UNIVERSITAT ROVIRA i VIRGILI

# A-DSS FOR FRAUDULENCE PREDICTION

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# Introduction

**MAIN GOAL**

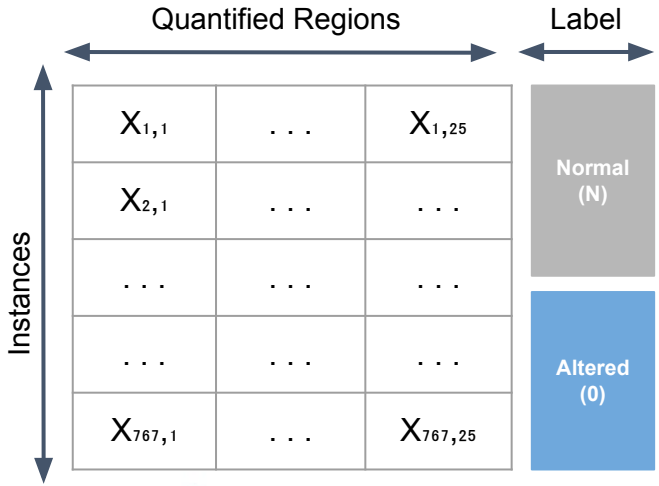
Development of a decision support system by means of multiple agents able to predict fraudulence in business companies.

Classification task:

- J48 algorithm: entropy gain based decision tree.

Training dataset:

- AUDIT²: 767 instances, 25 attributes.



# Proposed architecture

## User agent

Its role is to provide an interface for the user to interact with the system.

Reactive.

## Coordinator agent

Roles:

- Gateway between the user agent and the classification agents.
- Data splitting
- Decision system

Deliberative.

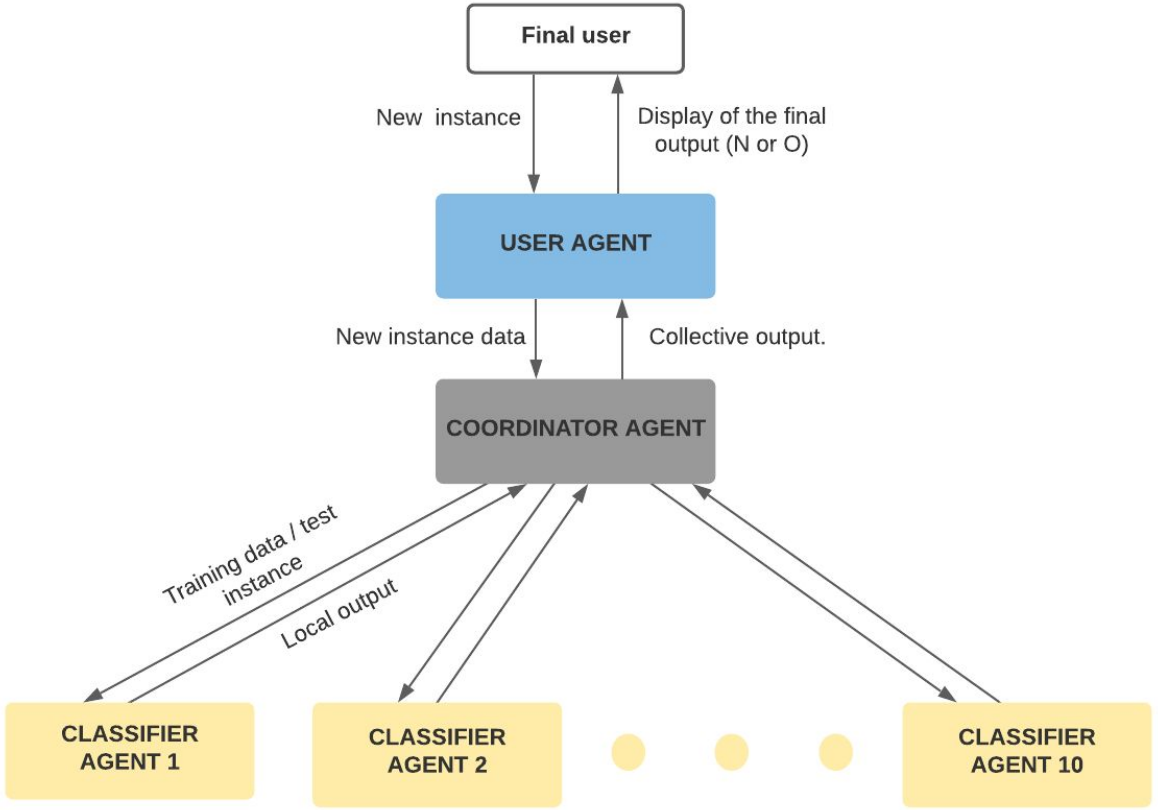
## Classifier agents

Responsible for classifying as fraudulent or legal a new observation or enterprise. Deliberative.

## Other agents

AMS (Agent Management System) and DF (Directory Facilitator).

# Proposed architecture



# Agent properties

The properties are different for each type of agent. However, they share some common facts:

The following properties are common in the three types of agents:

- Social Ability
- Rationality
- Autonomy

None of the agents have the next properties:

- Proactiveness
- Reasoning
- Temporal Continuity
- Mobility

# Agent properties

| Properties | User Agent | Coordinator Agent | Classifier Agent |
|---|---|---|---|
| Flexibility | ✗ | ✗ | ✓ |
| Reactivity | ✓ | ✗ | ✗ |
| Proactiveness | ✗ | ✗ | ✗ |
| Social Ability | ✓ | ✓ | ✓ |
| Rationality | ✓ | ✓ | ✓ |
| Reasoning | ✗ | ✗ | ✗ |
| Learning | ✗ | ✗ | ✓ |
| Autonomy | ✓ | ✓ | ✓ |
| Temporal Continuity | ✗ | ✗ | ✗ |
| Mobility | ✗ | ✗ | ✗ |

# Future steps

1. Incorporate feedback to current architecture
2. Decide which features will be used by each classifier
3. Decide the computation of the collective output
4. Design each agent with JADE
5. Define communication protocols between agents
6. Train the classifiers
7. Test the MAS
8. Write the final report
9. Deliver

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