

Human Computer Interaction

UNIT-5

Lecture 3:

Task modeling and analysis

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Lecture 3: CTT Example

Objective

- In the previous lecture, we learned about the importance of engineering task models
- We discussed about the basic idea about the ConcurTaskTree (CTT) – an engineering task model
- In this lecture, we shall discuss an illustrative example to better understand the concepts in CTT

CTT – A Case Study

Suppose we want to model the user tasks in operating a mobile phone. Further assume that we are interested in modeling the tasks related to making a phone call only (not taking photos or listening to music!).

CTT – A Case Study

- The questions of interest are,
 - What are the tasks?
 - What are the task types (user tasks, interaction task etc.)?
 - How the tasks are related (what temporal operators are applicable between tasks)?

CTT – A Case Study

- First thing to note is that there are three sequential tasks
 - We first switch-on the phone (assuming the phone is always switched-off after making a call)
 - Then we perform the tasks necessary to make phone call
 - Finally we switch-off the phone

CTT – A Case Study

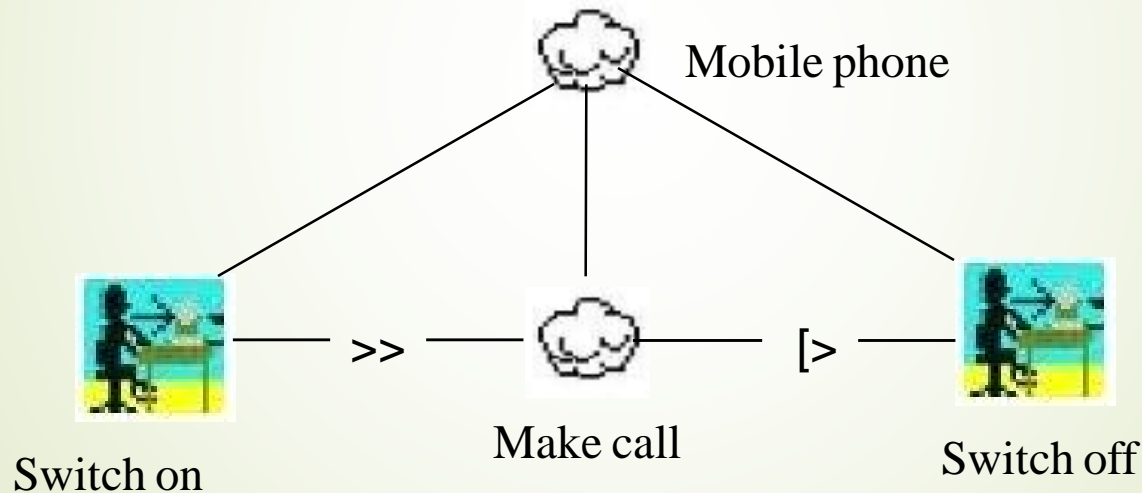
- Switching on/off the phone are interaction tasks
- The type of the subtasks necessary to perform a phone call are not of single types. Hence it's an abstract task.

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- Phone call can't take place before the phone is switched on. Thus, these two are related by the enabling operator (\gg).
- Phone can be switched off any time during a call. So, these two tasks are related by a disabling operator ($[>$).

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- The top level structure of the CTT therefore looks like the following



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- Now, let us determine the subtasks for making a call
 - We first have to select the number of the person to be called (**task: select number**)
 - Then, we dial the number using a “make call” button (**task: dial number**)
 - Once the called person picks up the phone, we start conversation (**task: conversation**)
 - Finally, at the end, we disconnect (**task: disconnect**)
- What are the task types?

- The “select number” tasks involve subtasks of different types. So, it is an abstract task.
- “Dial number” is clearly an interaction task.
- “Conversation” is an interaction task. Moreover, it is a repetitive task if we assume that a conversation represents each pair of utterance (called/caller)-response (caller/called)
- The remaining task, namely “disconnect” is also interaction task

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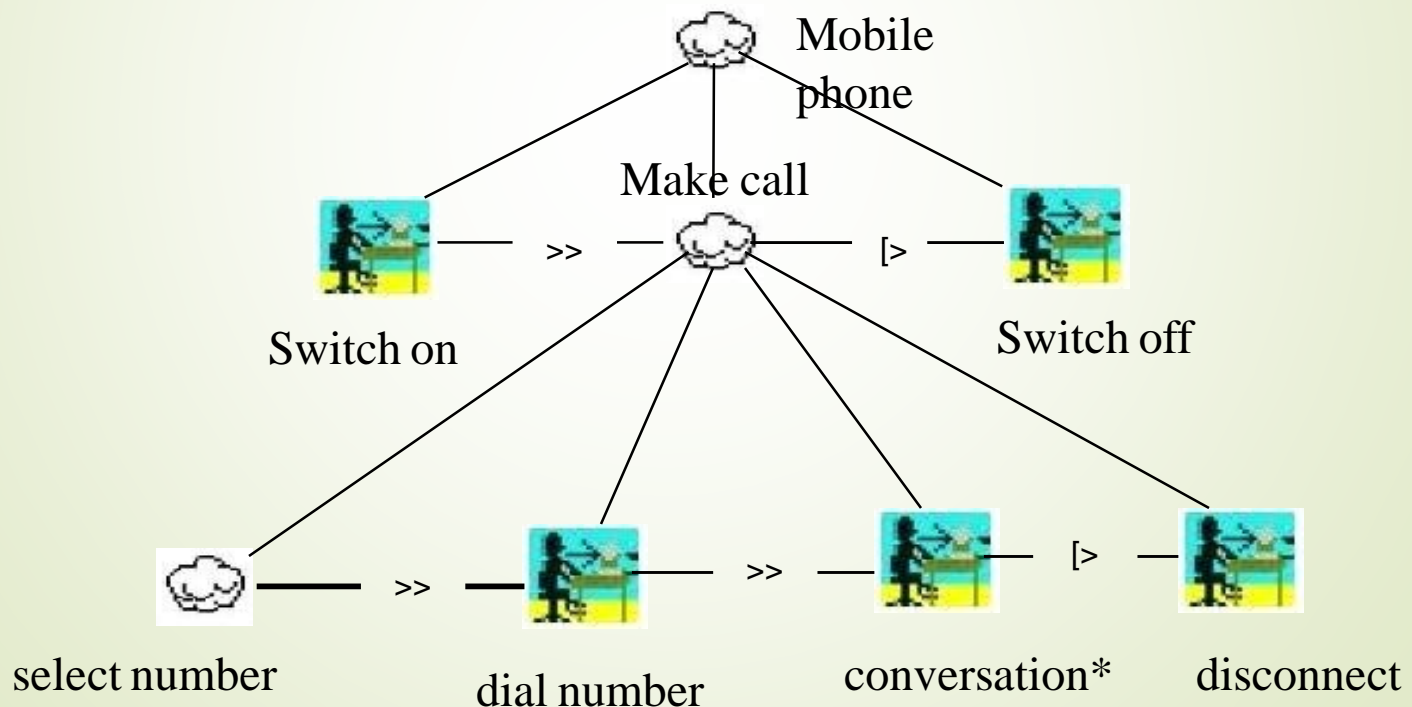
- Next, we need to find out the relationship between these tasks
- It is obvious that “select number” precedes “dial number”, which in turn precedes “conversation”
- “disconnect” comes at the end of the sequence of tasks

CTT – A Case Study

- Therefore, “select number” and “dial number” should be connected by the enabling operator (\gg). The same operator should apply between “dial number” and “conversation”
- Since a call can be disconnected any time during conversation, “conversation” and “disconnect” should be related with a disabling operator ($[>$)

CTT – A Case Study

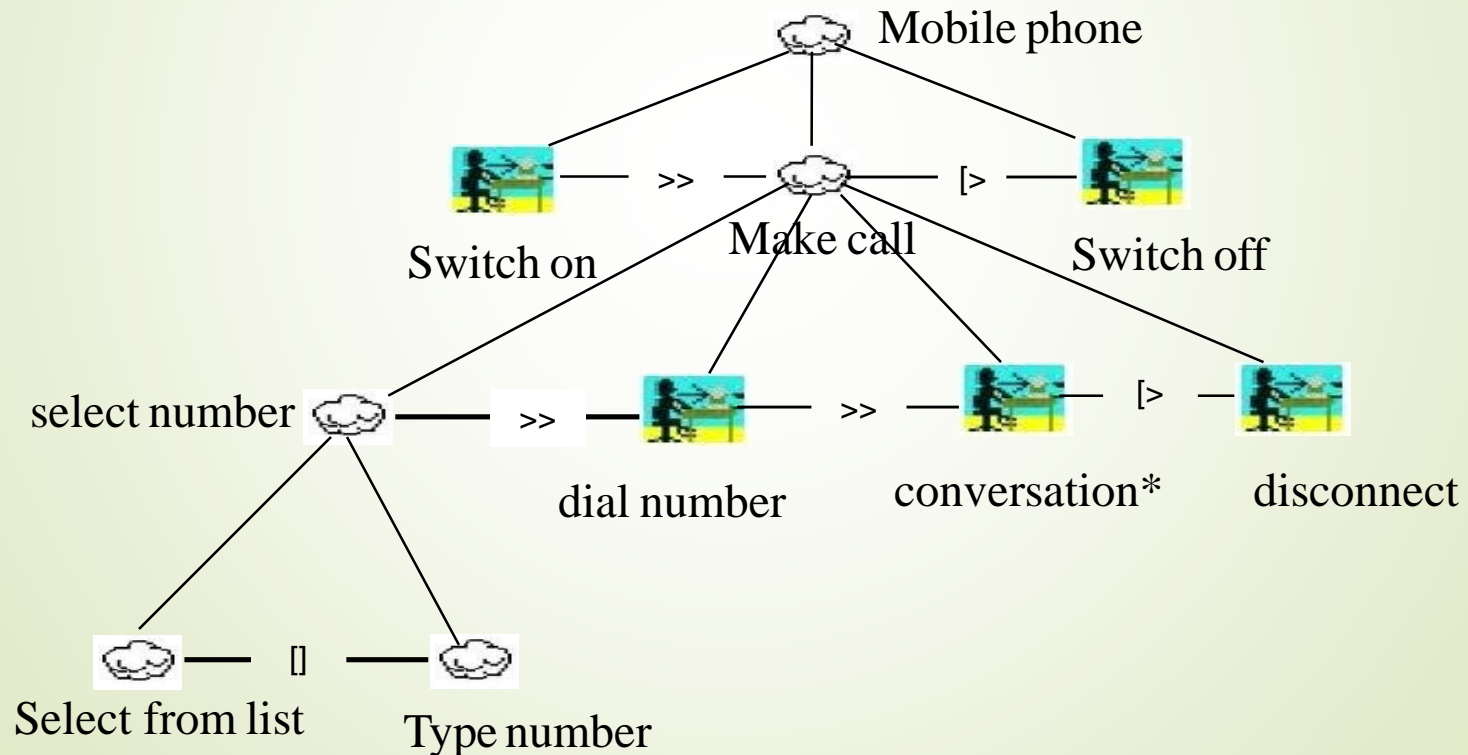
- Thus, the CTT looks like the following after expansion



- The task “select number” can be performed in either of the two ways.
 - We can select the number from a contact list (**task: select from list**)
 - Or we can type the number (**task: type number**)
- Both the above tasks are abstract type (as they can be further divided into different types of subtasks) and connected by the choice operator ([]).

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- Thus, the CTT looks like the following after expansion



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- The task “select from list” involves four sub tasks
 - First, select the appropriate button/menu option to display the list (**task: open list**)
 - Next, browse the list elements till you arrive at the name of the called person (**task: find name**)
 - Then, select the name using appropriate button (**task: select name**)
 - Finally, once the name is selected, the corresponding number is displayed on the screen (**task: show number**)

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- The first three tasks (display list, find name, select name) are all interaction tasks.
- Since these have to be performed in sequence, they are connected by the enabling operator ($>>$)
- The last task (display number) is of type application task. Moreover, it is related with the last task in the previous sequence (select name) through the enabling with information passing operator ($[]>>$)

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- The task “type number” involves two subtasks
 - We first need to recall the number (**task: recall number**). Clearly, this is a user task
 - Then we need to actually type the numbers (**task: enter number**). This is clearly an interaction task.
- The two tasks are related through the enabling with information passing operator ($[]>>$)

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- Thus, the CTT for the entire task looks like the following

