Attentional Trees And Robotics: Towards an Executive Framework Meeting High-level Decision Making and Control Layer Features.

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I. INTRODUCTION

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II. RELATED WORKS

A. Logic fixed Techniques

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B. Attentional techniques

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III. SYSTEM OVERVIEW

Attentional Trees framework aims at integrating the following features:

1) Task planner based on Behavior Trees
2) Priority handling of tasks based on attentional mechanisms and emphasis [**?**]
3) JSON schema conversion into Behavior Trees

A. Task Planning

B. Priority Handling

1) Attentional Mechanism:

2) Emphasis:

C. JSON Schema

A typical JSON schema consists of a list of string objects. The first object element defines the root of the Behavior Tree. The remaining object elements are defined as subtrees and will be added recursively as children from the root. Each object contains properties `name`, `type`, `father`, `children` and `parameters`, which provide with information about the Behavior Tree node types as well as additional attributes for pre-and post-conditioning handling, priority execution and any additional information.

```
{
    "name":"selector01",
    "type":"selector",
    "father": "sequence01",
    "children": ["isReached","reach"],
    "parameters": [["emphasis", 1]]
}
```

IV. METHOD

A. Behavior Trees Overview

A Behavior Tree (BT) is defined as a way to structure the switching between different tasks in an autonomous agent [1]. Motivated by the limitations of Finite State Machines[1], it provides with an ability to quickly and efficiently react to changes as well as the required modularity in systems where system's components may be interchangable and/or extendable.

1) Formulation of Behavior Trees: Behavior Trees can be divided into two type of nodes: control flow nodes and execution nodes. Control flow nodes may be of type Sequence, Fallback/Selector, Decorators or Parallel. Similarly, execution nodes may be either conditions or actions. Each node can return success or failure after execution. The type of node defines the behavior and task execution order depending on the return value of each node. Table I provides a description of this behavior.

[1]"one-way control are aninvitation to make a mess of ones program - Dijkstra [2]

Node Type	*Success*	*Failure*	*Running*
Fallback/ Selector	If one child succeeds	If all children fail	If one child returns Running
Sequence	If all children succeed	If one child fails	If one child returns Running
Parallel	If >M children succeed	If >N-M childrne fail	else
Action	Upon completion	If impossible to complete	During completion
Condition	if True	if False	Never
Decorator	Custom	Custom	Custom

TABLE I

TYPES OF BT NODES AND THEIR RETURN STATUS

B. Execution of Behavior Trees

C. Emphasis and Planning

D. Blackboard Mechanism

E. Implementation Details

V. EVALUATION

A. Use Cases

VI. CONCLUSIONS

A conclusion section is not required. Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions.

APPENDIX

Appendixes should appear before the acknowledgment.

ACKNOWLEDGMENT

The preferred spelling of the word acknowledgment in America is without an e after the g. Avoid the stilted expression, One of us (R. B. G.) thanks . . . Instead, try R. B. G. thanks. Put sponsor acknowledgments in the unnumbered footnote on the first page.

References are important to the reader; therefore, each citation must be complete and correct. If at all possible, references should be commonly available publications.

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