An Analysis in Preprocessing Stages of Cognitive Science in Neural Psychological Disorder

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***Abstract*: Cognitive Science is discussing about the inter-disciplinary of anthropology, psychology, Linguistics, Artificial Intelligence and Neuro-Science. In a digital way, it is following some techniques such as Semantics, Syntax and Functionalism. Other researchers are done their own research in Word-Sense Disambiguation in Neuro-Linguistic Programming domain and they found 95.6% accuracy in WSD Rule-based Machine Translation. Researcher or author was took this reference as a proof to implement the methodologies in cognitive science by using Psychological trained data. This Paper narrating these is the pre-processing stages in cognitive science domain under Psychological data.**

***IndexTerms*: Neural-Psychological Disorder, Philosophy of Mind States, Fuzzy Logic, N-Queens Problem using Backtracking Search and Cognitive Science.**

I. INTRODUCTION

Cognitive Science is deals input text of psychological terms with certain dataset. This domain deals with some computational terms such as Natural Language Processing, Philosophy of Mind States, Fuzzy logic and N-Queens Problem using Backtracking Search. For a researcher, this is research domain is a current research area. In previous studies, the researcher had some ideas about NLP (Natural Language Processing). In this cognitive science, the Artificial Intelligence (AI) is the one of the inter-disciplinary domain. NLP (Natural Language Processing) fell into the Artificial Intelligence. This paper narrates about the clear functionality about the cognitive science, because of this beginners or researchers in cognitive science able to establish their work clearly in future.

II. NEURO PSYCHOLOGICAL DISORDER

Neuro Psychological Disorder is diagnosis in the periods of babyhood, childhood and in adolescence. It is classified into Intellectual disability, Global developmental delay, Communication Disorder, autism problem and hyperactivity disorder. In Intellectual disability is giving prior to the disorder in both intellectual functioning and adaptive behaviors. Global developmental delay is diagnosis five year below children for motor skills, language, speech, social functioning and cognition. Communication disorder consists of language, speech sound and childhood fluency disorder/stuttering and social communication/pragmatic disorder. Autism disorder explains about lack of social interaction and communication in multiple areas. Attention hyper activity disorder is diagnosed from the age of 12 and that these symptoms have a negative impact of social, occupational or academic functioning. Neuro Psychological Disorder is processing with multi-paradigm. DSM (Diagnostic and statistical Manual and Mental Disorder is dealing the trained sets of autism and attention hyperactivity disorder. Instead of this, for adulthood students have to take the psychological case study for detecting their lack of learning capabilities.

III. PHILOSOPHY OF MIND STATES

In Philosophy of Mind states, several types of Functionalism are involved in this vast concept. The categories are Machine-State Functionalism, Psycho-Functionalism, Analytic Functionalism, Homuncular Functionalism and Mechanistic Functionalism. Nonetheless, this paper is discussed about the Machine-State Functionalism. Researcher thought that this functionalism is suits well to predict the accuracy in the trained data. Machine-State Functionalism is an algorithm and mathematical model which is established with Alan Turing machines. This Machine-State Functionalism is come under the major subject of Automata Theory.

IV. FUZZY LOGIC SYSTEM

Fuzzy logic system is processing with one or more sets with logics. This set theory procedure is get information from the mathematics, mostly in computational process the set theory in fuzzy logic is using association rules with hypothesis or Boolean operators with the combination of maximum and minimum values. This logics will basically helped to the researcher in the domain of cognitive science.

Fuzzy-Rules:

IF temperature IS very cold THEN fan_speed is stopped
IF temperature IS cold THEN fan_speed is slow
IF temperature IS warm THEN fan_speed is moderate
IF temperature IS hot THEN fan_speed is high

V. N-QUEENS PROBLEM USING BACKTRACKING SEARCH

Combination of paradigms can be regularized using decision trees methodologies. The n-queen problem using backtracking search algorithm is processed as a chess board. A queen can move to vertically, diagonally and horizontally. The possible of queen target is processed as x. It is processing under the decision tree representation. Decision is calculated from Decision 1 to n. Backtracking search is containing exhaustive search, complete decision tree classified into breadth first search and depth-first search. Exhaustive search is helps us to find the solution in decision order. Breadth first search is traverse through one level of children nodes, then traverse through the grandchildren. Depth first search is used to traverse through left subtree first, and then traverse through right subtree. Backtracking search is continuing the process to find the solution or express their output as null.

Example: Fig.1.N-Queens Problem using backtracking search

X			X				X
	X		X			X	
		X	X	X	X		
X	X	X	Q	X	X	X	X
		X	X	X			
	X		X		X		
X			X			X	
			X				X

N-queens problem using backtracking search helps us to find the result in cognitive science for the trained data of adulthood students to discover the results to apply on students, which data are getting results by the neural psychological disorder, that particular set of students have to get psychiatric treatment as per the results.

VI. COGNITIVE SCIENCE

Under cognitive science, it is functioning with the strategies of cognition and meta-cognition. Cognition is generally considered about the educational psychology for the improvement of the children. It is completely about the psychological activities in the basis of memory, learning, problem solving, attention and decision making. On the other hand, Meta cognition is explained the thinking about thinking. It is following some of the criteria, an individual control their own cognition. Cognitive Science is the multi-disciplinary research area; it is concentrates in the areas like NLP, Neuro-science, Anthropology, Psychology, Linguistics, Philosophy and Artificial Intelligence.

This research area is processing with the computational techniques called Artificial Intelligence (AI). This AI concept is narrow-down their functions in Neuro-Linguistic Programming (NLP). This NLP Concepts like manipulation, WSD (Word- Sense Disambiguation and Morphology). In this cognitive science domain NLP is the term mentioned about Neuro-Linguistics Programming not it as Natural Language Processing. Cognitive Science is programming with the several labeling/tagging/tokenizing. The labeling are Syntax, the mental lexicon, constituent structure, function structure, phrase, semantics, noun phrase(NP), pragmatics, verb phrase(VP), morpho-syntax, phrase structure, syntax-semantic interface, sentence structure, ambiguity, tree diagram. Neuro-Linguistic Programming is come under or connected with cognitive science for structuring classroom work for managing students. Generally, it is used to change the behavior patterns of human. It is classified into visual, auditory and kinesthetic. This cognitive science involved several techniques and field to create a certain prediction and real-time application. It is fallen into the deep learning methods. Researcher has to take more modules for getting the output.

Tools/Software for Cognitive Science:

- Matlab
- Python
- C

- C++
- Perl
- R Programming
- Octave
- Java
- C#
- SPSS
- SAS

VII. Conclusion

This paper moves to the next stages of prediction and implementation for Cognitive Science domain in the research area. This parametric pre-processing stages is helps us to narrow down the domain for the activation of computational mind by using Psychology trained data by using several techniques such as WSD, Machine-State Functionalism, Fuzzy-logic, N-Queens Problems. By the way of analyzing these functionalities or algorithms, will helping us to determine the problem for proposed work in research area. It will give finalization about the techniques, which is used for getting prediction set and real-time project or implementation.

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