



Chatbot in a Campus Environment: Design of LiSA, a Virtual Assistant to Help Students in Their University Life

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Abstract. This work presents some initial results of our research about the design and implementation of “LiSA” (Link Student Assistant), a chatbot intended to help students in their campus life, through information and services. The focus of our research is to understand which kind of information and services are better accessed through this kind of touch point, how the chatbot personality influences the user experience and the interaction and which level of intelligence should be implemented. After an analysis of the state of the art in the considered application domain we investigated, through a survey, the users’ needs and their inclination to the use of a chatbot for this specific purpose. A chatbot was created to deliver the survey, allowing to understand both the users’ needs and their behaviour while using the tool.

Keywords: Chatbot · Virtual assistant · Human computer interaction · Conversational interfaces · User experience

1 Introduction

Conversational interfaces are not new, however nowadays chatbots and virtual assistants are spreading on a wide scale as touch points to access information and services in a more natural way. This process of coming back to textual interaction was speeded up by the spreading of messaging platforms that started to support chatbots (i.e. Facebook, Telegram and Whatsapp) and many companies caught the opportunity to establish a new communication channel with the users. As an example Mastercard allows developers to easily integrate Mastercard payment technology into conversational e-commerce experiences through the Facebook chat [1].

Chatbots are used as a channel to interact with a wide range of different “intelligence” levels, from simple answering machines to complex natural language processors and artificial intelligence algorithms. Asking something via a text message could seem easier than browsing a GUI searching for a button or a textbox, however this kind of interfaces bring out new challenges in terms of user experience, interaction design and usability. Moreover there is the need of a multidisciplinary approach including disciplines like psychology, sociology and sociolinguistics.

To ensure a “natural” interaction a “good” chatbot should create an “illusion of life” [2], merging an appearance of intelligence and empathic understanding of the user. Chatbots, as social agents, need a mind, a body and a personality in order to be believable. Personality is essential to shape an empathic relationship with the user and to be able to react to unexpected situations, like verbal aggression, misspellings or lacks in its knowledge database. In relation with the field of use and its scope (i.e. a financial consultant in an home banking system, a customer care assistant) it should have a different tone of voice and offer to the user a different set of functionalities.

The final scope of this work is to investigate how to design a chatbot that could help students in their campus life. We are using a User Centered Design approach with a specific focus on interaction and user experience aspects. An important point is related about finding out which kind of services and information are better delivered with a chatbot according to users’ needs, users’ perception, context of use and usability. The chatbot, for example, could provide general information or give personalized messages (thanks to the knowledge of students’ curriculum). But it could also provide transactional services, like booking an exam or paying the annual fee. In this case would the student be more comfortable using a GUI or a chatbot? Furthermore the messages could be delivered in pull and/or push mode. In the first case the student asks for something, in the second one the system, based on some parameters, decides to write to the user. Another important point is related on how the chatbot personality and the tone of voice influences the User Experience and which one is more suitable for the context of use. Should the chatbot have the personality of a tutor, a professor, a member of the administrative staff? As discussed in the analysis of the state of the art, personality has a strong impact on the system. Furthermore the level of Artificial Intelligence should be decided according to the functionalities required but also considering the costs.

In this paper we present the initial steps of our work consisting in a review of the state of the art and the results achieved during the user research.

2 Background

2.1 Chatbots: A Short Overview

Chatbots are machine agents that engage a communication with human using natural language. From the early stages, when chatbots were mainly experimented to fool people into thinking that they were humans and to entertain them (the most famous examples are ELIZA [3] or A.L.I.C.E. [4]), nowadays they are used into a wide range of fields for more practical purposes, like information retrieval, e-commerce, education, etc. Over the time the main focus in chatbot design moved from the perfect imitation of human to the development of helpful tools able to support the users in their tasks with a more natural interaction achieved through the use of natural language [5]. This was possible thanks to the growth of data-mining and machine-learning techniques from one side, and to the spread of mobile internet and mobile messaging applications from the other side, that have influenced users’ approach to customer services and technology [6]. Internet users prefer to use social media for asking assistance instead of calling or writing an email expecting a real-time response [7]. From this point of view chatbots could be

an effective alternative to traditional customer service thanks to their timely and efficient assistance and information, which saves the users' time and made easier and faster obtain help or information [8].

Different types of virtual assistants can be classified by various criteria. From the technological point of view Dialog Systems can be divided in two main groups. High Level Dialog System, that provides a high level of analytical complexity and of context understanding, and Low Level Dialog System, simple pattern-matching algorithm, with low level of analytical complexity and a basic context understanding (this systems mimic the conversation rather than understanding it, but are programmed with a large store of small talk canned responses that allow to entertain different conversational topic settings) [9]. This first distinction is closely connected with another important classification between General Personal Assistant (like Apple's Siri, Amazon's Alexa, etc.) and Specialized Digital Assistant (this kind of chatbots has increased significantly after the launch of chatbots platforms by Facebook, Skype, Telegram, etc. and are more focused on specific domains or task, like buying a flight, asking information to a specific customer care or use a learning platform) [10].

The communication with a chatbot can take place by writing text or with a speech-recognition system, and machine learning methods can be used to train the chatbot to understand the inputs provided by the users. From here the split between two different kind of inputs and outputs, closely linked to the context of use. Voice-driven voicebots, based on speech recognition technology (digital assistants like Apple's Siri, Amazon's Alexa, etc.) that could be consulted everytime, also while the user is driving a car, but it may have trouble recognizing words if not pronounced correctly. Text-based chatbots, real time chats, implemented on the website or provided by social media platforms. There are also virtual assistant that can use both technologies.

If analyzed from the interaction point of view the human-system dialogue is composed by a person (user) looking for information, and an expert (system) giving information. This can take place through three interaction strategies, that determinate who between the user, the system or both are leading the conversation. In case of System-initiated interaction users' inputs are limited but the interaction is more efficient, in reverse in a User-initiated interaction users are free to take initiative but there can be problem with understand all the users' inputs. Mixed-initiated interaction strategy seems to be the solution better adaptable to different contexts [11].

2.2 Conversational Interfaces and User Experience

Understanding the user is fundamental for designing better conversational interfaces and more efficient chatbots, also because users expect to use natural language in their conversations with this kind of technology. In this scenario user's digital interaction moved from graphical user interfaces (websites and apps) to messaging platforms and voice-driven digital assistants [12]. Design should not be seen as an explanatory task (the user can see all the content and features available to reach his goal) but as an interpretational task (the system must understand the users' needs and how to serve him) and must extends from the design of the UI to the whole service [6]. The user interface is no longer limited to the screens but embraces other forms of interaction, above all the

machines are starting to understand user's natural words, behaviors and gestures. It's no longer necessary for the user to understand the machine's language (command line or GUI). About this change Andy Goodman, group director of Fjord, introduces the provocative term of Zero UI [13].

An important change in the sociology of the users of computer applications is the transition from expert users to "novice users", who need a virtual assistant more user-friendly, that satisfies some requirements in order to fulfill their requests. Sansonnet, Leray and Martin have identified a basic framework that a virtual assistant must observe. It must understand the user through the function of comprehension (The Dialogical Agent), must answer to the user's question through the function of competence and an access to a database of knowledge storage (The Rational Agent) and must conquer the trust of the user through the function of presence (The Embodied Agent) [14].

Kuligowska et al. proposed an interesting framework evaluation method to identify different aspects of chatbots functioning, which includes Visual Look, Knowledge Base (general and specialized information because a conversational agent should be able to answer to a set of general knowledge questions, not only about the topic in which it is specialized, an aspect close to the personality traits of the chatbot), Conversational Abilities, Language Skills and Context Sensitiveness (a good chatbot should be able to bear a coherent dialogue, understand the context, giving feedback and repairing the dialogue if necessary, to minimize user frustration during the interaction), Personality Traits (a successful chatbot should have a unique personality, including personality aspects, biography and emotions), Emergency Responses in Unexpected Situations (the chatbot should be able to overcome user's misspellings or other mistakes and diplomatically answers to rude or sexual provocations), Possibility of Rating Chatbot (ask directly to the users to rate the conversation is an important added value to estimate the appreciation of the virtual agent) [15].

This framework underlines the need to integrate the technology with psychosocial factors and to include the users' linguistic, cognitive and social behaviour. The effectiveness, efficiency and satisfaction of the classic usability definition is not enough in this case. Chatbots must establish a relationship with users, must be appealing and entertaining. They have to be flexible (user's personalisation and bot's adaptivity to the users' model), affective (the quality of the relationship), communicative (minimum effort required for the interaction) and autonomous (not only reaction to users' command). They need a mind, a body and a personality to be able to be successful and believable. The mind consists in cognitive abilities (problem solving), social capabilities and affective sensitivity (understand the mood of the user and answer with the correct emotional state). The body can be visible or not, for example described by a good narrative. The personality defines the interaction style and the "character" of the bot. The combination of these three aspects generate the bot's behaviour [2].

Before designing a chatbot it is important to know the users' motivations for using it. The user actively chooses the best medium for his purpose and an emotionally engaged user could be the variable that could make him choose to use the chatbot. Virtual assistant doesn't really "understand" the dialogue but they can create the illusion of intelligence and empathic understanding of the user and must be able to react to unexpected situations, like verbal aggression, misspellings or lacks in its knowledge database.

The goal of the “illusion of life” requires a multidisciplinary approach from artistic, psychologic and technologic fields [2]. For example the use of participant’s first name during a conversation with a chatbot is perceived as positive and influence positively the all conversation [16]. It could be also useful consider additional contextual information like users’ social media profiles to better empathize with their emotional status, even because the users’ requests on social media can be both informational and emotional [7].

2.3 Users’ Reactions During Human-Chatbot Conversations

Talking about chatbots like social actors with a personality and behaviour does not necessarily imply that computers are human actors. This kind of interaction is a different and specific world, with its own dynamics and rules.

Several differences have been found between human-human and human-chatbot communication. Users write shorter messages, have longer conversations and are more profane with chatbots than with another human. Despite the interaction with an artificial counterpart, people seem to feel confident and comfortable with chatbots and adapt their language like in a conversation with children or non-native speakers. The human-chatbot conversation is often anonymous and this allow a greater use of rude or sexually explicit dialogue, also because users are curious to test the limits of the virtual agent [17]. During the design phases is important to try to predict users’ behaviour during the conversation with a chatbot, in order to prevent this occurrences and to make the whole interaction more pleasurable.

An interesting aspect emerged during an experiment with the famous chatbot ALICE is that users anthropomorphised the bot, greeted it, thanked and used other expressions of courtesy. But, at the same time, users tend to put themselves in a dominant position and so create an asymmetric relationship as they believe their “natural” intelligence is superior to the bot’s artificial one [18]. As a consequence they often insulted ALICE as they felt they can reward or punish the system (e.g. turn off the computer).

The anthropomorphism is a natural tendency of human beings and consists in the attribution of human features to objects, animals and events. This element it’s also redeemable in HCI field and can brings to both positive or negative users’ reactions. Many empirical studies show the similarity between user reactions to humans and artificial companions [19].

Humans use stereotypes to simplify their perceptions of others, this could be done by age, gender or race and could also be positive or negative. This aspects are recognizable also in conversational agents’ interaction, especially regarding the sex stereotypes. For example the attribution of gender is an aspect of the natural human tendency to anthropomorphize objects. Brahnam evidences the difference between conversations made with female, male and androgynous chatbot [20]. In all three cases there was sexually explicit dialogues, but in case of the female virtual agent it happened more frequently and in more rude ways, pulling out the negative kind of stereotypization [21].

In conclusion, a well-designed chatbot needs a personality and must establish a relationship with users, should understand the context and be able to hold a conversation also about general arguments, not only about its specific domain. It should inspire

empathy and at the same time doesn't try to imitate too much a human (because more a bot tends to imitates a human and more it is perceived as unnatural and "weird" [22]), be able to overcome user's misspellings or other mistakes and diplomatically answers to potential rude comments. This last instance can be limited by reducing the user's free initiative using quick replies instead of free conversation, but on the other side this restriction risks to make the interaction more similar to a form or fixed menu and not like a natural conversation [11]. Before starting to design a conversational agent is important to define the technology, the target, and the typology of chatbot is going to be realised because there is not only one good solution applicable to all contexts of use.

3 Designing a Chatbot for Universities

3.1 State of the Art

In order to understand the existing scenario about chatbots in university, we have been analysing the academic literature, paying particular attention to those works focused on chatbots for Universities. Research shows that a chatbot could innovate campus technology, which is often outdated; furthermore it could deliver many benefits to the whole academic environment, for both students and employees. Nowadays many Universities provide information and handle frequently asked questions with a physical help desk, to welcome and assist students and visitors or with a website and a mailbox. Therefore, in order to manage the amount of daily requests, there must be some staff dedicated to that purpose [23] and students would need to go to the institute in order to request and receive real-time and updated information.

Communication media like email can solve the distance issue in some cases and it is the most frequently used tool to provide information; indeed, email can be an appropriate tool to send a single communication to a large number of students, although it can be slow and ineffective to manage single requests or to solve specific problems, because the asynchronicity of the conversation can lead to an unpleasant experience. Therefore a chatbot can be an useful and effective solution for students, who have the chance to have immediate and up-to-date information and could ease the staff's work, which would be simplified and unloaded.

Despite the restricted academic works, several online sources emphasised that a chatbot could be an appropriate tool to handle many requests from students.

Chatbots are designed to answer questions or to perform tasks in a specific area. In the academic environment they usually belong to one of these two categories: the first one is about chatbots used to help prospective students in finding the best university for his/her interests; the second category is about chatbots developed for a specific university: some of them act like a virtual assistant for students, while others perform a specific task. Chatbots, for example, have been used to involve students in Computer Science topics [24] or to help them in specific courses. These chatbots are task oriented, as the problem they try to solve are related to specific issues in teaching.

Instead the chatbot we are going to design, LiSA, belongs to the "virtual assistant" category, whose goal is to provide information and services to students, answering questions 24 h a day, every day. Information provided by chatbot assistants is usually

generic, like university's facilities, admissions, courses. There are different contexts of use for chatbot assistants in relation to specific moments during the academic year and specific needs of students. During the application process, a bot could help prospective students by supporting them during enrollment: the goal to achieve is for students to retrieve information without any need to browse several web pages looking for frequently asked questions. As a matter of fact, even though the web is usually a rich source for this kind of information, and most of universities already provide information on their websites, sometimes users find challenging to locate relevant information quickly [25]. Furthermore a chatbot could create a "human-like" connection while prospective students are seeking for information, establishing a natural interaction.

A chatbot, as a shortcut to get information in an easier, more natural way, is not only a great advisor to take the first steps into the university environment, but it is also a great help during the entire time on campus [26]. Many students do not attend lessons daily and it is important for them to have remotely updated information. Information could be pull (answer to a certain request) or push, like relevant updates and notifications to remind students about upcoming deadlines. Pull information usually offered by chatbots are about university facilities, upcoming events and academic information [27].

Other useful activities are related to push information and notifications. A chatbot could send notifications to inform students about sudden changes in timetable, for example, or remember deadlines and important events. The immediacy of the medium is perfect for rapid information and it could improve the way information is delivered.

Most of chatbots handle pull requests, while only some of them send automatic messages to students, in order to inform them about important news or sudden changes. These messages usually concern information addressed to all students, while they do not provide customized information based on the student's profile. At the best of our knowledge we haven't found chatbots offering transactional services like booking an exam or paying the annual fee.

3.2 The Design Process for the LiSA Chatbot

Previous works are essential to understand issues and opportunities in designing a chatbot and to establish next design steps. The focus of this work is to understand the complex relationships behind a chatbot-human conversation, in order to design a conversational agent that could be both easy and comfortable to talk with.

Next design steps are focused on observing our target users to understand their needs and behaviours. To this purpose we designed a questionnaire, useful to understand students' need for information, that was submitted as a chatbot in order to observe users behaviour during the conversation.

In Sect. 4 it will be presented the design process of the chatbot questionnaire, its aims and the structure we chose to ask questions. Consequently, Sect. 5 will report questionnaire results, highlighting users' need for information that will help to define the database of the LiSA chatbot. Concluding, Sect. 5 will also describe users emerging behaviours while chatting; this will be essential in order to define chatbot's personality and its tone of voice.

4 Method

4.1 Survey Bot Design

To explore students' information needs and their familiarity with chatbot technology a survey was used. The questionnaire was divided in three main sections. The first section concerned participants' personal informations (age, typology of student, etc.), the second section investigated the informations students are interested to receive or they looked for, the medium used to get them, and the satisfaction about the service. The goal of the third section was to probe participants' familiarity with chatbots and also investigate the information they will be interested to receive if the University had one. The methodology chose to share the survey was LiSA (Link Student Assistant), a Low Level Dialog System [9] chatbot built with Chatfuel [28] and implemented on the Facebook Messenger platform (Fig. 1).

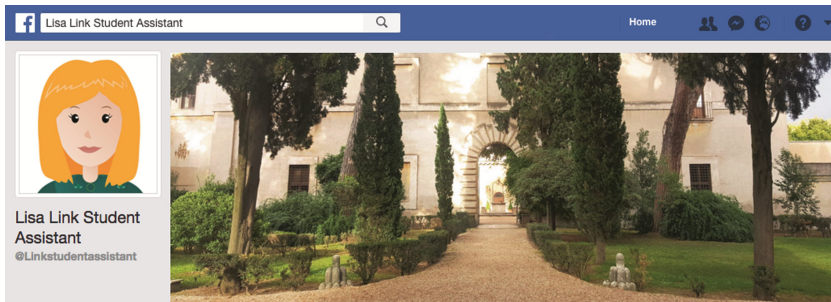


Fig. 1. Facebook page of the chatbot LiSA

The chatbot was structured like a survey bot with a System-initiated interaction [11] and quick replies text bubbles for all the answers, except one. This choice was made to guarantee an efficient interaction, avoiding misunderstandings due to free conversation, and for the sequentiality of the questions. The only free answer has been placed at the end of the survey and concerned which services the participants would be interested in, if the university had a virtual assistant. The last question was about the satisfaction to have been interviewed by a chatbot instead of a traditional form.

We created the LiSA's Facebook page and anticipated in this way the possible future university virtual assistant to the students. LiSA was provided with a profile picture (a comic-like character) and a short description of the research in which she is involved.

Because of the young target involved in the research, LiSA used an informal approach enriched by emoticons, to make the survey more agreeable and coherent with the mobile messaging applications context and to establish an empathic relationship with the participants.

4.2 Participants

In order to investigate students' information needs and their familiarity with chatbot technology we interviewed a sample of 100 students. Most of them were Link Campus University students, while the others were students from different Italian universities and prospective students from high school, who attended some activity at the Link Campus University. In this way we could investigate the internal students' information needs, the orientation information that would interest a high school student and the information system offered by other Italian universities. The 100 students interviewed were aged between 15 and 30 years old: 47,4% of interviewed users were aged between 15 and 18 years old, 50,9% aged between 19 and 24 years old and 1,8% aged over 25 years old. Considering that the questionnaire was administered via chatbot on Facebook's platform all the participants were familiar with Facebook Messenger. The majority of participants were involved to take part to the research personally, during classes and other activities at the Link Campus University.

5 Results

5.1 User Needs and Habits in Information Request

Most of the students from Link Campus University (88%) claim that they have been looking for information about University at least once and answered questions about which tools they have ever used and the level of satisfaction for the answer.

Table 1. Data about the tools students used to communicate with the Link Campus University

	Usage	Partially satisfied	Totally satisfied
Website	93%	28,6%	64,3%
Email	50%	15,4%	77%
Phone	53,3%	7,7%	92,3%
In person	75,9%	26,3%	68,4%

The table above shows that students have used different tools to communicate with the University and that they are quite satisfied with answers they received. A relevant data comes from phone requests, which revealed the highest satisfaction rate, followed by "in person" requests, confirming that personal interaction is still preferred by students to ask for information.

Furthermore the questionnaire highlights that none of the students ever asked for information on Facebook for several reasons: 41,4% of students say that Facebook is too informal to communicate with an institution, 41,4% say they do not use Facebook very often and 17,2% claim they didn't know they could talk to the University on Facebook. Facebook, as a social platform, is considered as an informal communication tool, not suitable for communicating with University. Relevant data comes from the relationship between research content and tool used to search for it, as shown in the table below.

Table 2. Data collected about the way students ask for different kinds of information

	Types of information				
	Enrollment	Scholarship	Opportunities	Events	Schedule
Website	21%	40%	36,7%	28,3%	21,7%
Email	18,5%	27,5%	22%	31,6%	27,8%
Phone	33%	12,5%	4,9%	26,6%	29,9%
In person	27,5%	20%	36,4%	13,5%	20,6%

Students were asked how do they usually look for several kind of information. The table highlights that enrollment generally is the first reason why students actively ask for information. Students prefer getting information about enrollment in person or by phone (41%), confirming what other studies found out. Furthermore class schedule is another issue of primary importance for students, due to the possible sudden changes in scheduled lessons. Preferred tools to ask for information about class schedule are email and phone, because allow students to get information without the need to go to the university.

Further questions focus on the information Link Campus University already offers to students and the way they deliver it. In this case we will consider only answers from current students of Link Campus University.

Most of the students claim that Link Campus University offers an information and notification service (81,8%) that reminds about important events and deadlines. They say that information is delivered via email (70,8%), phone (7,7%) or both (21,5%). The majority of the students are very satisfied from this communication service (69,2%), while 26,9% claim they are not very satisfied and 3,8% are not satisfied at all. Email seems to be the most widely used tool to provide personalised information at Link Campus University: 64% of the students say they receive personalised information and 36% say they do not. These students were asked further questions about their opinion about customised information and 66,3% of them say they would find useful receiving personalised information from the University.

Both current and prospective students answered questions about their knowledge on chatbots. Only 51,9% of students claim they know what a chatbot is, while the others have never heard about it. It is interesting to compare answers basing on age: most of younger users from high school know what a chatbot is (70%) while only the 56,3% of university students know it. This data would suggest that younger users are more sensitive and reactive to new communication tools.

A part of those who know what a chatbot is, claim that they have been using it to contact some customer service (65,4%). Students who do not know anything about chatbots say they have never used it because they use telephone to contact customer services (62,9%) or email (22,9%). 14,3% of users say they believe that chat is not an appropriate tool to contact a customer service so they have never used it.

Users who used chat tell they have talked with humans (38,5%) and chatbots (39,5%) and they could distinguish between human conversation and chatbot conversation because it was specified (70%), or the chatbot didn't understand requests (10%) or it was repetitive (20%). It is important to highlight that most of the users who had a conversation

with a chatbot evaluate it as satisfying (50%) or indifferent (40%), while only 10% define it as frustrating.

All the students interviewed have listed the information they would like to receive by the University via chatbot; answers were submitted in natural language, so data was collected and aggregated, in order to define macro-categories of information (Fig. 2).

In conclusion this questionnaire is a valuable contribution in finding out students' need, desires and current lacks in information delivering and using a chatbot was useful to directly observe students' perception and behaviour with this communication tool.

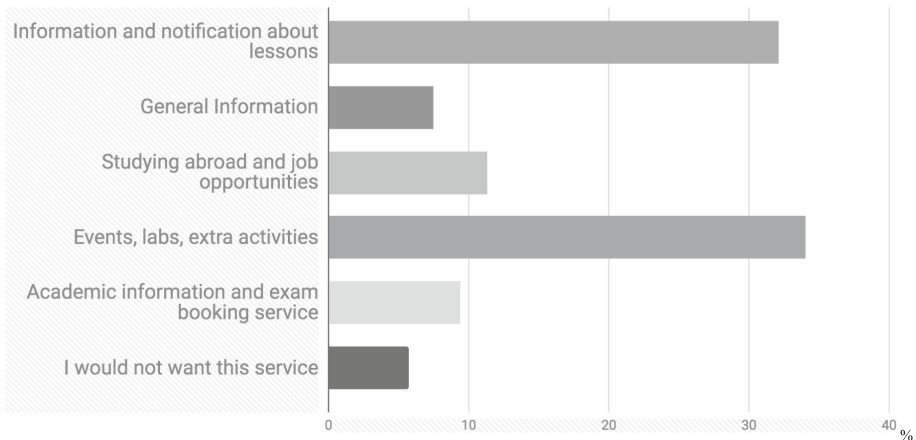


Fig. 2. Data about what type of information students would receive by an university chatbot

5.2 User Behaviour During the Conversation

Previous works show that people have different behaviours during an human-chatbot communication than during human-human communication and the analysis of the conversations with LiSA prove that. Most students correctly answered the questions using quick replies, often thanked LiSA and used other expressions of courtesy, enriched by smiling emoticons. This shows a tendency to anthropomorphize the chatbot, even if it has a low level of complexity. Other participants, instead, abandoned the conversation when LiSA asked to write personal opinions freely, showing an opposite, unconcerned reaction.

At the last question about rating the experience with LiSA, the 59,6% of participants valued it like interesting, 29,8% enjoyable and 6,4% indifferent. A marginal number of students rated it as annoying and boring; these opinions are closely linked to situations when LiSA looped or got wrong, making users frustrated or to the participants' curiosity about the chatbot response. Aggressive reactions were registered as well: some students (6%) insulted and offended LiSA, flirted with her or talked about physical appreciation despite LiSA has a simple and not sensual graphic appearance. In a first phase we have not included filters concerning rude or sexually explicit words, because the students were mostly involved personally in a university context and because their Facebook

profiles were not anonymous. After the first impolite answer we decided to provide LiSA with a sensitive personality, hurted by aggressive behaviours. This personality change led to different reactions: some students apologised with LiSA, while others tried to excuse their own behaviour with the curiosity to testing the limits of the chatbot. Rude words were used by both female and male, especially when LiSA looped or got wrong, as an evidence of dominant position. Flirting was only observed in men, confirming Brahnam [20] gender stereotypes observations.

Students who showed aggressive behaviours were especially younger prospective students, while Link Campus University students generally had a polite behaviour and completed all the questionnaire.

6 Discussion

Testing a chatbot gave us many interesting sparks in terms of information needs and of personality design guidelines.

The information that students are used to ask for, described in Table 1, are essential to define the information database that the LiSA chatbot will necessarily include. Table 2 will be an interesting hint to design further services that LiSA could provide. For example, it was observed that students would find useful to have a chatbot sending information and notifications about lessons, especially about changes in class schedule. This kind of information should be delivered in push mode, in order to immediately advise students.

Furthermore, students would like to be advised about University's events and activities. Also this information might be delivered in push mode and it could be personalised on student's interests and academic career. General information as well as information about enrollment will be included as well, but they might be available on request, supported by push notification about important deadlines and messages, already delivered by email.

Lastly, we will take into account further useful services, like exam booking, currently available on the student's personal page on the University online platform.

Analysing conversations allowed us to observe recurring behaviours, like sexually explicit and rude reactions, already proved in previous works. According to the evidence it is necessary to properly design LiSA's personality, enhancing empathy and sensitivity. Conversation should be well balanced and polite as an human-human conversation and this goal can be reached only by designing with empathy.

It can be assumed that some behaviours occurred because students believed they were anonymous, despite the conversation was actually a questionnaire presented by an University and above all conducted on Facebook, where identity is perfectly recognisable. This data highlights that some students improperly used the chatbot tool and that they did not care about their privacy and identity, especially when they were frustrated by errors or loops during the conversation.

7 Future Works

The next steps in designing the University virtual assistant will be based on the collected data analysis and other research studies cited in this work. First of all we will decide the gender and visual look of the chatbot and consequently the personality and tone of voice used during the conversations with students (formal or informal, use of emoticons, etc.). We will test female, male or neutral gender for the virtual assistant, in order to observe if there will be substantial differences in sexually explicit and rude reactions; then we will shape the final chatbot aspect and personality. The virtual assistant will be provided with an own biography and the capacity to answer general knowledge questions besides about specific university's topics. Personality is essential to shape an empathic relationship with the user and we would like that LiSA become a useful personal assistant for every Link Campus University student, able to give real time personalized information in a pleasant and informal way. We will implement filters and emphatic answers to make LiSA able to repair potential dialogue mistakes and to diplomatically answer to rude or sexual provocations.

We would decide the right proportion between quick replies and free dialogue according to the type of information to give; then we will define whether if the system or the user will lead the conversation and in which cases.

At the end of the design phase we will realise the first prototype of LiSA for testing it with a sample of students, in order to understand its effectiveness and thoughtfulness before the final release.

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