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A knowledge-level expert system responsive within the available time

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가

가

가 domain knowledge task control knowledge , task

가

1.

가

consulting

가

가

가

가

, , , interrupt
 , 가
 laffey[1] .
 Laffey 가
 anytime
 algorithm[4][5], design-to-time [2][3], progressive reasoning[6]
 Guardian[7], real-time system AI subsystem
 CIRCA[8] . anytime algorithm 가
 ,
 가 ,
 abstraction level . CIRCA
 ,
 . multiple method
 design-to-time algorithm
 quality tradeoff method . method 가
 .
 algorithm ,
 가 , 가
 가 .
 가
 가
 .
 -
 - 가
 - interrupt 가
 가
 . 2 task
 , 3 .
 4 ,
 , 5 .

2.

knowledge-based 가 ,
 abstraction level .
 abstraction level 가 ,

가

가

가

가

가

가

가

(task)

가 가

가

[9][10].

가

가

가

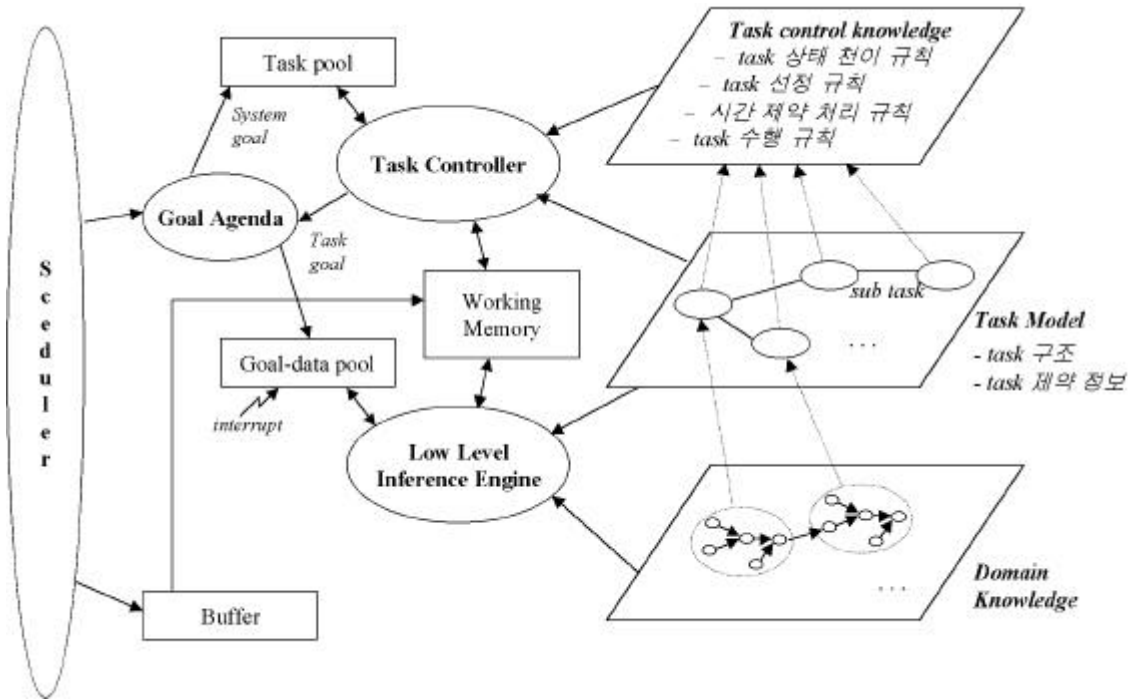
가

가

3.

1

domain knowledge task control knowledge . Task control
 knowledge task , task , task
 . Task model domain task
 task 가 domain knowledge task control
 knowledge
 task task controller , task, task
 task control knowledge . task controller task, goal pool system goal, task
 instance task ,
 task controller task가 , task goal agenda가
 task goal data, goal pool . task goal , task task
 task가 domain knowledge low level inference engine
 . inference engine task가 evaluation table 가 .



1.

4.

template

control

template

template

task

2

가

가

가

가

(terminal task)

가

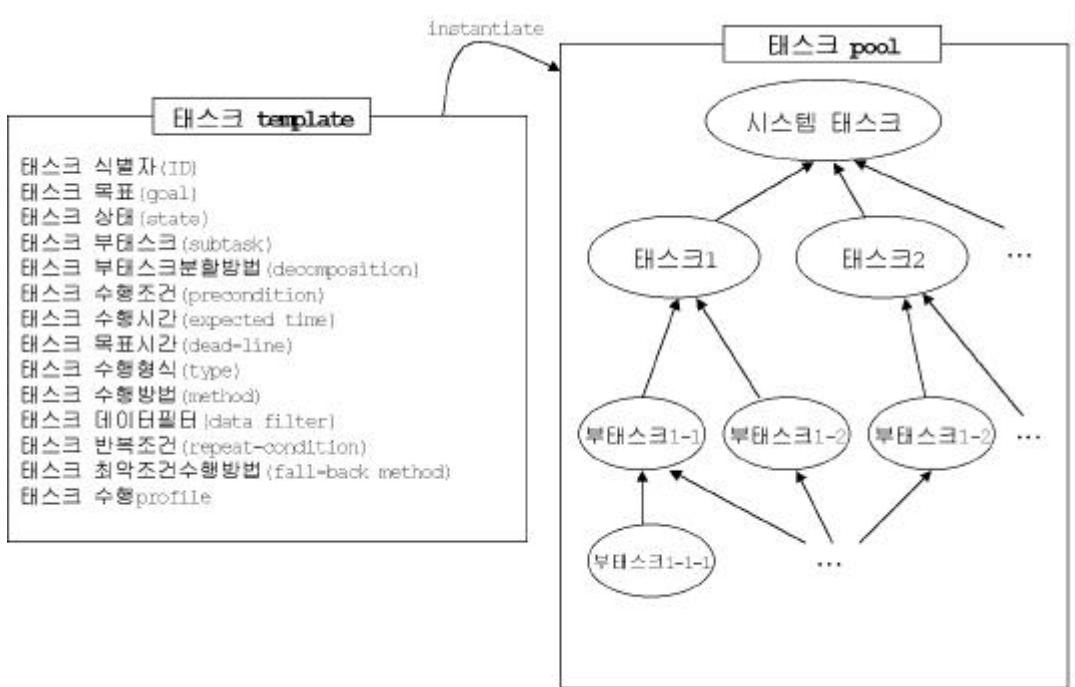
가

가

가

가 ,
 가
 가

template 가 2



2.

(ID)

(goal)

가

(state)

(active), (wait), (success), (failure), (sleep),

(select)

6가

- : 가

- :

- : 가

- : (goal)가

- : 가
- : 가

(subtask)

(decomposition)

- OR : 가 가 3가
- AND : 가 가
- DONE : 가

(precondition)

가

(expected time)

가

(dead- line)

가

(type)

(method)

(data filter)

(dead- line) 가 set

(repeat- condition)

가 goal

(fall- back method)

method

(profile)

(goal change)

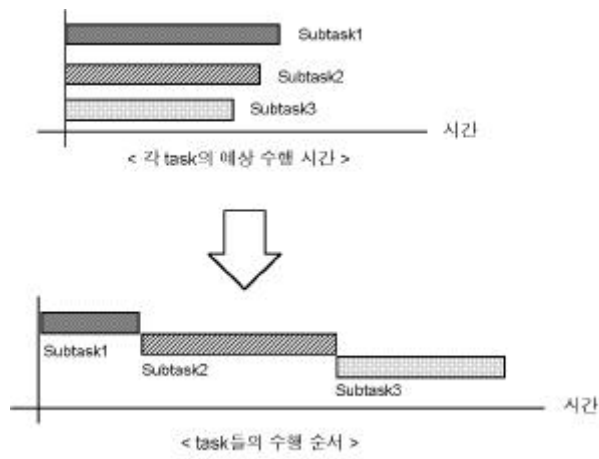
evaluation table

5. (task control knowledge)

task, task, task

1)

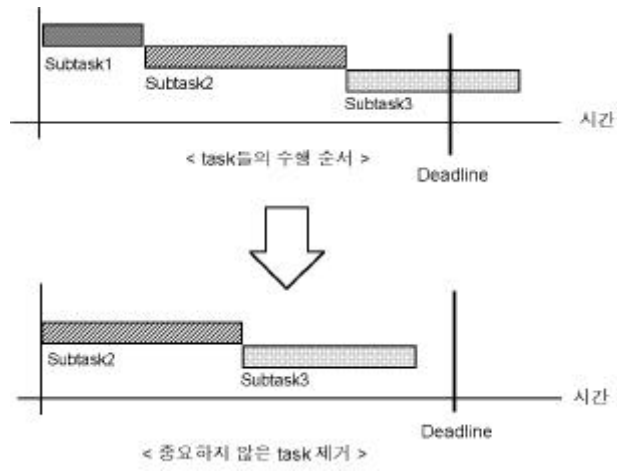
3



3.

2)

task



4.

3) task

가 , . ,

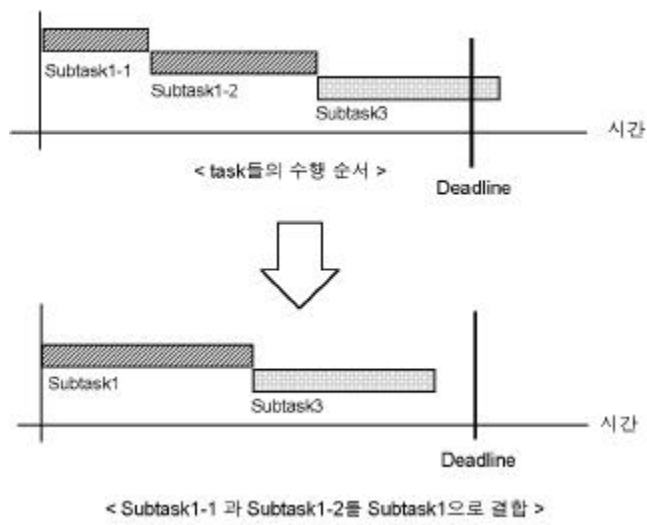
,

가

가

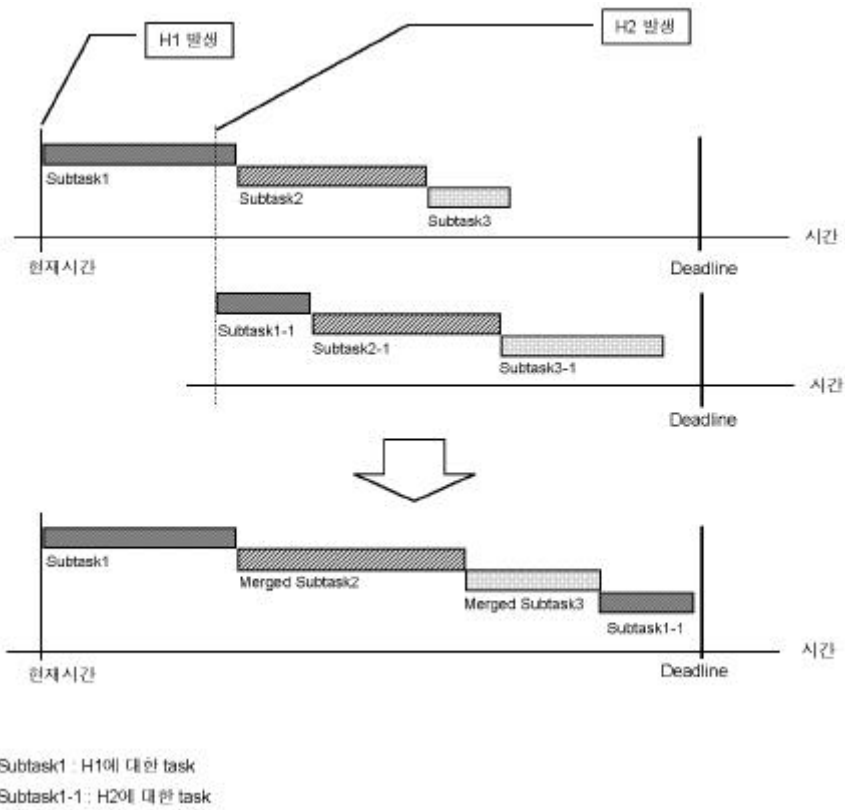
가

가 가 ,



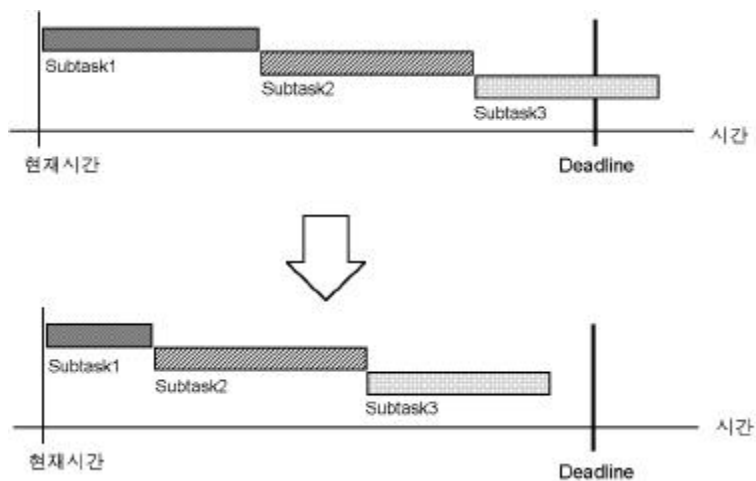
5.

(1)



5. (2)

4) task가 goal, data, knowledge



6.

goal

filtering data filtering, goal changing, knowledge
 6 . 6 deadline
 subtask 1,2,3 subtask1 goal, data, knowledge

6. :

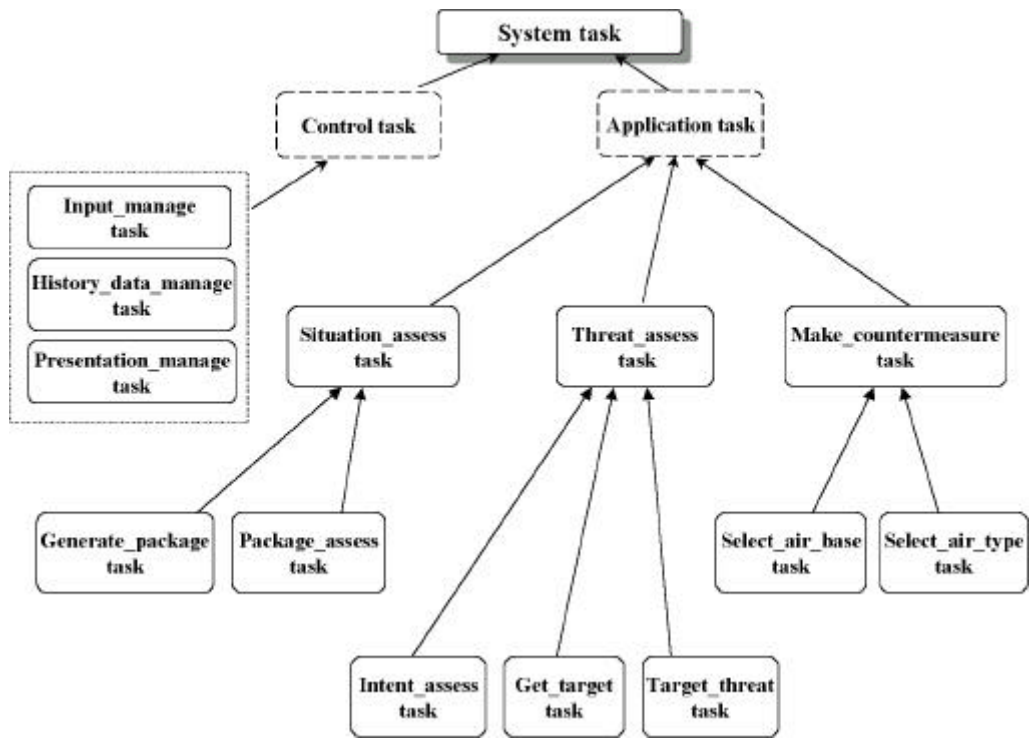
- 가 , ,
- 가
- run-time 가
- interrupt
- level interrupt 가 가

1)

- 가 , 가
- 가 ,
- dead- line , 가, 가,
- 가 ,

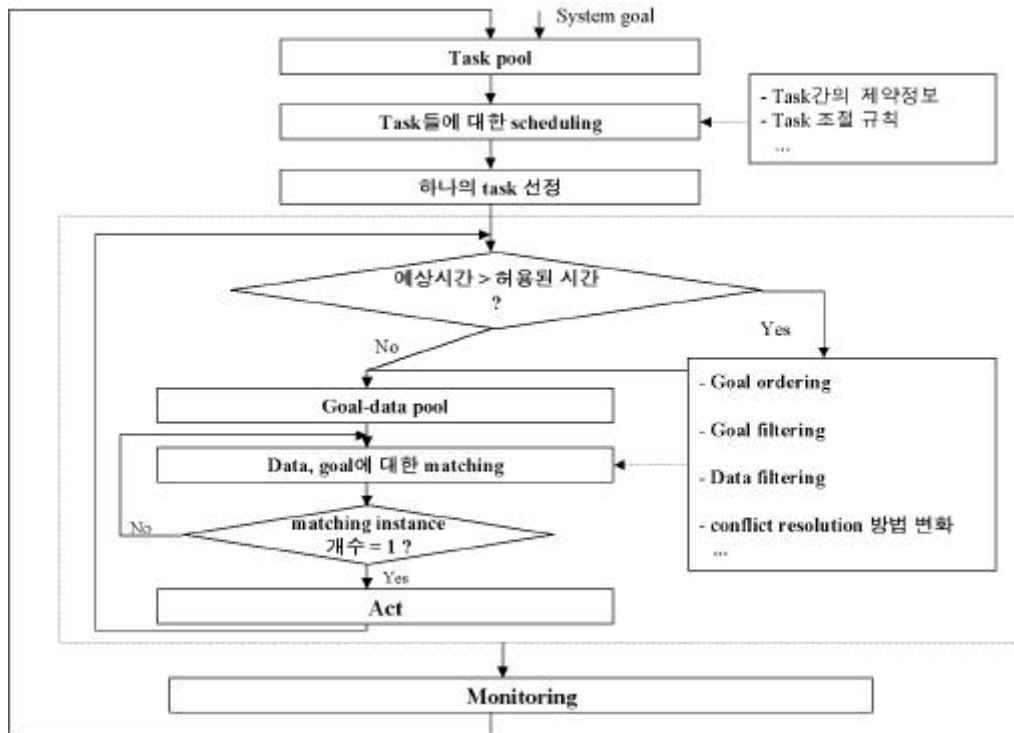
2)

task system task situation_ assess, threat_ assess, make_ countermeasure task 3가
 domain task system input_ manage, history_ data_ manage,
 presentation_ manage task control task
 domain task
 7 task sub task
 task control knowledge



7. task

3)



8.

8 .

, goal task task pool , task pool
 task task scheduling 가 task .
 task , task , task ,
 control control knowledge 가 ,
 task . task 가

7.

real-time real-time ,
 , AI 가 real-time
 , interrupt , , AI
 , 가
 interrupt 가 level
 , 가
 task ,
 domain level control level , 가
 , 가
 control knowledge , run-time
 , data, goal , data-driven goal-driven 가
 , level interrupt 가 가
 , 가 가
 가 . simulation
 , 가

8.

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