

***MADS* - Multi Agent Decision System**

Team 2

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1. User Agent

Interface between a user and other agents

Instance from user -> Predict action -> Show prediction back to user

2. Broker Agent

Receive constraints from user agent

Take in charge of Classifier Agents

3. Information Agent

Receive target data distributes and extract them from Database

Clean data and transmit data to Classifier Agents

4. Classifier Agent

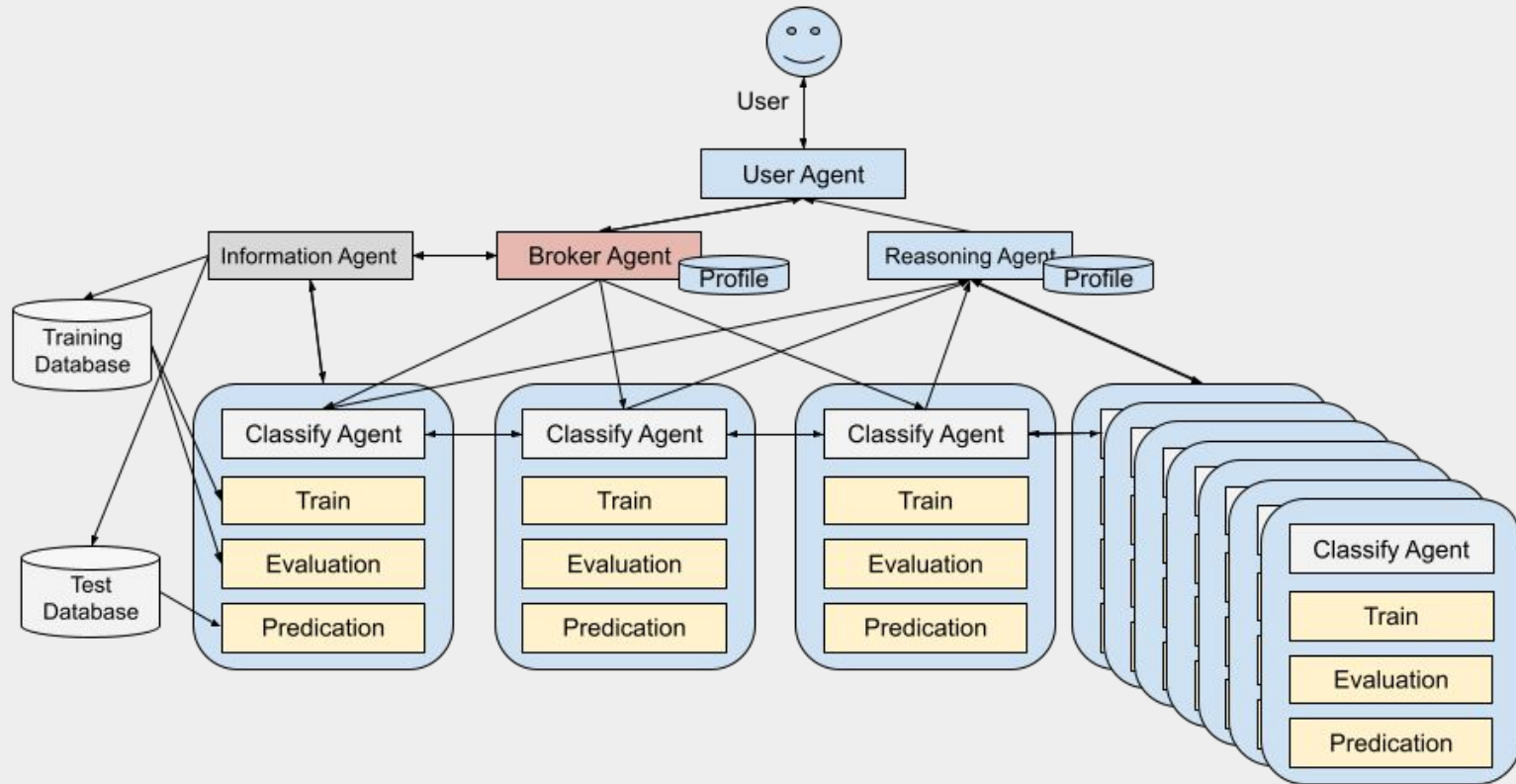
Receive information from databases

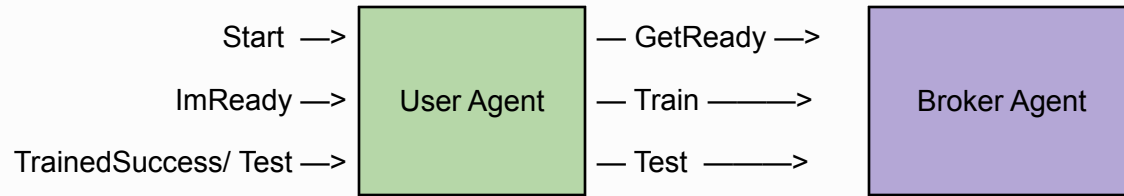
Train -> Evaluate -> Predict

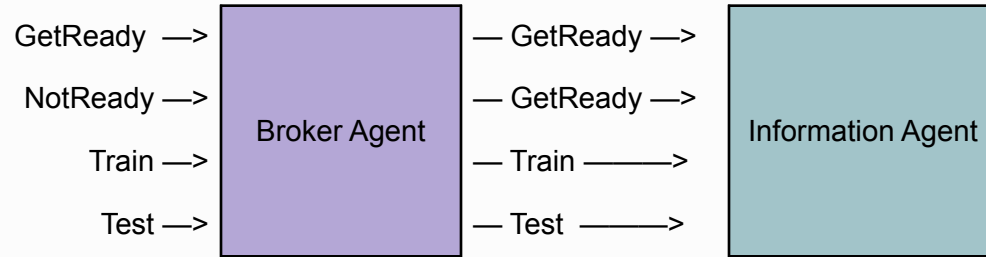
5. Reasoning Agent

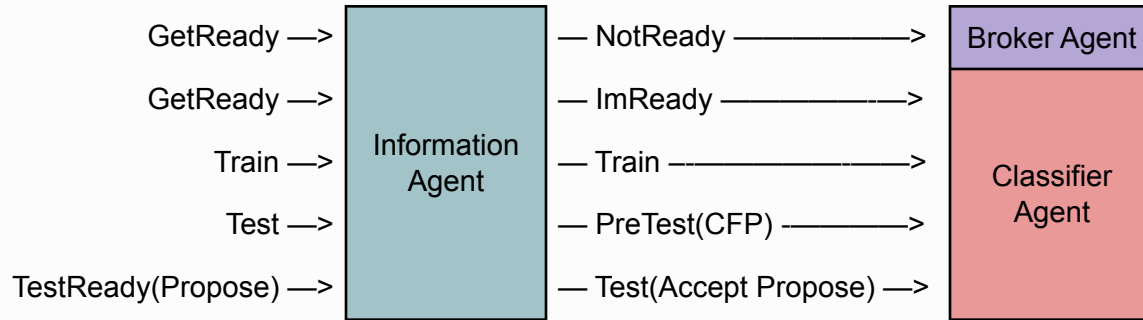
Collect evaluation results from classifier agents

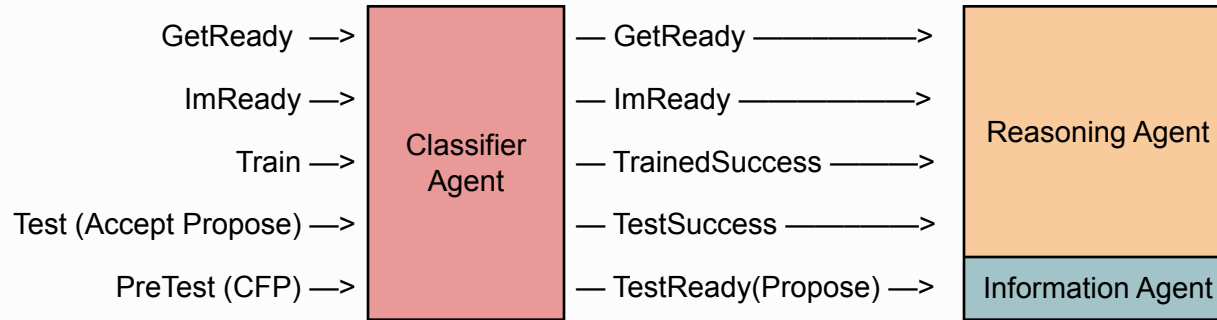
Using reasoning philosophy to give the final inference automatically

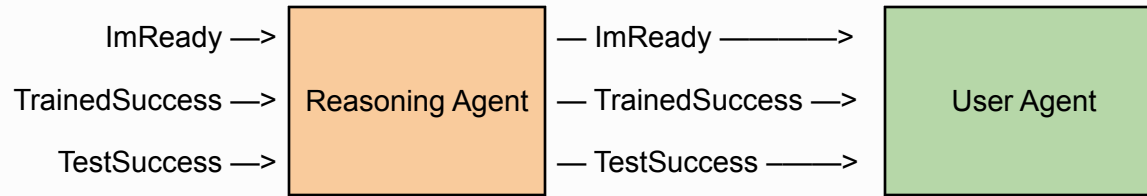












1. Test

- **ContractNet, CFP**
- **Classifier agent with proper attribute response to the request**

2. Simple voting

- **Uniform (plurality)**
- **TPR**
- **FPR**
- **Precision**
- **Recall**
- **FMeasure**
- **Accuracy**

Result

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Agent	Result				TPR	FPR	Precision	FMeasure	Accuracy
GT	[1, 1, 0, 1, 0, 1, 0, 0, 0, 1, 0, 1, 0, 1, 1]								
Uniform	[1, 1, 0, 1, 1, 1, 0, 1, 0, 1, 0, 1, 1, 1, 1]							=1	
	8	4	3	0	1	3/7	8/11	32/11	.80
TPR	[1, 1, 0, 1, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1]								
	6	6	1	2	.75	1/7	6/7	24/9	.80
FPR	[1, 1, 0, 1, 1, 1, 0, 0, 0, 0, 0, 1, 1, 1, 1]								
	7	5	2	1	.875	2/7	7/9	28/10	.80
Precision	[1, 1, 0, 1, 1, 0, 0, 1, 0, 1, 0, 0, 0, 1, 1]								
	6	5	2	2	.75	2/7	.75	24/10	11/15
Recall	[1, 1, 0, 1, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1]								
	6	6	1	2	.75	1/7	6/7	24/9	.80
FMeasure	[1, 1, 0, 1, 1, 0, 0, 1, 0, 1, 0, 0, 0, 1, 1]								
	6	5	2	2	.75	2/7	.75	24/10	11/15
Accuracy	[1, 1, 0, 1, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1]								
	6	6	1	2	.75	1/7	6/7	24/9	.80
Metrics	TP	TN	FP	FN	TPR	FPR	Precision	FMeasure	Accuracy

1. **Average accuracy is around 82%.**
2. **There is still a lot of room for improvement**
 - **Carefully selection of attributes.**
 - i. **Assign weights for each attribute, the most frequent attributes of top K classifiers will be assigned a higher weight.**
 - **handle 0 or few classifier proposals.**
 - i. **Adding new classifier agents.**
 - ii. **Use simple plurality voting for the final result.**
 - **Utilize more of the ContractNet protocols.**
 - **The message between agents can be more structured and uniformed.**
 - **Saving trained classifier mode and the train and the test results.**

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