting the activities of the players as they occur, the play-by-play commentator typically comments such facts as the score of the game, upcoming batters and statistics for the teams and players involved in the game. Color commentary, on the other hand, is much more subjective and wide, with the purpose being to increase entertainment (i.e, "color") to the broadcast.**

***Index Terms*—Apriori algorithm, color commentary, play-by-play commentary, ranking algorithm.**

I. INTRODUCTION

Broadcasting of sports is an industry of billion dollars. Broadcast of most professional sports to the public is done on television that reaches millions of home. The live viewing experience is much more different than the television experience, and the most significant part is its commentary. There has been much research done in the importance of commentary during sports broadcasting. Most attention is paid to the words of commentator while watching a game on television [9]. The attention of the viewer can be drawn to the parts of the picture that merit closer attention [4] is the effect of commentary, and the effect is called *italicizing* [10]. A good mood can be set during broadcast through commentary. Creating a hostile atmosphere during a broadcast by commentator makes the viewing experience more enjoyable. In order to listen to the interpretations of the commentators fans often bring radios to live games as the descriptions given in a broadcast by the commentators are useful. Also, a handheld video device is supported by some sporting venues that provide the spectator with in-game commentary.

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Helping the viewer to follow the game is the purpose of commentators and adding to its entertainment value. To tell interesting, relevant stories from the sport's past is one way to add entertainment to a broadcast.

A type of narrative discourse is sports storytelling. Narrative discourse involves relaying to viewers a sequence of actions in an exciting and engaging approach which is a creative activity. Recounting of contingent events from the past with one or more main characters is the idea of narrative discourse. A challenging problem for Artificial Intelligence (AI) is automating narrative discourse and a subject of much recent research [5]. The focus of this work is on one aspect of computational narrative that of selecting the narrative components to include based on the current context.

Sports story selection can be automated with AI considered as the hypothesis [2]. Setting out to test whether an AI approach could be developed that would map game states to related stories, thereby significantly increasing audiences' enjoyment of the broadcast. An AI system is developed to achieve this goal that tells stories in the context of cricket. To put forward appropriate stories to a (human) broadcast crew, [3] in the case of telling stories to commentators. It is a computer system that communicates to human's information which will help in improving their performance.

II. LITERATURE REVIEW

A. Automated Story Selection for Color Commentary in Sports

This paper [1] focus on commentating in sports generally includes two people - a Play-by-play commentator and a color commentator. Play-by-play commentating comprises conveying to the audience what is actually happening on the field of play. Beyond reporting the activities of the players as they occur, the play-by-play commentator typically comments such facts as the score of the game, approaching batsmen and statistics for the teams and players involved in the game. Color commentary, on the other hand, is much more subjective and wide, with the purpose being to add entertainment (i.e., "color") to the broadcast. After a play is over, color commentators tend to explore what has occurred beyond the surface. For instance, if a player strikes awkwardly at a pitch and fails, the color commentator may indicate that the reason for the hitch in his swing is that he has an ankle hurt and is not capable to plant his foot when swinging. This provides the viewer

some additional facts beyond what he or she can notice, or is told by the play-by-play commentator. Yet another manner in which the color commentator adds to a broadcast is by giving background statistics on the players caught up in the game. Whereas play-by-play commentators can deliver a player's statistics, color commentators tend to add more particular information about a player.

B. Sports Commentary Recommendation System (SCoReS): Machine Learning for Automated Narrative

This paper [3] focuses on automated sports commentary. Sports broadcasts typically involve two types of commentators – play-by-play and color. The main purpose of Play-by-play commentators is to make available truthful information regarding the game, such as telling the actions of the players and providing statistics. Color commentators have a more freely defined role – to present "color". This can be accomplished in many ways. As the commentators are mostly ex- athletes in the sport at hand, they can supply expert knowledge. They can also relay stories from their playing career or post-playing careers, of which they have cherished information. Their acquaintance of stories, however enormous for an individual, is still inadequate relative to the whole set of baseball stories obtainable Artificial Intelligence (AI) can be of backing over here. Computers can both accumulate many more stories than a human brain as well as swiftly Fig out the quality of a match among each story in the library and the game state at hand. In this work, an effort is made to model an unknown target function that maps game states to appropriate stories. As "being exciting" is an ill-defined subjective measure, the quality of the mapping by incorporating the selected stories into a simulated broadcast is evaluated and experienced the satisfaction of spectators and the attention of professional commentators. Prearranged a story database, the difficulty is then to retrieve stories most suitable for never before-seen game states during live sports broadcasts. The broader the story record, the more expected a suitable story can be initiated that matches to any provided game state.

C. *AdaRank: A Boosting Algorithm for Information Retrieval*

This paper [6] addresses the subject of learning to rank for document rescue. In the job, a representation is by design produced with some training information and then is utilized for placing of documents. The integrity of a representation is generally evaluated with performance procedures such as MAP (Mean Average Precision) and NDCG (Normalized Discounted Cumulative Gain). Ideally a learning algorithm would guide a ranking representation that could straightforwardly optimize the presentation measures with regard to the training data. Accessible methods, though, are only capable of guiding ranking models by minimizing loss functions slackly correlated to the performance measures. To treat with the difficulty, we urge a narrative learning algorithm contained by the skeleton of boosting, which can reduce a loss function straightforwardly defined on the performance measures. The algorithm, referred to as AdaRank, frequently construct 'fragile rankers' on the base of re-weighted training data and at last linearly combine the fragile rankers for making ranking prediction. It is showed that the training process of AdaRank is precisely that of improving the performance measure used.

D. Three RoboCup Simulation League Commentator Systems

Three systems which generate real time natural language commentary on the RoboCup simulation league are presented. Even though they highlight diverse aspects of the commentary problem the entire three systems take simulator information as input and produce suitable meaningful spoken commentary in real time. The three RoboCup simulation league commentator systems are Rocco, Byrne and Mike [7] [8].

1. Rocco

The Rocco commentator system is a reincarnation of an early research prototype called Soccer which was built in the late 80s for the automated interpretation and natural language description of time varying scenes. At that point small section of video recordings of soccer games were selected as a main application area since they presented exciting possibilities for the mechanical interpretation of visually observed motion pattern in a limited domain.

2. Byrne

An animated talking head commentary system which is called as Byrne. The scheme takes the yield from the RoboCup soccer simulator and generates suitable moving speech and facial lexis depending on the character's personality emotional condition and the state of play. Byrne can make use of any modular game analysis system as its contribution module. This input module produces comments much sooner than Byrne is proficient of saying them. To pay off for this, the input module feeds its remarks into a priority queue. Each remark has a birthday (the time when it was arrived into the queue), a deadline (a time beyond which it is from the past news) and a priority. When Byrne requests a new fact to say the queue returns one using a simple priority scheduling algorithm. The emotion generation module contains rules which generate simple emotional structures. These structures consist of: a type, e.g. happiness, sadness, etc; an intensity scored from 1 to 10, a target;(optional); a cause i.e. the fact about the world which caused the emotion to come into being and a decay function describing how the intensity of the emotion decays over time. An emotion structure generation rule consists of a set of preconditions the emotional structures to be added to the emotion pool and the emotional structures to be removed. The preconditions are filled by matching on the currently true facts about the world and about the character.

3. MIKE

Mike is an automatic real time commentary system capable of producing output in English, Japanese and French. Mike uses six Soccer Analyzer modules three of

which carry out high level tasks. There are six Soccer Analyzer Modules of which three analyze basic events are the 'Basic', 'Techniques' and 'Shoot' processes and the other three carry out more high level analysis as the 'Bigram', 'Voronoi' and 'Statistic' processes.

III. PROPOSED SYSTEM

In this section, we put forward a methodology to resolve the problem of conveying story-based color commentary to a live cricket game. We make use of two algorithms, first is hierarchical clustering algorithm and second is apriori algorithm where hierarchical clustering is used for storing the database
and apriori is used for retrieving the related information from the dataset used.

A. First Module

In the first module a GUI based web-page is created where the user will input the details for the on-going cricket match.

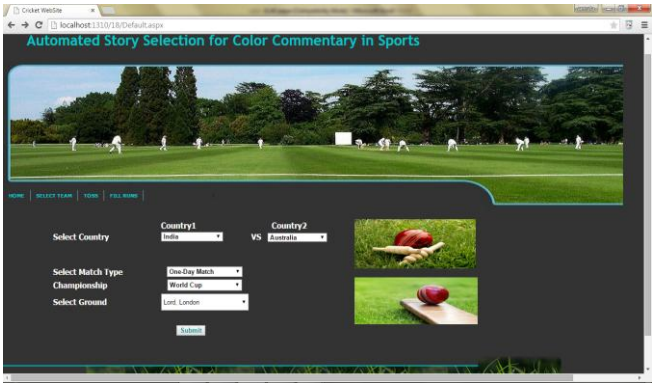

Fig 1: selecting match details

Fig1 displays the page where the user needs to select the details regarding the names of the countries playing the match, the type of match, the championship and the name of ground on which the match is being played.

Fig 2: selecting toss winner

Fig 2 shows that the user is supposed to select the toss won by the particular team and select the task of batting or balling.

B. Second Module

In this module the user is supposed to fill in the details for the complete scenario of the cricket match. Fig3 shows that the user needs to fill details like the names of the batting, balling player then putting up the number of over going on, runs made for that particular over on the specific number of ball and finally the number of wicket. After filling all these details the system will return a record that consists of the information relevant to the data fed above.

Fig 3: filling entire scenario

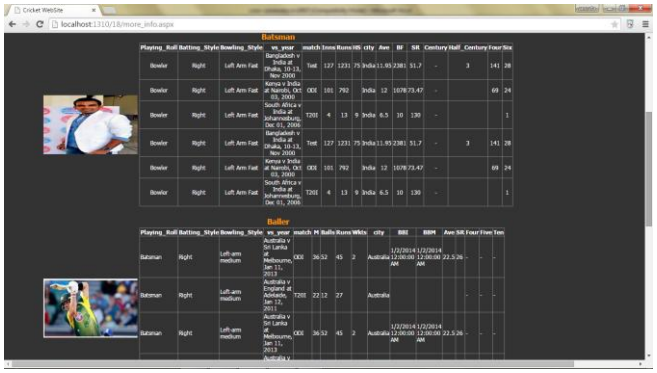

Fig 4: displaying player details

Fig 4 displays the complete information regarding the particular batsman and baller which was selected before.

Fig 5: final result based on apriori

In Fig 5 the final result is displayed, this result is the outcome of the information fed before by the user. The apriori algorithm works on the following parameters –over, wicket, run, ball. Apriori algorithm mines all frequent itemsets in database. The algorithm sort many searches in database to find out frequent itemsets where k-itemsets are used to create

k+1-itemsets. Each k-itemset is basically larger than or equal to minimum support threshold. Else, it is called candidate-itemsets. At first, the algorithm scans database to look for frequency of 1-itemsets that holds only one item by counting each item in database. The frequency of 1-itemsets is used to look for the itemsets in 2-itemset which in turn is used to look for 3-itemsets and so on till there are no more k-itemsets.

Fig 6: result based on ranking algorithm

In the above Fig 6 the results are calculated with the help of ranking algorithm that was used in the base paper.

IV. RESULT ANALYSIS

Fig 7: Graph

Fig 7 shows the graph comparing the algorithm used in the proposed approach that is apriori algorithm with the algorithm used in the base paper which is the ranking algorithm. The graph compares the algorithms on the basis of total counts of the stories generated by both the algorithms. The blue color indicates the count of stories generated by the ranking algorithm and yellow color indicates the count of stories generated by apriori algorithm.

Fig 8: graph parameter

Fig 8 shows the graph with different parameters such as overs, runs and wickets. This graph compares the number of irrelevant stories generated by both the algorithms based on the above mentioned parameters.

V. CONCLUSION

Storytelling is said to be a well-to-do and imaginative task. In order to outrival in storytelling, an inherent skill and training are required. In this attempt, we took a step towards automating this charge by building the AI story selector for color commentary in cricket. This system could generate a statistically significant constructive influence on the sports.

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