IMAS-MAI
Activity 1

Jordi Armengol, Víctor Giménez, Joan Llop, Daniel Ordóñez, Albert Rial

University Rovira i Virgili
Master in Artificial Intelligence

1. Characteristics of the environment
2. Best kind of architecture to apply to each type of agents.
3. Properties that should be exhibited by each type of agents
4. Agent types

Accessible or inaccessible

Accessible, since:

- All agents can obtain all the environment information.
- We consider Classifier agents can access to all the information
  $\rightarrow$ Manager tells them the parts they need.

Deterministic or non-deterministic

Deterministic, since:

- Depends on the application domain i.e. the dataset we want to learn.
- We consider that our models will be deterministic.

Episodic or non-episodic

Episodic, since:

- The system should not need to consider previous executions.

More complex approach $\rightarrow$ Manager agent could consider its own performance in previous episodes to change its behaviour.

Static or dynamic

Dynamic, since:

- Human interaction with the system at any moment of time.

Discrete or continuous

Discrete, since:

- Limited number of actions in the system.
- Finite dataset.

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Best kind of architecture to apply to User agent

Reactive, since it just sends queries:

- T: Training.
- P: Prediction.

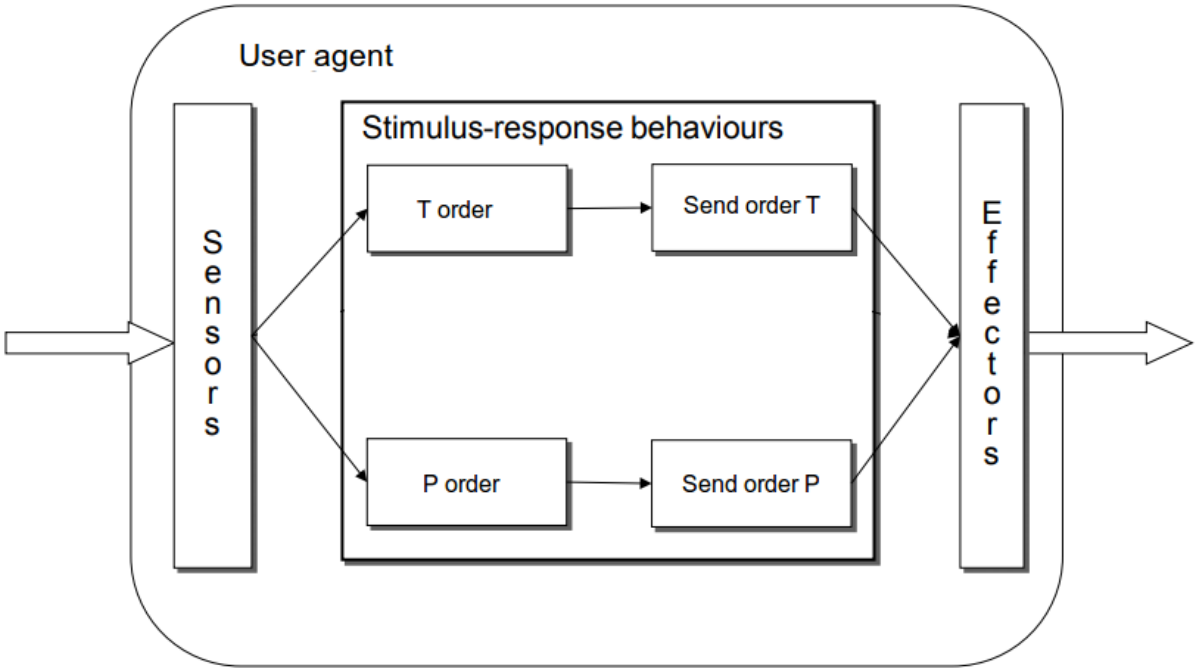

Figure: Basic architecture for the user agent (reactive)

Best kind of architecture to apply to Manager agent

Hybrid:

- Reactive: Behavioral layer $\rightarrow$ Send data
- Deliberative: Cooperative planning layer $\rightarrow$ Ensemble classifiers

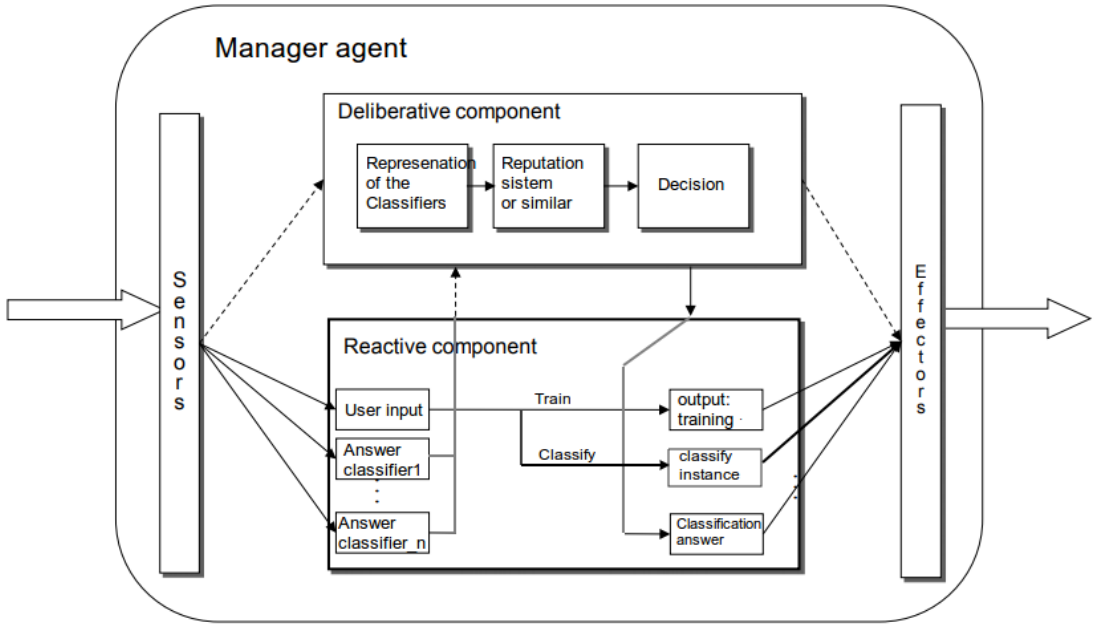

Figure: Basic architecture for the manager agent (hybrid)

Best kind of architecture to apply to the Classifier agents

Hybrid, since:

- Reactive: Behavioral layer $\rightarrow$ Inference
- Deliberative: Planning layer $\rightarrow$ Training

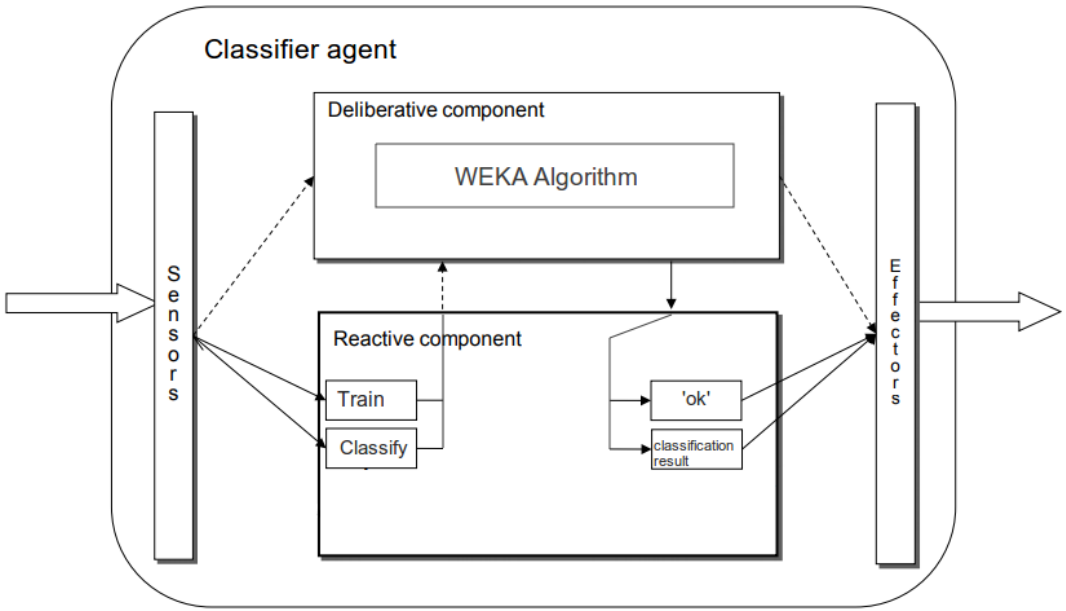

Figure: Basic architecture for the classifier agent (hybrid)

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Properties that should be exhibited by the User agent

- **Reactivity**
- **Communication and social ability**
- **Rationality**
- **Temporal Continuity**

Properties that should be exhibited by the Manager agent

- **Reactivity**
- **Proactiveness and Autonomy**
- **Communication and social ability**
- **Flexibility**
- **Rationality**
- **Reasoning and Learning**
- **Temporal continuity**

Properties that should be exhibited by the Classifier agents

- **Reactivity**
- **Communication and social ability**
- **Rationality**
- **Reasoning and Learning**
- **Temporal Continuity**

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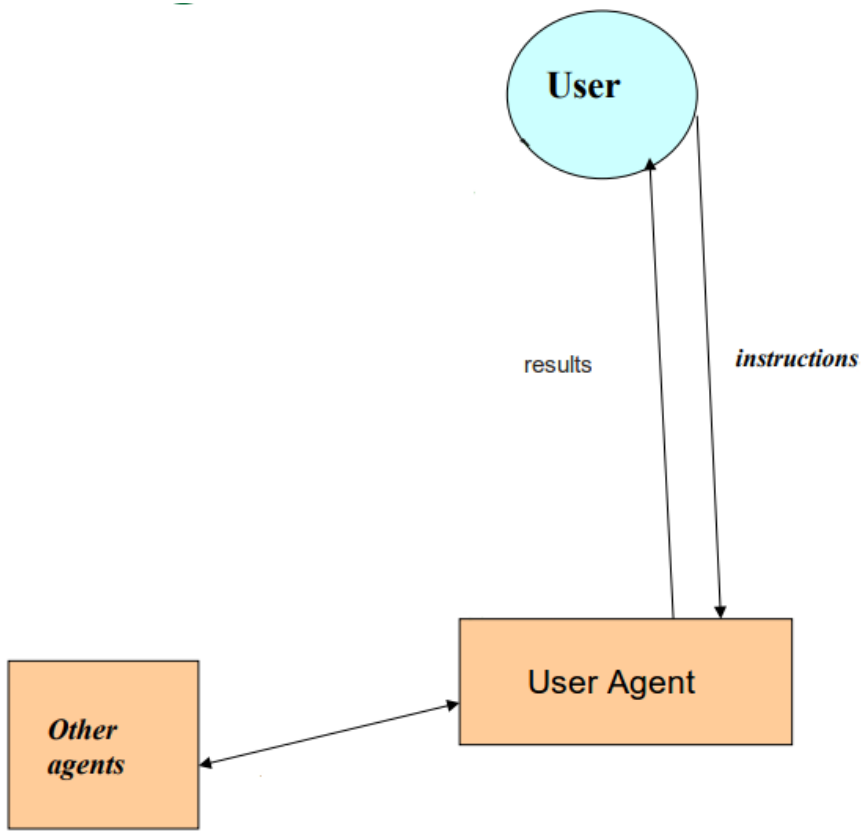
User agent type

Interface agent, since:

- Helps the user
- Avoid repetitive commands
- Limited cooperation and reasoning



Manager agent type

Collaborative agent, since:

- establishes communications with all the other agents
- Negotiates in case of conflict
- Has some limited learning

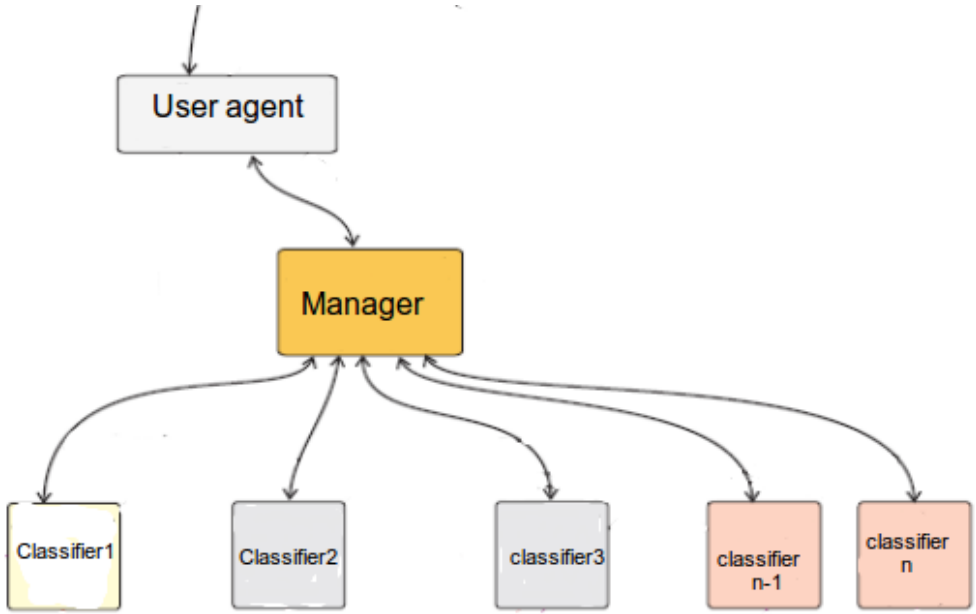


Figure: Collaborative type for the manager agent

Classifier agents type

Agentification, translator, since:

- The agent is a translation from the application (WEKA) to the manager

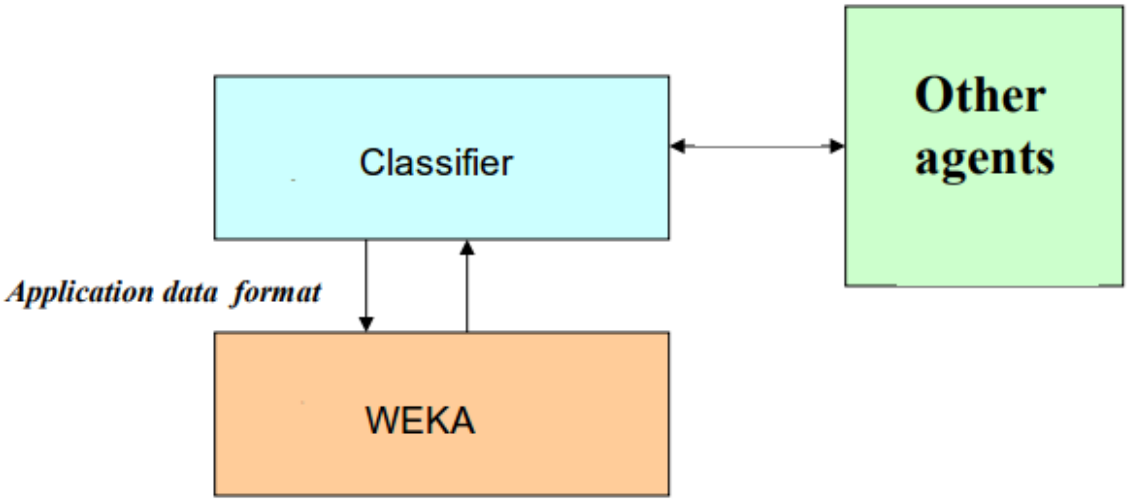


Figure: Agentification (translator) type for the classifier agent

Thank you

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