



ALGHO

Technical sheet

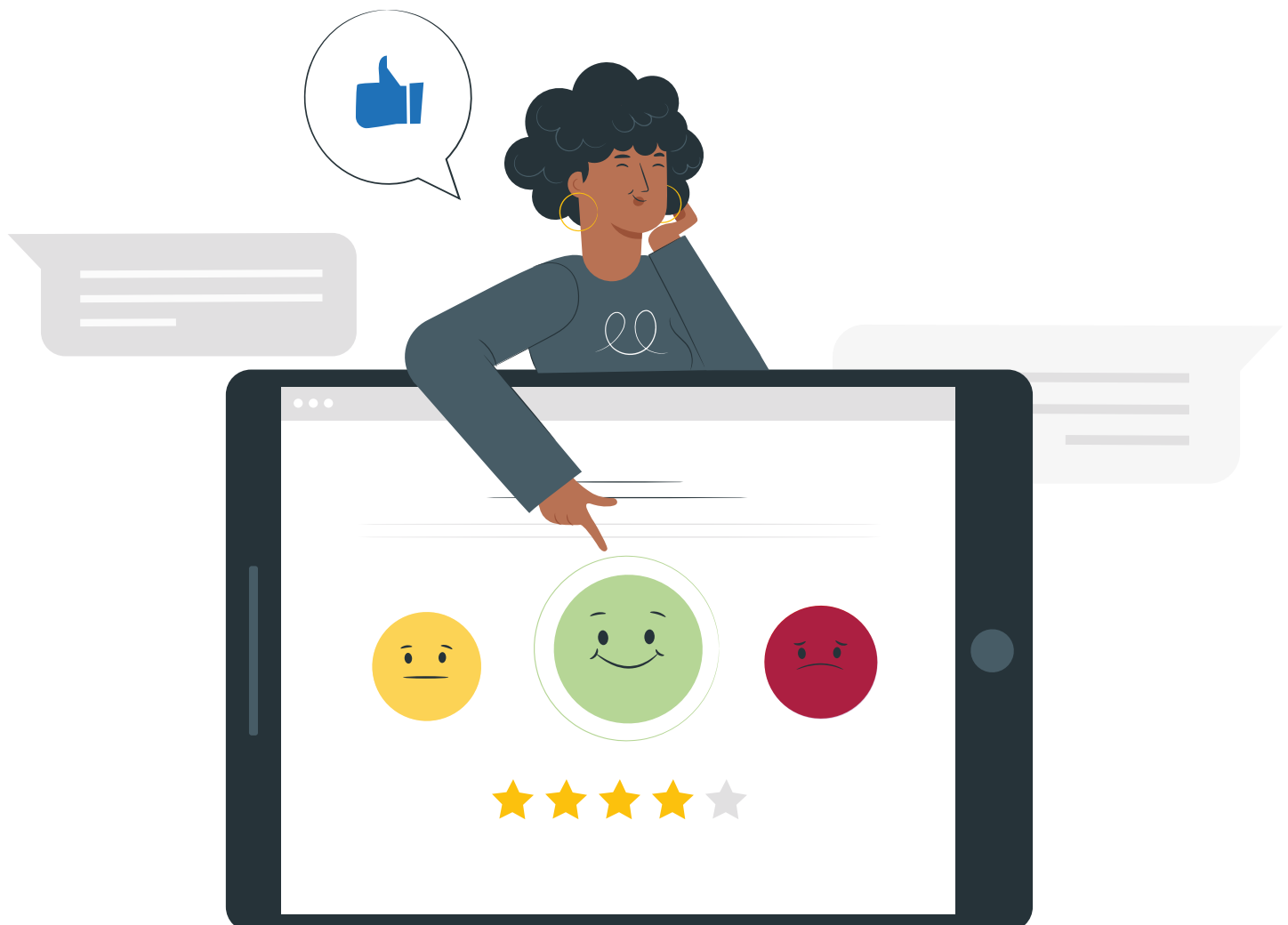
Introduction

Nowadays **virtual personal assistant solutions** are becoming key along the **customer journey**. Our solution Algho was created to **simplify and speed up** the creation and the management of “artificial intelligence humans”.

In order to provide more efficient and accessible services, companies are rethinking the way they manage their interactions, preferring digital oriented processes.

Algho is indicated for those companies who are looking for solutions that can improve **consumer experience**, shortening long chain steps/process flow to sign a new contract, request and delivery a new product or service.

The challenge is aimed to simplify and digitalize the entire customer journey.



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Algo ecosystem

Algo is an **AI Conversational Platform** that integrates several owned cognitive technologies but also sourced from international vendors like Google, Microsoft, Amazon, IBM and used in order to support and optimize main stream processes like Customer Care, Marketing and data management. Those technologies help create empathic virtual assistants who are capable of interacting through natural language and are able to interpret, generate and produce non verbal aspects of the conversation (like movements or mood stages).

Algo is capable of **analyzing** and **understanding** user requests through technologies like speech recognition, NLP, Semantic Role Labelling, Emotion Analysis, Computer Vision. Algo also identifies more relevant replies present in its Knowledge-base via “Intent Recognition” process based on Machine Learning techniques guaranteeing excellent accuracy already with few examples.

The creation of a Knowledge-base, its maintenance and constant update is the result of The “**Reinforcement Learning**” process obtained/driven by the conversations between virtual assistants and users.

The more he interacts with users, the wiser he becomes an expert in the used application domain, increasing its response reliability. On top of that Algo is able to interpret users’ moods and can formulate an adequate response also for non verbal aspects (tone of voice, gestures and avatar’s facial expressions).



Artificial Human

Our **Avatar** is based on 3D latest technologies with the aim of facilitating an **empathic relationship** with the user and therefore a new and effective User Experience.

With **Digital Human Interface** we are positioning Algho in the new frontier of the **Interaction Design** and interfaces design. It's a 3D avatar inserted in interactive three-dimensional space that repays with an increasingly fluid and enjoyable browsing experience for the end user with the aim of capturing people's attention. This revolutionary system changes the concept of digital communication, from a written impersonal communication form to one based on the intersection of verbal, paraverbal and non verbal communication (head movements, micro facial expressions, hands movements, etc..) which are typical of human interaction and relationships.



Margherita

Artificial Human

Customer eXperience 4.0

This solution and communication type towards the user is impacting **Customer Experience**, creating the right engagement and providing a higher and innovative level of **User Experience**. During the conversation among the customer and the operator there is equilibrium between dialogue and personality, supported by feelings and emotions that always create empathy. Today with the bond that is evolving and strengthening between man and machine, humans are grateful to devices daily used to resolve their issues. This involves a personification of technology and more trust in it: the user is expecting the same level of empathy that would be created with a human being. Digital Human Interface **is able to perform tasks but also advise the user among choices to be made based on his/her previous behaviours or expressed preference.**

Adopting Digital Human Interface guarantees the possibility to personalize interaction via avatar and the environment: this improves the user experience and creates engagement with it. Furthermore it allows to boost customer experience and answers real time to user needs. Human features, natural movements and natural vocal interface lower the distance and distrust that can be felt while interacting with a 3D at first. This avatar's personification is given by the expression and evocation of feelings and also by a proactive posture towards the users while asking questions to the user.



Our Virtual Assistants created with Algho not only can provide info related to products, services or data, but can also be proactive towards users resolving more specific tasks, like for example booking an appointment, opening a support ticket or tracking shipments.

This is possible throughout Conversational Forms: it's a system that translates classic web forms into conversations, where the Virtual Assistant asks info to the user and gathers them in order to complete the requested task. This function can be combined with the Autoform Filling: thanks to the Information Extraction engine, Algho is able to extract from users' requests all necessary information that simplify and accelerate the filling of the form.

One of the key technologies of Algho platform is our Word Sense Disambiguation algorithm that enables identification of the most accurate meaning in each word in a specific context and elaborates data from conceptual point of view and not from specific words. This feature allows to obtain excellent accuracy/performance during the Intent Recognition phase also with examples.



Technical features

Algho has mechanisms that allow him to improve his skills and performance in time: this happens via Machine Learning techniques that constantly evolve the system itself improving his knowledge in a proactive way thanks to the conversations held. Automated learning is supervised therefore needs Chatbot Manager's approval to confirm that what learned from conversations is correct. Virtual Assistants learn through:

Unanswered questions:

when he is not able to answer a question which is not present in the knowledge base or because he doesn't understand what has been asked, the question gets stored by the Virtual Assistant in a dedicated section in the platform. The operator will then fill in the right answer to the unanswered question, integrating and enriching the knowledge base.

Voting answers:

during conversations, for each reply, the user will be able to evaluate positively or negatively the quality of the answers received by the Virtual Assistant. The vote is saved and it will be indicated to the system that the provided answer is not correct.

Disambiguation of the questions:

In case of uncertainty about the possible answers, Algho can propose several alternatives to the user. From this selection the Virtual Assistant learns how to reply overcoming uncertainty when answering future questions.

Live Chat:

during Live Chat with a user, the operator can report to the Virtual Assistant new questions that are not present in the knowledge base in order to reduce support requests. To add new info is enough to select users' questions and the reply provided by the operator.

Integration



Algho is an open and flexible system that allows any type of integration with the company's information systems by putting the software and services in communication with each other in real time during the conversation. Algho, in fact, integrates with software, databases, websites, management and much more in a simple and immediate way, allowing you to improve the performance of your business and making the search and sharing of information faster.

It also has, internally, special RPA modules, which allow you to automate the interaction with the user by performing actions in real time on the application on which it is integrated or to program them for execution in BATCH mode.

The systems with which Algho integrates are:

- CRM
- ERP
- Database
- E-Commerce
- Management
- Booking system
- Web Service
- Ticketing systems

Omnichannel

Virtual Assistants are fully integrated into the omnichannel strategy because they allow users to be able to ask their questions on any available channel, making the user experience complete and optimal.

Algho's Virtual Assistants are able to respond simultaneously not only to numerous users but also on different channels: while user X asks for information on his latest order via Telegram, another is asking to book an appointment on the website; the Virtual Assistant is able to process both requests in real time and respond to both users at the same time.

Algho's Virtual Assistants can be published on different channels, let's see which ones:

Company Website

The Virtual Assistant is at the service of users, facilitating the search for information on the website, automated navigation, thanks to browser automation and the execution of actions, such as opening a ticket or booking a demo.



Instant Messaging App

The relationship is built every day and is made up of attention to needs and a perfect information symmetry between different channels.



WhatsApp



Viber



Telegram



Skype



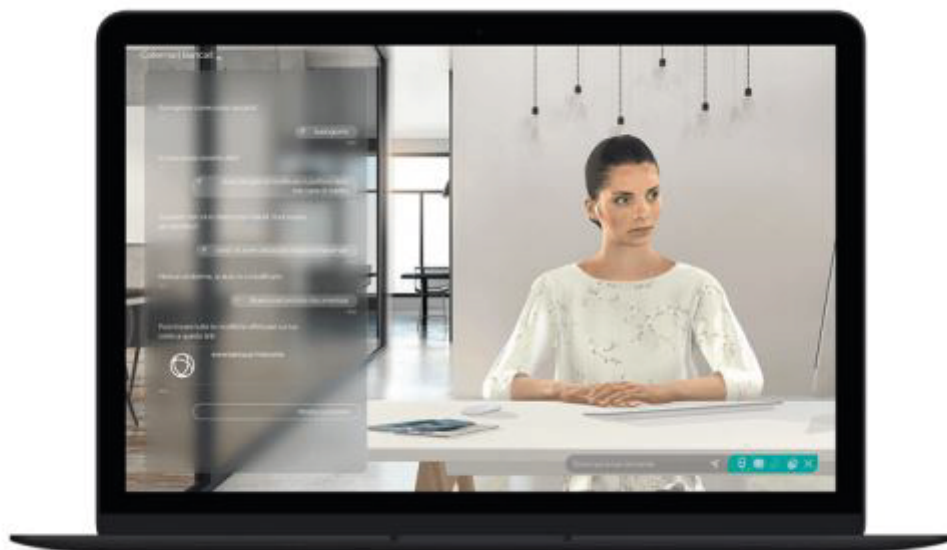
Slack



Messenger

Informative system

Algho integrates with software, databases, CRM and ERP management systems, facilitating the recovery of information and data.



WhatsApp Business

Simplify interaction with customers by responding quickly to messages.

- Requests can be managed simultaneously by different operators;

The response is always immediate and guaranteed (using WhatsApp

- allows you to reduce response times. Speed = loyalty);

Conversation flows can be tracked and customized;

- Ease of integration with other company tools (CRM, ERP...);

It is possible to know the analytics of the conversations (open, closed, in

- progress tickets)



VoIP

Algo integrates with the main VoIP switchboards with SIP protocol and third-party voip services.

The user will no longer have to wait for an operator who frees himself from another call to forward his request, but can immediately leave his data to the virtual assistant who, interacting with the voice, will be in charge of requesting and recording all the relevant information.

This service, therefore not requiring the physical presence of personnel, will always be active, 24 hours a day, seven days a week and can therefore be used at any time of day or night and from anywhere.

The Virtual Assistant integrating with the VoIP switchboards allows the automated management of incoming calls and the booking of services in a practically immediate way for users who have a need, but at the same time for operators it becomes extremely easier to manage data that they will surely have. a leaner and more basic form allowing him to provide more immediate and direct assistance.



Business Revolution

Algho with its **Analytics** module, allows you to query, analyze and consult strategic company information through natural language and make decisions in a **faster and more efficient** way. The Algho Analytics module also implements Data Mining and Time Series Prediction algorithms, which are a set of Machine Learning techniques combined with statistical analysis that identify correlations, patterns and trends in large volumes of data.

Business Intelligence applied to Algho Virtual Assistants allows **immediate data and information recovery**, through a simple request. The Virtual Assistant, in addition to searching and showing information, is also able to comment on it, thanks to **Natural Language Generation** technology. Via those Natural language Generation technologies that allow to generate text from data, Algho Virtual Assistants can create answers to users' questions, starting from linguistic templates based on activation rules which criterias have been verified or from similar described examples provided during training from other sources.

In this way we can easily and immediately:

- identify areas and way to increase profits
- analyze customers' behaviours;
- compare competitors' data;
- monitoring performances;
- optimize processes;
- forecast new initiatives success;
- Identify market trends;
- detect eventual problems.

On top Algho has an integrated **Smart Document Access** module which is a **Document Management solution** that is able to store and intelligently manage contents present in documents. A semantic search engine that, based on keywords or complex requests, is able to scan, index and identify the information relevant to the searched topic. The system is capable of receiving information that does not reside in a database or any other data table.

Our Smart Document Access module consists of a **textual analysis system** which, through the recognition of the key information contained in the documents, the automatic segmentation into atoms of the knowledge of the document, autonomously generates a knowledge base that can be used in conversations with customers, minimizing the virtual assistant training job. The extraction of structured and unstructured information takes place through an Information Extraction engine which, based on targeting on taxonomy, predefined and customized with the customer, automatically identifies the relevant data for research purposes. The **Natural Language Processing** platform carries out a **semantic analysis of texts** and the recognition of linguistic entities based on contents.



In the current landscape it's getting harder to distinguish between the numerous online sales portals available. This is why it becomes essential to **make a difference** within your platform, with dedicated services, sales support and customer assistance 24 hours a day. But offering a differentiated and easily accessible service is not enough: what can make your business unique is its **exclusivity**, defined by the interaction between the user and the platform. So one of the ways to make your service more competitive on the market is to **integrate a virtual assistant** with the aim of improving the customer experience, starting from the first access on the portal up to the final stage of the interaction. The Algho platform can be used on various industry sectors such as Public administration, E-commerce, Public utilities, Customer care, Banking systems, Software houses, Healthcare. It is also evolving to soon satisfy the following sectors: travel & booking, media, food & beverage, automotive, utilities, communications, postal and logistics services.

Algho is the **first Multimodal Conversational AI Platform** capable of analyzing and producing conversations that simultaneously use all dimensions of communication and create, not simply chatbots or voicebots or virtual assistants, but Artificial Humans, or artificial entities capable of interacting with humans both by exploiting the verbal aspects but also the non-verbal aspects.

Only 7% of the information present in a conversation is tight up to used words and their specific meaning. Many other information are resumed by facial expressions or the tone of voice.

Algho implements a very **simple and flexible** learning methodology that allows it to be adapted to any business process: this means that the technology can be quickly integrated into any company environment.

Understanding the conversation occurs by simultaneously relating different analysis processes regarding different inputs. In particular, the system analyzes the **tone of the voice to classify the emotional state of the user**, the facial expressions and gestures of the arms, hands and the whole body (where possible) using computer vision techniques and words used by the user in expressing the request.

All this information is processed simultaneously and used to identify the **most relevant answer** (present in the Algho Knowledge-base) which will be automatically adapted both in the content (through Natural Language Generation technologies) and in the non-verbal aspects of the avatar (body movements : facial expressions and tone of voice).

GENERATING THE MOST APPROPRIATE ANSWER

Gesture Generation

Based on text and output of the analysis module of the user gestures, tone of voice and sentiment analysis produces movements adapted to the context.

Facial Expression Generation

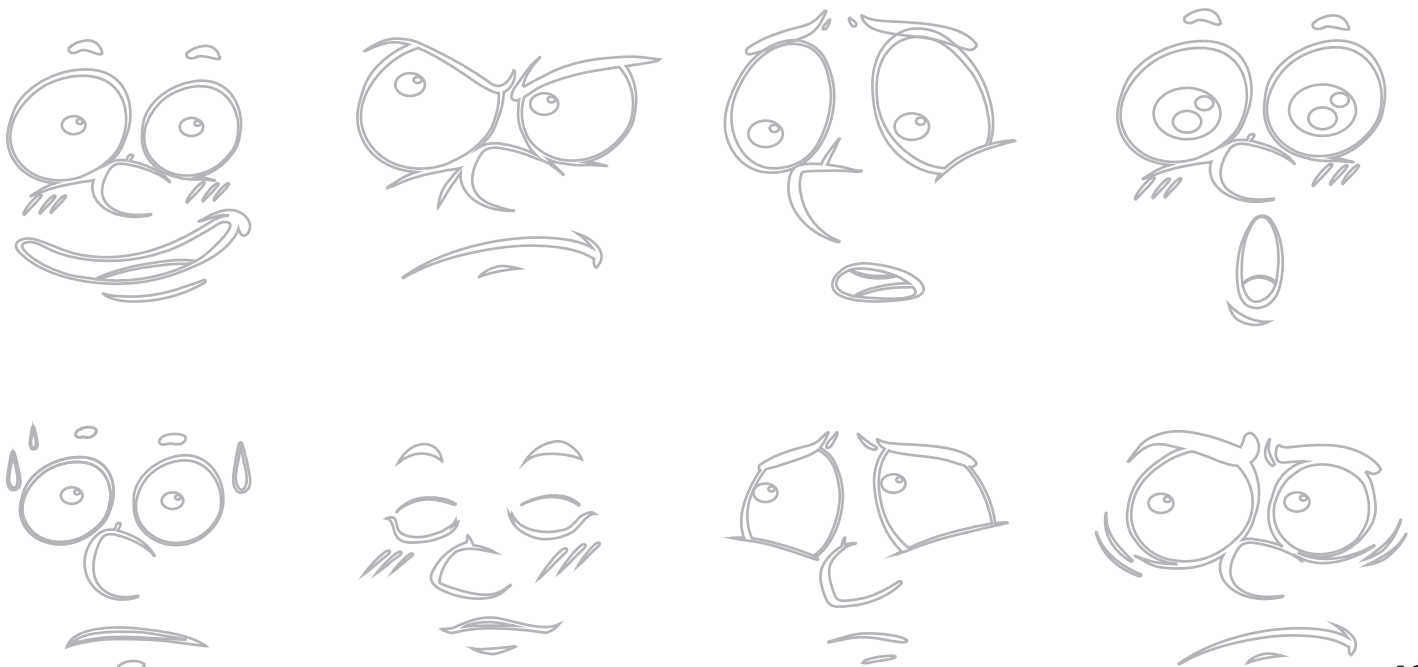
Algho generates sequences of facial expressions.

NL Generation

Rephrasing answers present in the KB based on users moods.

Voice Empathizer

Based on vocal synthesizer audio (Google or Amazon) and on output of the analysis module of the user gestures, tone of voice and text sentiment analysis, the virtual assistant produces an appropriate audio response.



A solution for change

Algho's multimodality becomes necessary and fundamental for some application scenarios such as **customer service, entertainment** but also as the **support business management decisions**.

Provide your innovation proposal's physical dimensions Algho is a digital proposal therefore does not need any hardware intervention or installation.

According to the guideline of the "Technology Readiness Level", ALGHO is positioned at **level 9**: real system tested in an operational environment (competitive production, commercialization).

Through the use of Algho and its virtual assistants, it is possible to **raise awareness** of companies and users in the responsible use of sustainable consumption and production models.

An application scenario could be to create a Virtual Assistant, which, through conversation and natural language, can stimulate from young people to adults to adopt behavioral styles that are adequate to achieve the 2030 **sustainable development goals** 2030.

In particular, these AI solutions reduce waiting times and requests management with consequent impact on energy saving and waste of resources. For example, the possibility of having an immediate response reduces **energy costs** associated with waiting times and / or the various attempts to contact an operator.





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