

# An Ontology of Cricket

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**Abstract** – If we look our around, we observe that affects of ontology is seen every where. every thing is going to link with ontology on internet. Ontology can be defined as hierarchical representation of classes, sub classes, their properties and instances. It has led to understanding the concepts of given domain, deriving relationships and representing them in machine interpretable language. Ontologies are associated with different languages that are used in mapping of multiple ontologies. Ontology is a kind of concept model that describes system at the level of semantic knowledge. It aims to access domain knowledge in a general way and provides a common understanding of concepts in the domain so as to realize knowledge sharing and reuse among different application programs and organizations. The introduction of ontology in multimedia retrieval system can improve the effectiveness and efficiency of the retrieval system. In this paper i try to present, overview of Ontology. I explore the method of constructing concept ontology for Cricket by identifying the concepts, concept hierarchy .I have adopted a semi-automatic construction method of multimedia ontology. I try to implement this, methodology to construct concept ontology for a cricket video. With the advent of Mobile and Pervasive computing, the applications and services are required to adapt dynamically according to changing environmental situations. Context aware system senses the change in computational surroundings and dynamically adapts their behaviour to environmental change without any user intervention. Using contexts such as time, location people and activity, WSNs know which information is significant to transmit. It helps to retrieve the system information easily.

**Keywords** – Ontology, Cricket, Sports Video, ,WSNs Theory.

## I. INTRODUCTION

Recently, the volume of digital video has grown significantly. Age becomes very important in our life. This is due to cheap digital cameras, scanning, security and more. Restart the device. Media is being used now. Various sectors like entertainment, media, distance Education, tourism, CAD/CAM distribution, GIS, games etc. with Advances in digital technology have led to natural progression. Requires a lot of media storage space. Appropriate security design, subscription systems, data models, Get these videos based on ideas and well and effectively. recovery process. Permission to make digital or printed copies of all or part of this work Personal or classroom use is provided free of charge, provided that: is not created or distributed for profit or commercial

gain, and that Mwala exists. available. Copy Otherwise republish or republish, host on servers or lists, etc Special prior permission and/or fee required. The sports industry is gaining more and more attention due to this. Interest of broadcasters and producers, sponsors and viewers. People want to search and search by video segments. Its semantic content. They want to find the right place immediately. Accurate video, describing only what they want, preferably natural language. To achieve this, there must be Knowledge of semantic concepts. to enlarge Concept-based search engine performance and effectiveness A video annotation, indexing and search system should be developed. This forces the multimedia community to focus on the present. The study of a well-defined set of semantic concepts. Our research On the needs of the users came to the conclusion that most applications. Based on semantic concepts. Concepts play a very important role. Semantic search aims to improve search accuracy by understand the searcher's intent and the contextual meaning of the terms how they appear in the searchable data space, be it on the web or within the system for more meaningful results. A query plugin allows you to search for morphological differences terms or the meaning of the meaning of a word. Query expansion is a method that all users a query can be converted into multiple related queries each other. This means that the main query terms are replaced a collection of several new terms and previous original terms. For these terms, queries are generated that are used to get relevant results. The relevant terms can be found at use of subject ontology Ontologies are increasingly used to build applications for a specific domain. The ontology enables users capture document semantics.

In Multimedia Database Indexing and Searching. success depends on a rich semantic concept. In Multimedia Search Systems, ontologies have historically been used to improve Concepts, their relationships and performance by definition Classification of Concepts An ontology is a kind of conceptual model that describes a system in terms. Semantic Knowledge Level It aims to gain access to knowledge. Domain in a general way and provides a common understanding. concepts in the subject area to realize knowledge exchange and Reuse between different applications and organizations. A domain-specific ontology is very useful for knowledge. Exchange and acquisition analysis. Introduction to Ontologies A multimedia can improve accuracy in search engines. Memorize speed effectively.

## II. LITERATURE ON ONTOLOGY

If we studied about ontology we look that there is some existing work already done in this domain. some of the existing work is mention in my paper to increase the understanding the

concept of ontology. It will help to understand the concepts of ontology clearly.

1) *Deception of Ontology*: Ontology is one of the buzzwords in many areas of computing, the science. There is some confusion about what the term "ontology" is. actually means how it differs from taxonomy and thesaurus. Pidcock defines a dictionary as a directly numbered list. terms governed by some defining authority. Taxonomy is hierarchy of vocabulary terms. Thesaurus is a network vocabulary terms. Ontology is all of the above, but usually with ability to capture more complex relationships between concepts. In the field of knowledge engineering, various scholars give different definitions of ontology according to ontology content, ontology form or purpose ontology. Perhaps the most popular definition of modern formal ontology is expressed in [1]. An ontology is a formal, explicit specification general ideology. The idea of some phenomena in the world reveal and determine the corresponding concepts and relationships of this phenomenon. Ontology usually defined as an abstract model of the region of interest formal semantics in the sense that they constitute logic theory. These models should represent the general the ideology of the subject area, where they are supposed to reflect the agreement of a certain society or group of people [3]. In the simplest case, ontologies consist of a collection of concepts or classes that are relevant to the field of interest, as well as set relationships defined by these concepts. Ontology is one kind a conceptual model that could describe the system in the field semantic knowledge. As a new type of knowledge organization tools, ontology attracted more. Ontology has become widespread, used in many fields such as knowledge representation, knowledge sharing, knowledge integration, knowledge reuse, search for information and so on. Hence the development Ontology is severely hampered.

2) *Necessitate for Ontology*: Ontology defines a common vocabulary of precise definitions domain terms that can be used worldwide. N. F. Noy and D. L. McGuinness describe the need ontology. To share common understanding of the structure of information among people or software agents To enable reuse of domain knowledge To make domain assumptions explicit To separate domain knowledge from the operational knowledge To analyze domain knowledge

3) *Construction of Ontology*: Continue throughout the life cycle of the ontology. Basic steps to build the ontology are: Determine scope and domain of ontology Consider reusing or existing ontologies List the important concepts in ontology Definition of categories and category hierarchy Define class attributes - slots Define slot sides Create instance. Ontologies should be abstract enough to be reusable. different applications. The main question, of course, is how ontologies can be built. Ontology Creation Process active engineering work, the result of which is ontology, which is a general conceptualization people involved in the process. Usually this process is called as ontology engineering. An ontology is usually constructed in the following way; The first step is getting a domain knowledge, and then organize an ontology with subsequent concretization ontology derivation, ontology

verification and fixation.

4) *Ontology Methodology*: Ontologies can be built using various ontology constructs. Methodology. Some of these methods exist for create an ontology from scratch or reuse an existing ontology with/without modification. Basic methods of ontology designs are: The skeleton method is also known as ENTERPRISE. Ontology Method Meth The seven step method CENSUS methods TOVE methodology Circular methodology CACTUS IDEF5 Xinli Zhao, Dongxia Zhao, Wenfei Gao introduced a comparative study of methodology. Each method has its function and hitch and there is no such technology which is generally accepted as the best method. The methodology can be chosen depending on the problem, subject and user requirement. The seven-step method is a bit more mature. but others. It mentions the construction of an ontology based on a thesaurus, which is good for reference.

5) *Ontology Languages and Tools*: Several ontology languages have been proposed for construction. ontology. Domain knowledge can be represented by ontological language, often involves the coding of knowledge and collection of axioms for reasoning. Formal ontological problems based on various ideologies such as semantics, descriptive logic taxonomy and thesaurus, etc. Ontological problems custom and standard: RDF, RDFS, OIL, DAML, DAML + OIL, OWL and other languages. OWL is a language for making ontological statements and facilitates more machine interpretation of web content than XML, RDF and RDF-S, providing additional vocabularies along with the formal ones semantics. OWL is well supported by Protégé. Ontologies become so popular because of the ability to represent domain semantics, project structure knowledge of the subject area, obtaining a general and general understanding concepts and hierarchies of concepts that can be transferred over people and computers in the world and coordinate syntactic, logical and semantic inconsistencies. Ontologies are becoming increasingly important in many areas. Because of this increase, auxiliary tools are needed creation and maintenance of ontologies will increase as well. WonderTools rated five tools as good understanding how they work and what kind of users they are suitable for. Ontolingua: Ontolingua offers distributed collaboration environment for viewing, creating, editing, changing and using ontologies. WebOnto: A web tool, but completely graphical. this is java an applet along with a configured web server that enables users view and edit knowledge models on the web ProtégéWin: Windows utility, also graphical, designed to building the ontology of domain models. OntoSaurus: A web tool very similar to Ontolingua, but uses Loom language ODE: A Windows-based tool that combines graphical and text tool KADS22: a graphical and textual tool for building ontologies and reasoning methods. Ontological engineering tools can be classified in different ways types of tools, locally installed tools, and available tools through the internet. Locally installed tools are not support synergistic cooperation for obvious reasons. However, the web tools support synchronous creation and editing. ontology. Since different tools all have their advantages and cons, it is impossible to find the perfect tool. Conclusion that for

inexperienced users Web Onto and Protégé Win are more suitable, because they are best suited for conceptualization, formalization level of ontology development and they need little knowledge of the underlying epistemic language and easy to learn. Ontolingua and Ontosaurus apparently more suitable for later stages when they are only relatively small improvements and changes are needed.

### III. A CONCEPT HOW TO CONSTRUCT ONTOLOGY

To classify the concept a picture was capture while constructing ontology is mention here for increasing in understanding of the ontology. This figure is related to Cricket ontology.

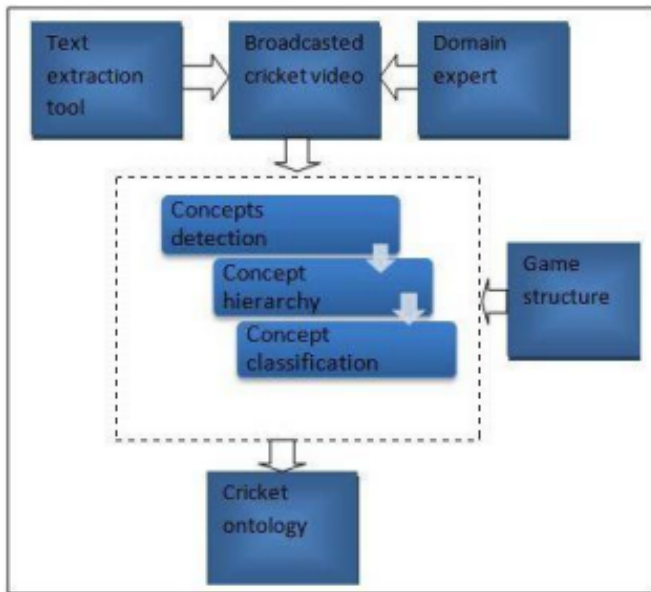


Fig. 1. Ontology Construction

Ontology promotes the exchange of information and knowledge exchange of news stations, sports fans, players, sponsors as well as to improve efficiency and effectiveness system for downloading sports videos. There is no one right category hierarchy for any domain. The hierarchy of concepts depends on possible uses of the ontology and details This is necessary for the application and user requirements.

### IV. IDENTIFICATION OF CONCEPTS FOR CRICKET ONTOLOGY

Concept represent persons, places, events, actions, score, terms, topics or any thing that is desirable to mark the presence in the media object. Concepts may be organized in to hierarchies. The basic logical unit in the structure of cricket domain is one ball. Based on the structure of the game, we have segmented the cricket video into various video objects, which contains one complete meaningful ball seen. A cricket video contains concepts like player, score, actions like batting, bowling etc. A raw video V can be segmented in to n number of segments or video objects VO<sub>i</sub>, i.e.,  $V = VO_1, VO_2, \dots, VO_i$  where i ranges from 1 to the number of balls in the match. Each Video contains a number of concepts as depicted in figure 3.3. Let C be the set of all possible concepts in a given domain.  $C = C_1, C_2 \dots C_j$  where j ranges from 1

to the possible number of concepts. The number of concepts and the type of concepts depends on the abstract view of the application and the user requirements. We now can view a raw video as a collection of concepts,  $V = C_1, C_2 \dots C_j$ . Each video object VO<sub>i</sub> contains set of concepts C<sub>c</sub> which is a sub set of the concept set C.  $VO_i = C_1, C_6, C_y, C_j, \dots$  Concepts can be classified in to concept class based on the concept type. A concept can have z number of subclasses. For example, a player concept can be further classified into batsman, bowler, fielder etc based on the role of the player. Further a concept class can have number of concept values,  $CC_m = CV_1, CV_2, \dots$ , where CV<sub>o</sub> is the possible values that the concept can have. For example, batting concept can have subclasses as cover square, sweep, square cut, hook etc. Multimedia objects are described by a set of concepts  $C_1, C_2, C_3, \dots, C_n$  where n is the number of concepts associated to video object, each concept C<sub>k</sub> can have m concept values. i.e.,  $VO_i = CC_1(CV_1), CC_2(CV_2), \dots, CC_n(CV_m)$ . E.g.: VO<sub>i</sub> = dismissal (run out), batsman (Sachin), shot (square cut). Concepts can be identified and added at any time which increases the flexibility of the proposed model. E.g. in cricket video player, score, dismissal, ball goes to, shot ext are concepts. Run out, square drive, sixes are concept values. User can browse A video based on the semantic hierarchy concepts like dismissal and they can search specific type of dismissal like catch run out etc.

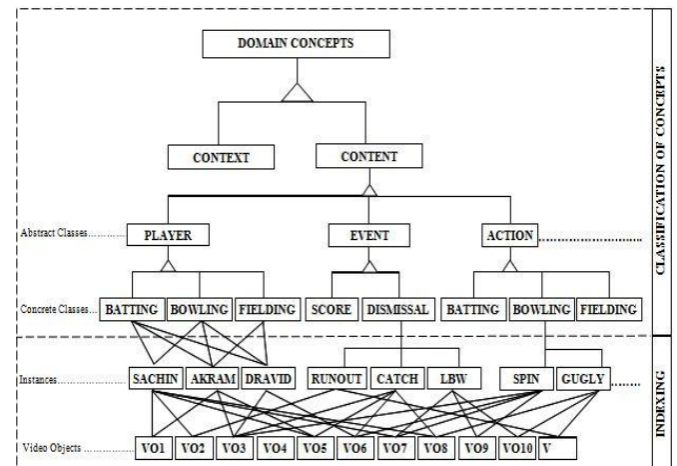


Fig. 2. Cricket Ontology Concept classification

### V. PRACTICAL APPROACH FOR CRICKET ONTOLOGY

Most of the ontologies are built complete automatically or completely by hands. However, manual ontology construction time-consuming and therefore expensive project as compare to fully automatic. However, the construction of an ontology is usually not feasible because many specific decisions need to be made. adequately define the area of interest. Knowledge previously collected data can be analyzed to obtain the structure of the ontology. Cricket ontology is made by using top to bottom as well as bottom up approaches. The concepts and the concept hierarchy are obtained by analyzing the structure of the domain/game. after this I refined the the class hierarchy by defining the properties of the concept classes. Complete knowledge can be represented by representing the

properties of the concept classes. Thus the player class will have name, country, age, no. of wickets etc. I have used Protégé as an Ontology developing tool to implement our cricket ontology construction. Protégé, can used the design of class as flexible way and organized the classes as hierarchy. After this I convert the knowledge clarified and represented using the class hierarchies as described above into an ontology. I selected OWL, as the ontology language, which is standard ontology language recommended by W3C. The advantage of high level concept based video ontology, is that it supports more natural, powerful and flexible way of data retrieval

After this generated figures are given as below

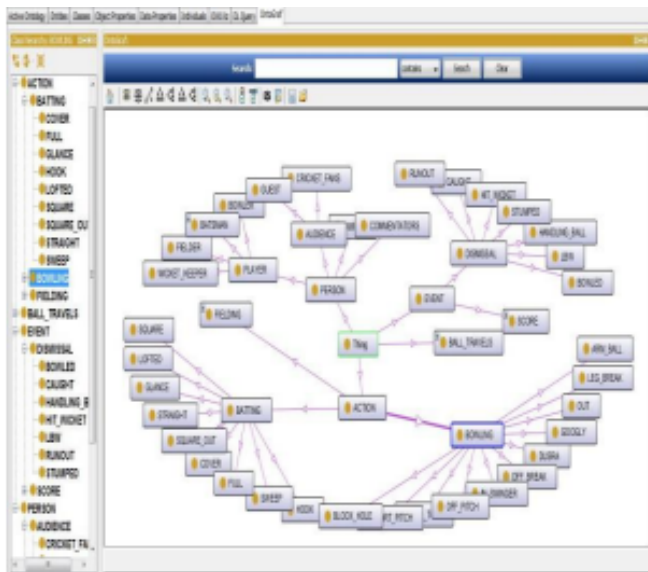


Fig. 3. Cricket concept Ontology–Onto graph

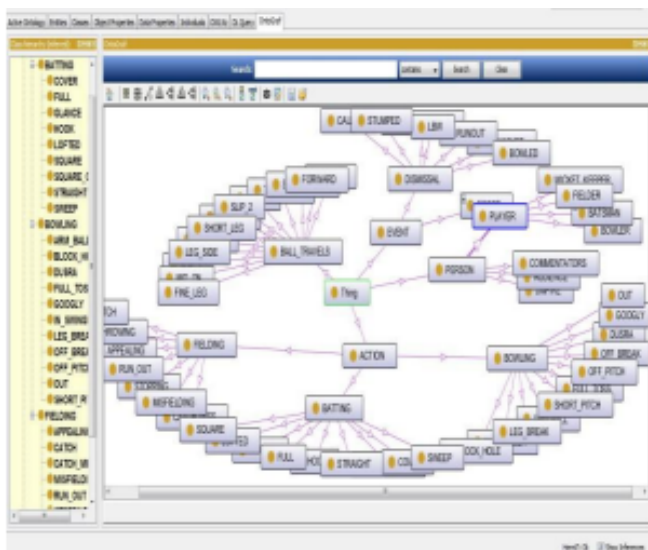


Fig. 4. Cricket concept Ontology: Onto graph

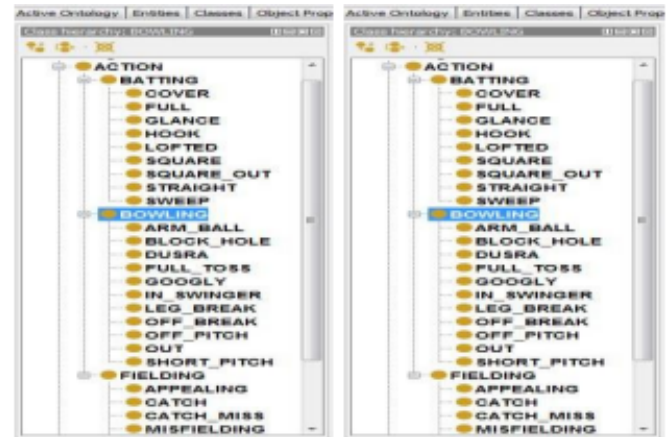


Fig. 5. Cricket concept hierarchy in Protégé

## VI. COMPETENCY QUESTIONS

Q1- Who is the coach of Pakistan Cricket team Ans- Saqlan Mushtaq Q2- Who is the captian of Pakistan Cricket team Ans- Babar Azam Q3- Who is the wicket keeper of Pakistan Cricket team Ans- Muhammad Rizwan Q4- What is the Ranking of Pakistan Cricket team? Ans- seventh in Tests, sixth in ODIs and fourth in T20Is by the ICC. Q5- Whom are the openars for Pakistan Cricket Team? Ans- Muhammad Rizwan Babar Azam

## VII. SPARQL QUERIES

here are some Queries related to competency questions.

1) *Query about Coach:* Select ?coachName Where ?Team a :Team ?Team :coachName ?coachName

2) *Query about Captain:* Select ?captainName Where ?Team a :Team ?Team :captainName ?captainName

3) *Query about Wicket Keeper:* Select ?WicketKeeperName Where ?Team a :Team ?Team :WicketKeeperName

4) *Query about Ranking:* Select ?ranking Where ?Team a :Team ?Team :ranking ?ranking

5) *Query about Openers:* Select ?openerName Where ?Team a :Team ?Team :openerName ?openerName

## VIII. CONCLUSION AND FUTURE WORK

An ontology is a clear formal description of concepts. domain name. In this paper, we studied the semi-automatic Create a multimedia ontology for cricket video. our The approach is based on bringing together existing construction tools Combined Ontology Tool for Super Extraction Subtitles from video clips. We use our methodology. Building a concept ontology with the video game cricket. us Create an ontology using the Ontology Development Tool A client-built ontology can achieve this goal. An ontology declaration has

good scalability and can be long. Enriched and renewed. An ontology is a model of the real world. The ontology should be able to reflect the vocabulary of the subject. To do this rationally, you need to create an ontology. Iterative and incremental process. after Create an original version of the domain ontology, it remains. It needs to be updated again and again to develop and present the best. Semantic knowledge of the subject. Inquiries can be made. To build an ontology-based video recording system. This approach can be extended not only to other sports. Videos, but also other types of videos like movies.

## IX. REFERENCES

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