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"We Are Here For You"

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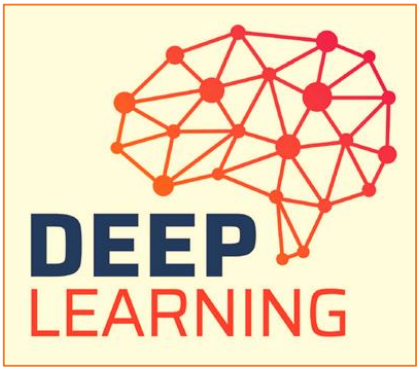
INTRODUCTION

Everywhere, in our workplaces as well as in our homes, robots, machines and electronic devices surround us. More specifically, domestic robots are increasingly present in our lives and daily tasks in order to make our lives easier and to help us with various tasks. These revolutionary devices provide us with help in terms of housework, advice and maintenance. They do their work independently or they are connected to their owners.

Today, as project leaders, our project contributes to both the scientific and commercial fields.

Indeed, our scientific project consists in the creation of a robot, but a rather particular robot. This robot will be able to speak several languages (i.e. simulate a conversation / a chat with a human user in natural language), and to adapt to the person to whom it is addressed, i.e. if for example the person is old and feels alone, he will be able to choose to discuss with a person of his age (man or woman) or with a young person. The same thing if it is a child he can choose for example the option to play guessing games with a person of the same age as him. Our robot will also offer music of all styles, weather predictions, recipe ideas and all this in the same product.

In short, our robot will take into account the language, gender, age and mood of the user, to offer him programs / advice / answers adapted to his category.
This will be done using our skills acquired during our university course in computer science and more precisely using the advances in artificial intelligence such as Machine Learning and Deep Learning algorithms (neural network, Naïve Bayes Algorithms, Random Forest Algorithm), as well as our knowledge in Big Data (the management of voluminous data) and in networking.



1. NAME AND DETAILS OF THE BUSINESS

Our robot is classified in the category of educational and leisure robots. The name of our project is : *B-guide*, that is to say the best guide (*B* for Best). This is inspired by the fact that our project is here to make others feel that they are not alone since people will be able to chat with people of the same age and/or sex as them. Thus, our slogan is :

"*We Are Here For You*" which always reflects the spirit and purpose of our product.

Logo of our product :

How our product looks like :

Features offered by our product :

- ✓ Various conversation topics such as politics, sports, general culture, world news, history, art, travel, movies, anime, manga... etc.

- ✓ Jokes, stories and novels.
- ✓ Films and series: proposals according to the seasons and the periods of the year, for example it proposes films of Christmas in winter month.
- ✓ Quizzes, games and riddles.
- ✓ Music according to the user's mood (the voice of the person).
- ✓ Weather prediction and itinerary.
- ✓ Cooking : proposal of menus / recipes for the week according to the budget and culinary preference of the user.

The characteristics of our product :

- ✓ **1) Detection** : so that our robot can detect its environment. So it will be equipped with sensors: light sensors, touch and pressure sensors, auditory sensors and sonar.
- ✓ **2) Energy** : our robot will be able to power itself. And that by using solar energy.
- ✓ **3) Intelligence** : this is thanks to the programmer who gives the robot its "intelligence" thanks to artificial intelligence algorithms. The robot will have to have a way to receive the program so that it knows what it must do. [1]

2. THE IMPORTANCE OF LAUNCHING SUCH A PROJECT

Our project is quite ambitious and aims to facilitate the interaction between humans and their living environment. Indeed, our project consists in understanding the human intention and then making decisions that best suit the user in an intelligent way, by exploring the collection and extraction of data from the user's interaction with our product.

Our product helps users in their usual tasks, it provides them with a wide variety of services, which grows day by day, and above all, it saves them time, money and good mood due to all the features it offers.

The importance of our project consists in the fact that we combine two essential elements: the robots that have invaded the world with the technological advances and artificial intelligence, and the fact that our product will be a companion in the daily life of future users.

Indeed, several categories of **people are targeted** by our project :

- ✓ **1) Large families with small budgets** : because our product can be adapted to women, men and children, so they can all use it and save money.
- ✓ **2) Elderly people** : because for an elderly person, to dialogue, to express himself allows to preserve his cognitive capacities, his memory, to maintain thus, a social life and to show his citizenship. In addition, with our product they will be able to do this and choose the age of the person with whom to dialogue and the subject of conversation.
- ✓ **3) Mothers** and anyone who has difficulty finding recipe ideas or who wants to have balanced menus.
- ✓ **4) Children** : because they can use it to talk with people of their own age, play guessing games, quizzes...etc.

In short, every person on earth, our product is for them.

3. STAFF : DESCRIPTION OF 4 MAIN SCIENTIFIC OCCUPATIONS OF THE BUSINESS

Our company includes several professions; we quote the 4 main scientific professions that allow the permanent progress of the project:

- ✓ **1) Data scientist** : for his analytical mind, allowing him to identify and understand the business problems of the company because the data scientist collects, processes, analyzes and makes massive data talk, with the aim of improving the performance of a company. A data scientist in our company will help us identify the audience that will be interested in our product and the possible improvements we can make.

- ✓ **2) Artificial intelligence engineer** : who will design computer programs capable of reasoning like humans in order to respond to complex tasks that consist of dialoguing with people, giving statements of quizzes with answers, recipes and weather and this using all the advances of artificial intelligence and more specifically Deep Learning and Machine Learning.

- ✓ **3) Designer** : his mission is to design and imagine the final shape of our product which must meet functional, aesthetic and economic criteria. And this by combining with the standards, rules or codes in force in the company.

- ✓ **4) Robotics Engineer** : who will write plans, sketches and other documents demonstrating the given ideas, and will modify them according to the comments and simulation results. His role will also be to configure, test and debug the sample robots made. Moreover, ensure that the robotic machines operate safely. [2]

4. THE CURRENT MARKET

Asia is currently the largest market for industrial robots, with China leading the way, followed by Japan and the United States. In Europe, Germany is the largest user of robots.

The global market for domestic robots has reached an SD value of 3 billion by 2020, driven by autonomous robots, increased awareness of robotic applications, increased concern for safety, and rapid advances in technology. Aided by increasing consumer demand for autonomous

robotics technology, the market is expected to grow further during the forecast period 2022-2027 at a CAGR of 22%. [3]

Impact of COVID-19 pandemic on the robotics market :

After COVID-19, the traditional industrial robotics market is expected to grow at a compound annual growth rate (CAGR) of 10.4 % due to a shortage of skilled labor, especially in developed countries, leading to increased use of automation in the industrial robotics market. Manufacturers are turning to automation to reduce manufacturing costs and maintain their cost advantage in the market. [4]

5. TWO MAJOR COMPETITORS

1st Competitor :

Alexa : Alexa is the name that refers to and is used to call out the intelligent personal assistant developed by Amazon.com's Lab126, made popular by the Echo devices.

In November 2014, Amazon announced Alexa at the same time as Echo. The name Alexa was chosen due to the fact that it is composed of the consonant X and therefore facilitates accurate recognition

Alexa can :

- Play songs.

- Narrate a Kindle Book.
- Find a Nearby restaurants and order food online.
- Check movie showtimes or sports schedules.
- Track your amazone packages.
- Get news updates.
- Have Alexa read your emails. [5]

2nd Compititor :

Google Assistant : Google Assistant offers voice commands, voice searching, and voice-activated device control, letting you complete a number of tasks after you've said the "OK Google" or "Hey Google" wake words. It is designed to give you conversational interactions.

Google Assistant can :

- Control your devices and your smart home.
- Access information from your calendars and other personal information.
- Find information online, from restaurant bookings to directions, weather and news.
- Control your music.
- Play content on your Chromecast or other compatible devices.
- Run timers and reminders.
- Make appointments and send messages.
- Open apps on your phone.
- Read your notifications to you.
- Real-time spoken translations.
- Play games. [6]

However, the market leader is **Alexa**.

6. NEW PROJECT OFFERS

The most important novelty offered by our robot is that it is adaptive to the user's requests and demands, regardless of :

- ✓ **His language** : our project is one of the first projects to natively support several languages. Most existing solutions support only one language. Even if they manage to support more than one language, they still tend to favor one language (usually English). In our project, we have equally distributed the efforts to support all languages with the same quality.
- ✓ **His gender** : our robot detects the gender of the person according to his voice (male, female) in order to propose programs adapted to them (for example cooking for women and sport for men).
- ✓ **His age** : our robot detects the age category of the person according to his voice (old, young, child) in order to propose programs adapted to them (for example art and traditions for old people, news for young people, games for children).
- ✓ **His mood** : our robot detects the mood of the person according to his voice (happy, sad, nervous) in order to propose them programs adapted to them (for example (Songs for happy people, Jokes for sad people, Yoga classes and calm songs for nervous people).

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In addition, our robot is equipped with a personalized and adaptive mobile application to communicate with him remotely. Indeed, this mobile application associated to our robot, is intelligent, able to recognize perfectly the human voice, to process automatically the natural language and to synthesize the voice from the user's smartphone, exactly as the robot does. Moreover, it is easy to use, customizable, has good language support and gives relevant results in just a few seconds, while protecting the users' data and information. It is sophisticated, secure, reliable, flexible, free, compatible and works perfectly on the Android platform.

The mobile application associated to our product is a good language learner, it adapts itself to the user's searches, habits and preferences. It is very accurate in terms of answers and results and performs dialogues, allowing interaction with the user. Indeed, it is able to recognize easily the voice. It is also possible to communicate with our assistant in writing.

This is the personal touch of our B-guide product.

7. PREMISES NEEDED

For our project we need 3 main premises:

- ✓ **The Headquarter** (B-guide Headquarter) : the headquarters will constitute the official address of our company. Indeed, we need a room or a building of a medium-sized surface which will shelter :
  - the general services of our company (general management, human resources, sales, marketing, finance, industrial, IT, accounting, purchasing / sales, administration, legal ...).
  - meeting rooms for our professional meetings.
  - the reception room for our customers.

This location will determine a part of the administrative and judicial bodies that are competent to deal with the business of our company.

Preferably, our head office has a strategic geographical position in an important business district, to facilitate partnerships and collaborations with other companies in similar fields.

- ✓ **2) The Factory (B-guide plant)** : we also need another room, larger than our headquarter, divided into several spaces that will house both :
  - **A space for development (Software engineering)** : work space allowing artificial intelligence engineers, and developers to implement the robotic programs before sending them to manufacturing. These spaces must be equipped with modern technologies such as modern computers, fast internet... All this to create a comfortable and healthy working environment in order to accelerate the progress of our project.
  - **Spaces for manufacturing or Workshops (Hardware engineering)** : space for manufacturing our chatbots. This is where the assembly of the robots takes place, as well as the integration of the intelligent programs into them.

Preferably, the workshops are isolated and soundproof garages, in order not to disturb the development space and the outside world with the noise of the manufacturing machines.

- ✓ **3) The shop** : we need a last room, of a small surface. This is where we store our robots after they are made, and display them for sale.

Preferably, our store has a direct access to a place much frequented by people, families and tourists, in order to attract the maximum of customers.

8. DESCRIPTION OF 4 MAIN EQUIPMENT

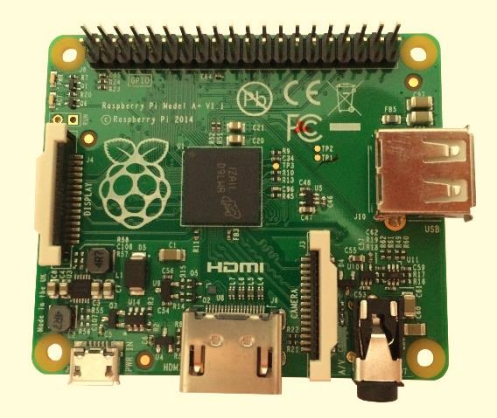
Such a project requires a lot of equipment (computer, electronic, electrical, mechanical...). We quote the 4 most crucial equipment allowing the permanent progress of our project:

✓ **1) Supercomputers or supercomputer and PCs :**

These are sophisticated computers designed to achieve the highest performance possible with the techniques known at the time of its design, especially with regard to the speed of calculation. These equipments are useful to run artificial intelligence algorithms in order to have the best possible predictions and results for user queries. [7]

✓ **2) Nanocomputers (Raspberry PI) :**

These are computers possessing a size smaller than a microcomputer. These equipments will be the brains of our robots, Indeed, these motherboards will help us to start with a head start since they are delivered with a preconfigured environment in order to accelerate some basic steps of the development process. [8]

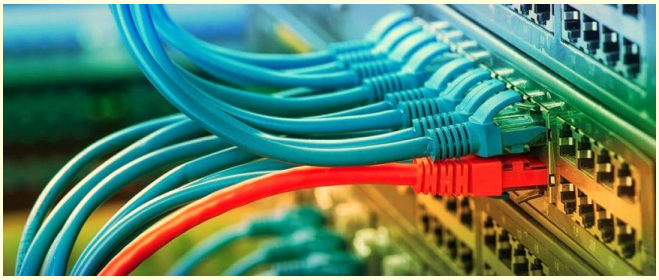


✓ **3) Data servers :**

These devices store user data in order to customize the robots. It will also help us to collect and analyze user data so that we can improve more and more.

✓ **4) Network infrastructure :**

Equipment needed for communication between the company's team, but also with customers.



9. BUDGET AND DETAILS OF FINANCING

After a thorough study of the market, we realized that the minimum budget to start such a project would be $50,000 divided as follows:

- ✓ 20.000 $ for staff and development.
- ✓ 10,000 $ for the premises.
- ✓ 20,000 $ for initial materials and equipment to start manufacturing the robots.

This budget is an estimate. In reality, it can grow as well as shrink.

Regarding the financing, we will create and finance our project from :

- ✓ **1) Bank financing** : it is about making bank loans to launch our project.
- ✓ **2) Sponsors** : this is funding from companies interested in the idea of our project.
- ✓ **3) Fundraising from our entourage** : it is about collecting funds from our entourage, i.e. calling upon our close relations (family, friends and other relations).
- ✓ **4) Honorary loans** : this is a loan without guarantee or personal surety, generally at zero interest, and registered as equity. The amount can reach 90 000 $ for innovative projects.
- ✓ **5) Competitions** : many associations, foundations, schools or other entrepreneurial organizations offer competitions for entrepreneurs. These competitions are not only about financial endowments, but also about the possibility to get known and to meet partners or investors.

CONCLUSION

In such a project, we can encounter many difficulties, the most important are :

- ✓ Expensive rent (premises) and materials needed for the project.
- ✓ Difficulties of financing: we may not find enough sponsors to finance our project.
- ✓ Lack of manpower as it is a new project.

However, this does not prevent the project from being interesting and feasible, especially since we have the necessary background, computer skills, prerequisites, and innovative ideas that will make us a partner of your projects responsive, reliable, and adapted to your deadlines and quality and cost requirements.

Thus, the only weak point we see in our project is the fact that we have no previous experience in the commercial field.

On the other hand, to conclude, we have many strong points that will help us to experiment quickly in the commercial field. And among these strengths we mention :

- ✓ Our ability to learn quickly.
- ✓ Our ability to innovate.
- ✓ Our ability to work as a team.

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