

Fuzzy Blackboard GPT: Generative Pre-trained Transformer



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ABSTRACT

Blackboard System is shared the knowledge, controlling knowledge sources and data sources of problem solving concept. Blackboard System can access knowledge sources simultaneously by transforming the rule based into nested rule-based. In this presentation fuzzy nested conditional inference is studied. Blackboard system is studied using fuzzy nested conditional inferences and controlling knowledge sources. The knowledge sources are pre-trained for Blackboard system. Blackboard Generative Pre-Trained Transformer is studied using question answering system. Blackboard System will reduce the search, integrate and reuse the knowledge sources (KSs). The Fuzzy Blackboard GPT Shell is given.

1. INTRODUCTION

Fuzzy Blackboard System mainly contain components are Knowledge acquisition, Knowledge base (facts and rules) Blackboard (KSs), Control Unit, Control Shell, Working Space Extracting KSs Inference Engine

Given a universe of discourse X , fuzzy proposition of type “ x is A ”, $x \in X$, a fuzzy subset A of X is defined by its membership function μ_A taking values on the unit interval $[0,1]$ i.e. $\mu_A(x) \rightarrow [0,1]$

if x_1 is A_1
 elif x_2 is A_2 and ...
 else x_n is A_n

References

- Engelmore R., Morgan T. (1988). Blackboard Systems, Addison-Wesley
- E. H. Mamdani, Application to Fuzzy Logic to Approximate Reasoning using Linguistic Synthesis, IEEE Transactions on Computers, vol.C-26, issue 12, pp.1182-1191, 1977..
- Poli Venkata Subba Reddy, Blackboard and Blockchain Technology for Database Systems . Global Journal of Computer Science and Technology: C Software & Data Engineering, Vol 22, issue 3, pp.23-28, 2022.

2. METHODS

The object of Blackboard Systems is to capture the knowledge sources of particular AI problem. The Blackboard GPT is to access pre-trained knowledge sources

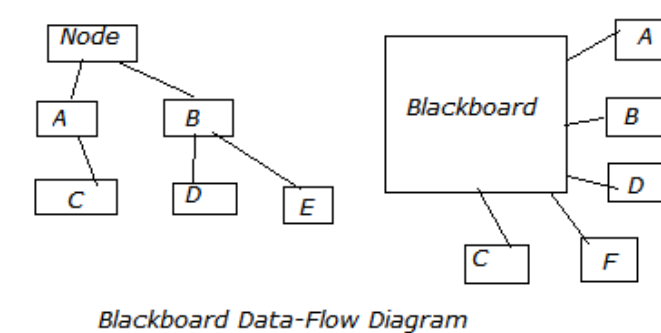
Blackboard Shared Pre-Trained KSs

if (condition) :{ // block of code to be executed if the condition is true}
 elif (condition){ // block of code to be executed if the condition is true}
 elif (condition){ // block of code to be executed if the condition is true}
 else { // block of code to be executed if the condition is true}

Share representation of the pre-trained knowledge sources fact1, fact2, fact3, fact4 and fact5

```
<HTML>
<HEAD>
<SCRIPT language = "JavaScript">
document.write("<H3> Rule-1:if x is fact1
and x is fact2 then the fact3<H3>");
document.write("<H3> Does the Fact1
?<H3>");
var s1= prompt("Does Fact1?", "fact1");
var f1 = prompt("enter fuzziness of the fact1",
"fuzziness");
document.write("<H3> "+s1+"<H3>");
document.write("<H3> Does the
Fact2?<H3>");
var s2= prompt("Does the Fact2?", "fact2");
var f2 = prompt("enter fuzziness of the fact2",
"fuzziness");
document.write("<H3> "+s2+"<H3>");
document.write("<H3> Does the
Fact3?<H3>");
var s3= prompt("Does the Fact3?", "fact3");
```

```
<SCRIPT language = "JavaScript">
if (s1== "fact1") {if (s2== "fact2") {
document.write("<H3> The following fuzzy rule
satisfies <H3>");
var f4= Math.min(f1, f2, f3);
document.write("<H3> Rule-1:if fact1 and
fact2 then Conclusion<H3>");
document.write("<H3> Rule-1:if "+s1+" and
"+s2+" then Conclusion "+ s3 +" , "+f4
+"<H3>");
}
elif
{document.write("The rule not satisfies");
}
else
{document.write("The rule not satisfies");
}
```



Rule-1:if x is fact1 and x is fact2 then the fact3
 Does the Fact1 ?
 fact1
 Does the Fact2?
 fact2
 Does the Fact3?
 fact3
 The following fuzzy rule satisfies
 Rule-1:if fact1 and fact2 then Conclusion
 Rule-1:if fact1 and fact2 then Conclusion fact3

3. RESULTS

The outcome of Generative AI is given below.

ChatXpertGPT Fuzzy Agent Shell

Hi! I'm ChatXpertGPT Fuzzy Agent Give facts and I will give Decision.

Hi! I'm ChatXpertGPT. Type 'chat' to exit.

ChatXpertGPT: 'fact1'

ChatXpertGPT: fact1

fuzziness f1:0.7

('ChatXpertGPT:', 0.7)

ChatXpertGPT: 'fact2'

ChatXpertGPT: fact2

fuzziness f2:0.6

('ChatXpertGPT:', 0.6)

ChatXpertGPT: 'fact3'

ChatXpertGPT: fact3

fuzziness f3:0.8

('ChatXpertGPT:', 0.8)

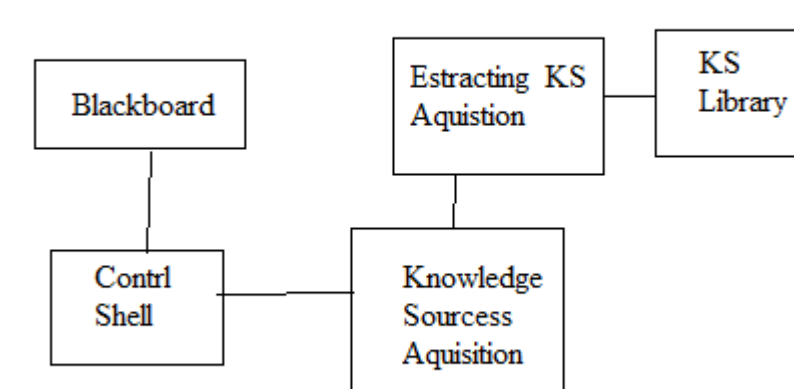
('if fact1 and fact2 and fact3 then ', 'Decision', 0.6)

('Action', 0.6)

ChatXpertGPT: 'chat'

ChatXpertGPT: Chat is over.

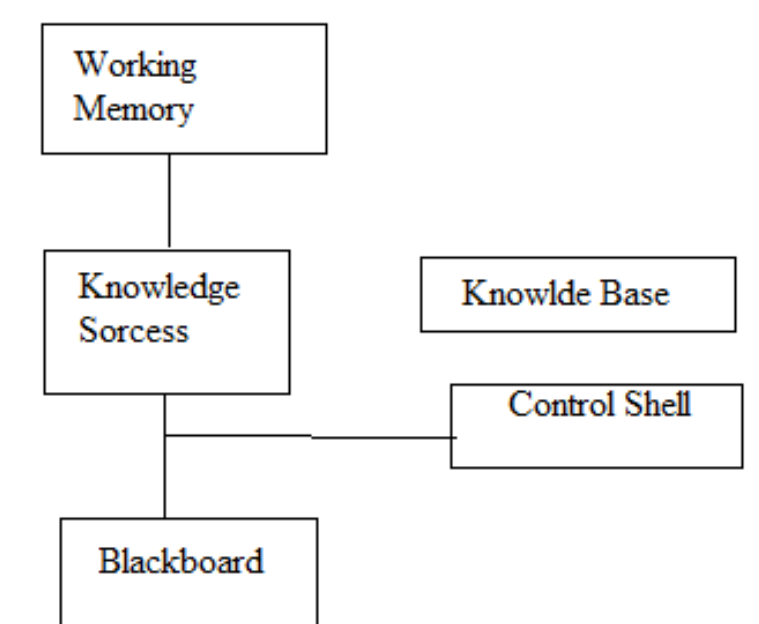
Blackboard System Operation



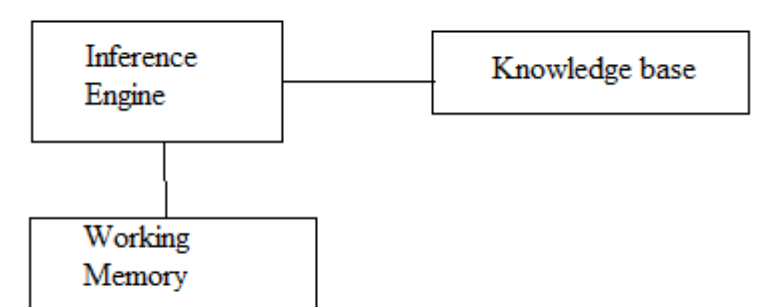
4. CONCLUSIONS

Blackboard System is shared and controlling knowledge or data sources of problem solving approach. Blackboard Control Architecture is controlling knowledge sources of Blackboard System. In this paper, fuzzy nested conditional inference is proposed. Blackboard system is studied for fuzzy nested conditional inferences and controlling knowledge sources. Blackboard System is studied to simplify and minimized the fuzzy nested fuzzy condition inference. Blackboard System will reduce the search and reuse the knowledge sources (KSs). The Blackboard Shell system is given an example with JavaScript.

Blackboard System



Rule-Based System



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