
Algorithm 1 Main Exploration Loop with Expanded LLM Event Generation

```
1: procedure START(input_manager)
2:    $count \leftarrow 0$ 
3:   while  $count < max\_event\_count$  do
4:     Update UI state and snapshots
5:     if  $count = 0$  then
6:        $event \leftarrow KillApp$ 
7:     else if  $count = 1$  then
8:        $event \leftarrow StartIntent$ 
9:     else if  $count \bmod events\_to\_restart = 0$  then
10:       $event \leftarrow ClearOrRestartApp$ 
11:    else
12:      if LLM mode is active then
13:        if Continuing LLM Sequence then
14:          Build Next Action Prompt
15:           $response \leftarrow CallLLM()$ 
16:           $response \leftarrow ValiditByLLM()$ 
17:           $act \leftarrow ParseAction(response)$ 
18:        else
19:          Reset Message History
20:          Build Meaning Prompt
21:           $r_1 \leftarrow CallLLM()$ 
22:          Build Task Prompt
23:           $r_2 \leftarrow CallLLM()$ 
24:          Add Task Title from  $r_2$ 
25:          Build First Action Prompt
26:           $r_3 \leftarrow CallLLM()$ 
27:           $response \leftarrow ValiditByLLM()$ 
28:           $act \leftarrow ParseAction(r_3)$ 
29:        end if
30:        Update LLM Mode:  $in\_llm \leftarrow act.hasNext$ 
31:         $event \leftarrow WrapAsU2Event(act)$ 
32:      else if Current UI  $\approx$  Previous UI then
33:        Activate LLM Mode
34:        Follow same steps as above to generate  $event$ 
35:      else
36:         $event \leftarrow RandomGenerate(from\_state)$ 
37:      end if
38:    end if
39:    Execute( $event$ );  $count \leftarrow count + 1$ 
40:  end while
41:  Clean up and exit
42: end procedure
```
