Intelligent Agents in Customer Relationship Management

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Agenda:

- Intelligent Agents
  - Intelligent Agents
  - Virtual Assistants
- The characteristics of selected virtual assistants used in Customer Relationships Management
  - Inguaris – virtual assistant
  - Fido – virtual assistant

INTELLIGENT AGENTS SYSTEMS

☐ In the organization's activities, involving a particular person to obtain certain information may be inefficient.

☐ Standard systems of information retrieval (Internet search engines, Internet comparing engines), although subject to dynamic growth, are often unable to keep up with the information needs of the organization. It seems that to meet these needs, it is necessary to enrich the selected IT systems (e.g. transactional and analytical) with an element of intelligence, perception, and autonomy.

☐ This idea is consistent with the concept of an intelligent agent, which has already been proposed in the fifties of the twentieth century

Term Intelligence Agent

When analysing the literature on the subject, it may be noticed that the term "intelligent agent„:

- intelligent software,
- wizards,
- knowbots,
- taskbot,
- userbot,
- software agent,
- softbots-intelligent,
- software robots

has never been given a generally acceptable definition and it has been variously interpreted.

Term Intelligence Agent

Difficulties with clear interpretation of the term "intelligent agent" result in identifying its common characteristics in order to provide its meaning. A minimum set of features that should characterize an intelligent agent, includes :

- autonomy, the ability to start / stop operation without user interaction,

- long duration of running in the background of the system, so called "long-lived", it runs continuously, even when a user is not using it,

- possibility to communicate, communication with other systems and agents to obtain information from various sources,

- ability to cooperate, the cooperation with the user or other agents during the exchange of information,

- activities on behalf of the delegating person, the representation of the user.

Functions Intelligence Agent

When considering the action of intelligent agents, we can distinguish their three main functions, such as :

- perception of the dynamic environment conditions,
- impact / response to environmental conditions,
- interpretation of what the agent sees, problem solving, drawing conclusions and taking action.

Functions - rules

These functions can be written according to the following rules defining the action of the agent at the moment of receiving a signal by the input sensor:

Input: perception – input sensors (receptors)
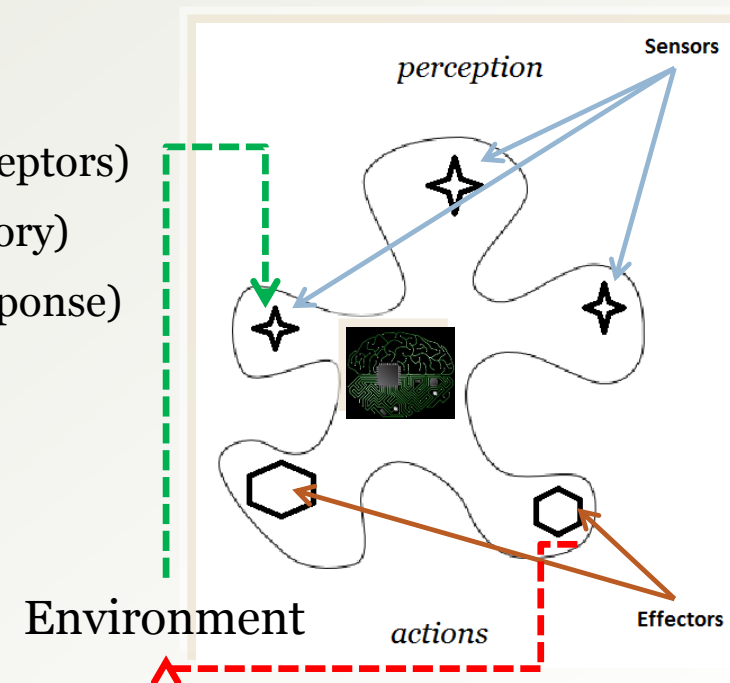
       Components: rules – a set of actions

              Memory upgrade (memory, receptors)

              Choosing the best action (memory)

              Memory upgrade (memory, response)

Output: responses – output sensors (effectors).

Sensors

perception

Effectors

Environment

actions

INTELLIGENT AGENTS, VIRTUAL ASSISTANTS

Among the most common forms of intelligent agents there are so-called virtual agents, virtual assistants and chatbots.

Such systems are represented by virtual characters. A characteristic feature of such characters is the possibility of conversation (dialogue) with the user through natural language, which writes the words into special forms.

This is enabled for the virtual assistant by built-in mechanisms of natural language processing, thematically extensive knowledge base and algorithms of requesting.

THE CHARACTERISTICS OF SELECTED VIRTUAL ASSISTANTS USED IN CUSTOMER RELATIONSHIPS MANAGEMENT

Problem:

> *information overload*

One of the solutions:

> *implement to websites a convenient for users communication channel, which is a more and more often successfully used virtual assistant.*

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THE CHARACTERISTICS OF SELECTED VIRTUAL ASSISTANTS USED IN CUSTOMER RELATIONSHIPS MANAGEMENT

The main task of the virtual character is to conduct a conversation with Customer in a natural language. The course of the conversation is usually as follows:

1. virtual assistant greets the Customer (on the website, the user sees the relevant text of the message, sometimes, in addition, he may hear the voice of a virtual assistant),

2. the Customer replies, introduces himself or asks a question in the form of a natural language (the words are entered from the keyboard into the form field),

3. virtual assistant generates the answer by text displayed on the website, it can also open new web pages (e.g. web pages with the offers of specific products or their characteristics, a site with a contact form, etc.).

THE CHARACTERISTICS OF SELECTED VIRTUAL ASSISTANTS USED IN CUSTOMER RELATIONSHIPS MANAGEMENT

The possibilities of using a virtual assistant on the web pages can be varied. We can indicate that a virtual assistant can be:

1. a sort (humanoid) of showcase of the organization,

2. a consultant who answers the customer's questions related to the company, products,

3. a sales assistant who supports (provides service) the process of electronic sales,

4. the interviewer,

5. a tool for acquiring and storing the information about customers, their tastes, preferences, expectations.

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THE CHARACTERISTICS OF SELECTED VIRTUAL ASSISTANTS USED IN CUSTOMER RELATIONSHIPS MANAGEMENT

Knowledge of the virtual assistant may concern:

- a subject ordered by the organization,

- widely understood general knowledge that would allow the system to become more attractive to the interlocutor,

- a set of the so-called emergency responses,

- interest of the virtual consultant,

- other resources of the organization. This is accomplished by connecting the virtual consultant to an external database (external database, enterprise service, CRM system),

- definitions retrieved from dictionaries, encyclopedias, news, catalogues.

INGUARIS – VIRTUAL ASSISTANT

The virtual consultant Inguaris is a product of the Artificial Intelligence company [sztucznainteligencja.pl]. It pays the role of a virtual character (web bot) that communicates with the web page user by natural language in the form of a written text.

The functional architecture of Inguaris is a combination of software running on a server and a special dialog box, so called chat window where the user types in the message. In a typical solution, the software of a virtual consultant is on the Sztuczna Inteligencja company's servers, while his interface (chat window) is installed on the customer's server.
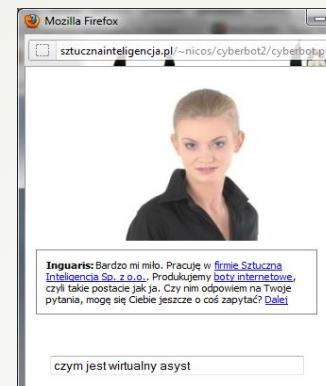
INGUARIS – VIRTUAL ASSISTANT

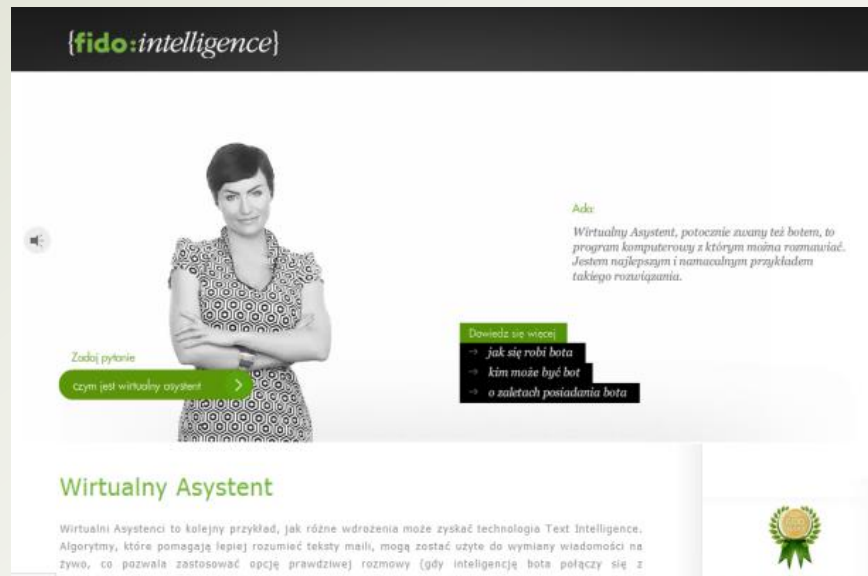Various functions of the virtual consultant may include:

- can remember (identify) the name of the client;

- knowing the date and time, weather, games results, foreign exchange rates and stock;

- any visualization (pictures, video)

- speech synthesizer (e.g. IVONA),

- chat history window,

- the ability to send electronic mail on a request of an interlocutor.

- integration with external systems (CMS systems, Internet shops, Instant Messaging, chat rooms, e-mailing systems)
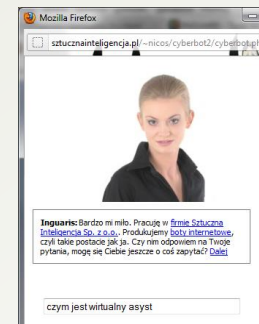
FIDO – VIRTUAL ASSISTANT

Fido - a virtual assistant - is a product of the Fido Intelligence company [www.fidointelligence.pl].

The functional architecture of Fido is a combination of software running on the server with a special area of the website, where a user types in his words that act as a form of communication between the virtual assistant and the user.

FIDO – VIRTUAL ASSISTANT

Among the advantages of the virtual assistant Fido there are:

☐ a convenient form of communication, a virtual assistant communicates with the user through natural language both in the written and the sound form,

☐ more efficient search of the desired information by the user, for example, after typing in "contact, please" the virtual assistant displays the appropriate content on the website and reads all the information regarding the contact with the company,

☐ the functioning of a virtual assistant who talks about selected by the user options in the menu, and thus informs the user about the content of each page,

☐ the possibility of voice communication, which is achieved through the use of IVONA.

The use of VIRTUAL ASSISTANT

Bussines:

- Zeptejte se Anny: http://www.ikea.com/cz/cs/

Public administration

- City Offices (http://www.gdynia.pl/bip/?wu=true)
- ZUS: http://www.zus.pl/

The Treasury of the Polish Mint

(http://skarbiec.fidointelligence.pl/uak/skarbiec.html)

CONCLUSIONS

In summary, the use of the virtual assistants technology by organizations confirms their enormous potential in managing the customer relationships.

The given examples of this technology suggest that it may be useful in the following cases:

□ supporting the completion of Web forms by the user (e.g. forms of orders),

□ assistance in navigating through pages of the website (e.g. virtual assistant opens pages with the content searched by a customer),

□ obtaining information about the clients, directly at the point where they are generated (the clients themselves type in phrases in natural language).

CONCLUSIONS

When analysing these examples of the virtual assistants potential, we can point out numerous benefits resulting from their use. These include:

- □ financial: reducing operating costs (average cost of employing a worker at the same time – 24 h / 356 days a year, would be a cost of three (employees) * 1,500 PLN * 12 months = 54,000 PLN + the cost of necessary infrastructure and work place (to compare, the annual cost for a virtual assistant license is about 25,000 PLN),

- □ marketing: creating a new source of knowledge about the clients and for the clients, a more attractive website.

Thank You for Your Attention

Děkuji za pozornost

Dziękuję za uwagę

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