A multi-agent system to support customers interaction

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Objective

The present work consists of the study of Multiagent Systems (MAS) and Natural Language Processing (NLP) to integrate conversational capabilities with software agents. With this theoretical basis, we aim to implement a solution prototype, given an application domain.

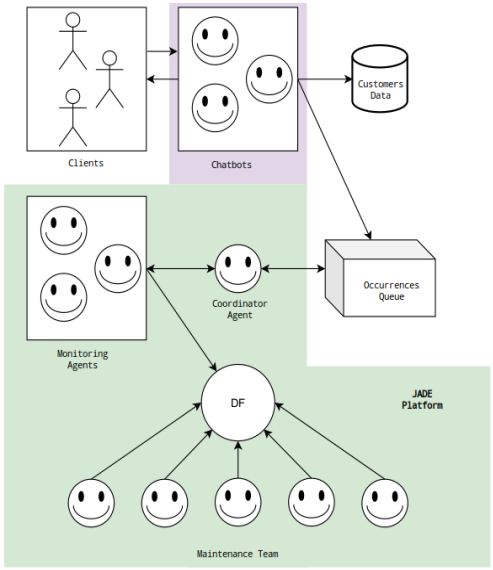
Materials and Methods

By establishing the domain of application information systems for service providers, the solution can be segmented into two environments (Picture 1): one composed of conversational agents interacting with the customer and another populated by agents that will ensure the operationality of the service, through inter-agent coordination and integration with other systems.

In the design of conversational agents we can explore classical PLN (computational grammar) approaches based in logic and knowledge systems, as well as more recent machine learning techniques. These agents will consume customer data to provide personalized service and will record issues generated by customer interaction in a queue. In the operational environment, the coordinating agent consumes the issues and delegates them to the responsible monitor agent. In turn, a monitoring agent will coordinate a maintenance team responsible for the regularization of the service.

Results

To this moment, only the agents in the operational environment have been implemented, with the support of JADE, a MAS development framework.



Picture 1: Solution's Architecture (Adapted)

Conclusions

The multi-agent approach gives high versatility in the design and implementation of complex systems. In the next 10 months of the project we will explore the capabilities of the system, aggregate the conversational environment and conduct testing and analysis to better understand its limitations.

References

Diksha Khurana et al. "Natural language processing: State of the art, current trends and challenges". Em: arXiv 1708.05148 (2017)

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