Banking Application

Overview

- Control Strategy
- Information State
- Actions
- Task

User can transfer, withdraw, and deposit money.
Overview

- Task
- Control Strategy
  - Information State
  - Actions

Information State: Interface

- LastMove: What was the last move be (write only).
- NextMove: What will the next move be (write only).
- Allow system to make multiple utterances in a turn such as inform & question.
- Used by control strategy to determine if to run action rules.
- Set by action rules to indicate if system made last move.
- Useful, as sometimes you need to distinguish if system made last move or user.
- Set during action rules.
- Used by control strategy to determine if to run action rules.

- HaveTurn: Does self have the turn (1 or 0).
- Read only. Intended to be read by understanding rules.
- LastSpeaker: Who spoke the last dialogue move (self or other).
- Read only. Intended to be read by understanding rules.
- LastMove: What was the last dialogue move.
Meta Control Strategy

- Will use three types of rules
- Understanding rules: will examine what was just said and update information state based on this
  - Only the first one will be applied
- Deliberation rules: update IS based on other knowledge in IS
  - Note that no rule might apply especially when system made the utterance
  - Only the first one will be applied
- Action rules: will determine what to say next based on IS
  - Only first rule will be applied

Order of rules does matter

- Understanding rules: will examine what was just said and
- Deliberation rules: will examine what was just said and
- Action rules: will examine what was just said and
Private and Public Goals in Dialogue

- Need to track system's private goals and joint goals in dialogue

An approximation of joint goals:

- QUD: Questions that have been asked, but not yet answered
- QUDspeakers: Speaker of each question on QUD
  - Needed so system knows if it should be answering or user
  + Organized as a stack, as if one person asks a question, other might ask a question that needs to be answered first, in order to answer original question.

System: how much do you want to transfer?
User: how much is in my savings?
System: $100
User: then, I'll transfer $50
Private Goals

Informal State: Domain Information

- Balance (checking)
- Amount
- From
- To
- Transaction Type

Private Goals

- Used to form goals from understanding an utterance
- By having agenda, can have goals that might not be achieved in current turn
- If user asks query, user to determine transaction type
- Goal used to determine transaction type
- 
- Use an agenda for shorter-term private goals of the system

Agenda drives action rules

If can't understand what user said, add goal to agenda to inform user

If can't understand what user said, add goal to agenda to inform user

Organized as a stack

Private goals: goals that are not mutually known and shared
Actions for Domain Goals

- Actions
  - Information State
  - Control Strategy
  - Task
User Answer to Query

Use general understand rule for system’s queries

• Use special understand rule for system’s queries

Queries on the Agenda
Example Execution

The Dialogue Manager will look for "bye" as NextMove and end
- If no other action rule, the system will end
  Last rule
  ```
  \{ \text{set is(NextMove) bye} \}
  \{(\text{set is(NextMove) bye}) \}
  \{ \}
  \text{set up the action bye}
  ```

Ending the Dialogue

Example Execution

User: transfer

System: query TransType

understand self-ask

deliberate transfer-from

deliberate transfer-to

deliberate transfer-amount

deliberate none found

System: query Amount

understand other-answer

deliberate setup

deliberate self-ask

System: query Amount

user: Transfer

System: query TransType

understand self-ask

deliberate none found