



HOLY SPIRIT UNIVERSITY OF KASLIK
SCHOOL OF ENGINEERING

GIN 456 – Human-Robot Interaction

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Final Report

FriendBot

Contents

Project Proposal	3
Use Case Document	6
Use Case #1: Introduce Self.....	6
Use Case #2: Play a game	8
Use Case #3: Take a quiz	11
Use Case #4: Tell a story.....	13
Use Case #5: Teach a song	16
Personas	20
Persona #1: Georges	20
Persona #2: Maya.....	21
Persona #3: Ray.....	22
Persona #4: Elias.....	23
Persona #5: Celine.....	24
Design Block:	25
Introduction.....	25
Activity choices.....	26
Discussion:.....	Error! Bookmark not defined.
Challenges:	Error! Bookmark not defined.
Unexpected outcomes:	Error! Bookmark not defined.
How to improve?.....	Error! Bookmark not defined.
Conclusion:	29

Project Proposal

Introduction of this project

In a digital and interconnected world, our children's development of social skills and the ability to form friendships play a big role in their development, emotional well-being and future success. Children are now stuck to their screens and have minimal interactions with the outside world and even with other children.

Project Objectives:

To address this concern and make a change to let the technology have a positive impact in our society, we want to design "FriendBot" which is a mediator robot that plays with kids while improving their social skills and empowering children to make new friendships as the children bond together while playing with the robot.

Our project involves the creation of an autonomous robot friend intended to improve friendships between young children.

We will be using Robot Pepper to implement our project, here's why:

- It has a humanoid appearance with a friendly face and expressive eyes, making it approachable and engaging for humans.
- It interacts with humans in a social and natural way. It can take voice commands and can speak multiple languages.
- It can be programmed to perform a wide range of tasks and behaviors, making it adaptable for multiple industries and applications.
- It can provide information and engage in conversations while answering questions and entertaining others.

Work Method:

Iterative Development Process:

We will use a basic prototype of the robot with core features and conduct tests with a small group of children to gather feedback on the robot's features.

Refine the robot's design, software and interactions based on the user's feedback.

After each refinement, perform usability and functionality tests and repeat the whole process until the robot works perfectly and based on our main purpose and objectives.

We encourage collaborating with experts in the education field to help us assemble a diverse team of professionals to help in the testing phase and take suggestions and feedback based on their expertise.

Discussion:

Challenges:

1. Gaining a comprehensive understanding of Choregraphe involves a systematic approach to familiarizing oneself with this specialized software for programming humanoid robots..
2. Making sure the robot gets what's going on and responds involves more than just telling it what to do. It means teaching the robot to understand things around it and react in a smart way. This is done using clever techniques like artificial intelligence, so the robot can make decisions based on what it sees or senses. It's like upgrading the robot to be more aware and responsive, making interactions with it smarter and more adaptable.
3. Understanding HTML codes and creating a web page involves learning the basic building blocks of the web language, HTML.
4. Combining our use cases together. Blending different ideas to create a complete and connected solution. The aim is to make everything work together smoothly and efficiently, ensuring that our approach covers various aspects or needs.

Solutions:

1. **Spending more time with Pepper the robot:**

This indicates a dedicated effort to familiarize oneself with the robot's features, suggesting hands-on exploration and interaction to better understand its capabilities.

2. **Tried each function block alone on Choregraphe:**

The individual testing of function blocks in Choregraphe implies a methodical approach to learning and experimenting with the software's functionalities, ensuring a comprehensive understanding of each element's role.

- ### 3. **Worked in a team and helped each other understand the coding part:**
- Collaborating in a team suggests a cooperative learning environment, where members support one another in comprehending the coding aspects of Choregraphe, fostering a shared understanding and skill development.

Unexpected outcomes:

Negative unexpected outcomes:

- The robot misinterprets some actions, resulting in unplanned or improper reactions.
- Unexpected technical glitches or malfunctions occur during interactions, causing interruptions.

Positive unexpected outcomes:

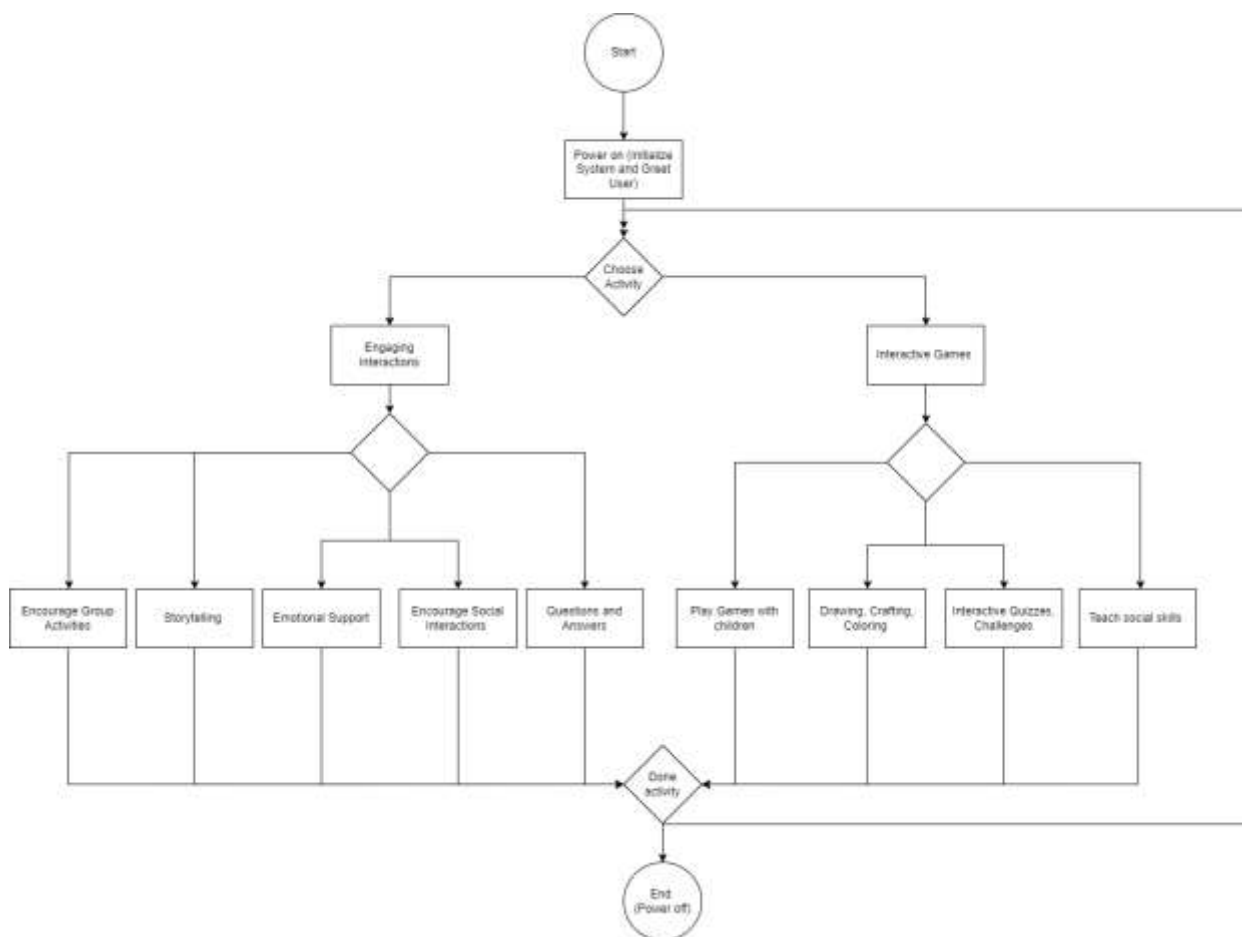
- Kids show surprisingly high levels of interest in a certain aspect or activity that wasn't originally thought to be the main emphasis.

- Initially shy or reticent kids become enthusiastically cooperating on tasks assisted by the robot.

Future research:

- Enhance Friendbot's personalization capabilities, allowing it to adapt its behaviors and activities to individual children's preferences, learning styles, and developmental stages.
- Investigate strategies to maintain long-term engagement with Friendbot.
- Introduce more complex games or activities that challenge children's cognitive abilities.
- Develop interactive storytelling capabilities where Pepper can narrate stories and involve children in the narrative.

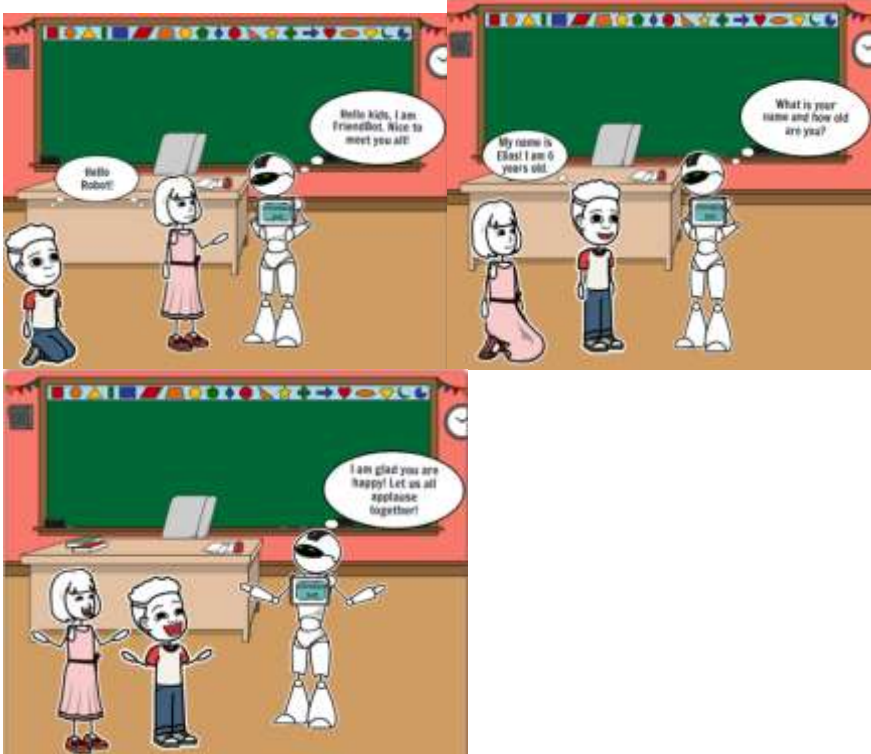
Here is attached below the flowchart that describes how the robot will be operating in the factory:



Use Case Document

Use Case #1: Introduce Self

UC-ID and Name	UC-01 Introduce self		
Created By	FriendBot (Sarah Daou)	Creation Date	13 October 2023
Actors	<ul style="list-style-type: none">Pepper the Robot (FriendBot)AdultChild		
Trigger	The adult presses the "Introduce Yourself" button on Pepper the Robot.		
Description (Objectives/Goals)	FriendBot will warmly introduce itself, to create an engaging atmosphere, and gather basic information about each child to personalize interactions.		
Preconditions	<i>The state of the system or user BEFORE executing the use case</i> <ol style="list-style-type: none">Pepper the Robot is powered on and operational.The robot's sensors and communication systems are functioning correctly.There are children present and an adult supervisor nearby.		
Postconditions	<i>The state of the system or user AFTER executing the use case</i> <ol style="list-style-type: none">Pepper the Robot successfully introduced itself to the children.Pepper asked each child their name and age.Pepper has created an engaging environment		
Action Sequence (Success Scenario)	<ol style="list-style-type: none">The adult presses the "Introduce Yourself" button.Pepper greets the children: " Hello kids, I am Pepper the Robot. I came from another planet and would like to know more about you."Pepper asks the first child: "What's your name?"Child responds with their name.Pepper responds: "Nice to meet you, [Child's Name]! How old are you?"Child responds with their age.Pepper acknowledges: "Great! Thank you, [Child's Name]."Steps 3 to 7 are repeated by FriendBot for each child present.Pepper concludes: "I am here to be your friend. We will play, chat, and have lots of fun."Use case ends.		

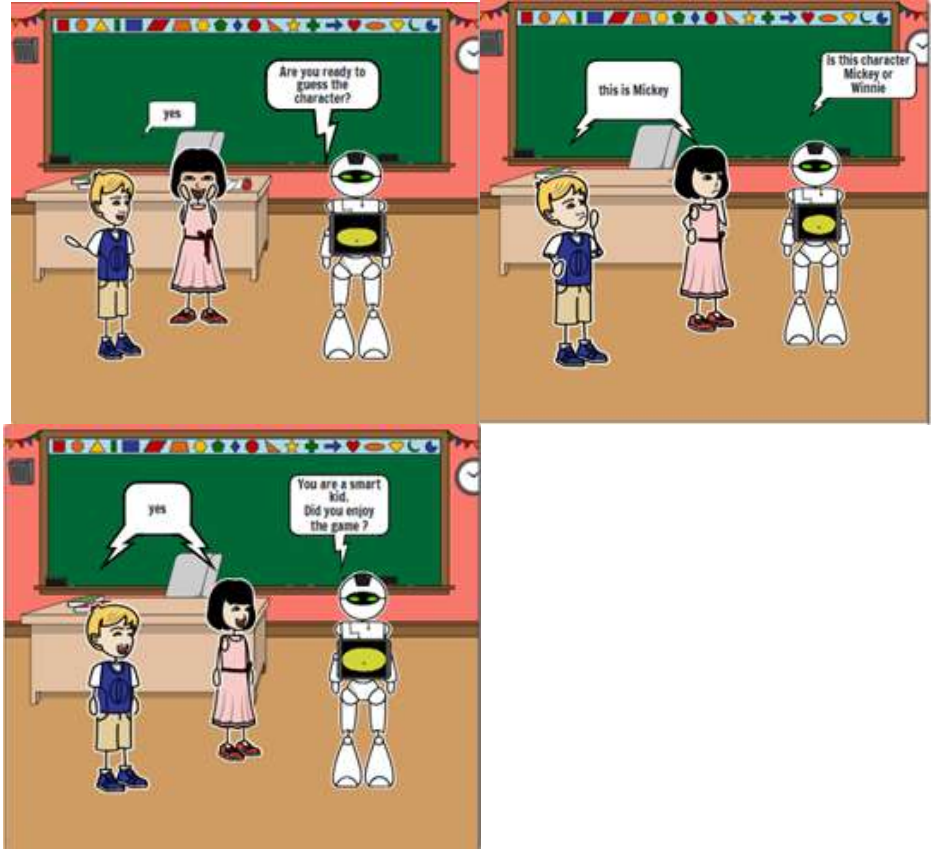
Extensions	<p>4a. Child does not respond: 4a1. Pepper politely asks again, ensuring the child feels comfortable and encouraged to answer.</p> <p>4b. Child's answer is not recognized: 4b1. The Robot alerts the child that the answer was not recognized by FriendBot and returns to step 3 of the normal flow.</p> <p>5a. Pepper has technical issues: 5a1. FriendBot displays a friendly error message and attempts to rectify the issue or informs the adult present in the room.</p>
Requirements	<ul style="list-style-type: none"> Functional sensors for recognizing the presence of children and detecting their responses. Clear and child-friendly voice for effective communication. User interface with an "Introduce Yourself" button for the adult supervisor.
Storyboards	 <p>The storyboard consists of three panels illustrating the interaction between FriendBot and two children (a girl and a boy) in a classroom setting. In the first panel, FriendBot greets the children with the speech bubble: "Hello kids, I am FriendBot. Nice to meet you all!". In the second panel, the children respond, and FriendBot asks for their names and ages: "My name is Elise! I am 6 years old." and "What is your name and how old are you?". In the third panel, FriendBot expresses happiness and encourages applause: "I am glad you are happy! Let us all applause together!".</p>
Priority	<p>High priority, as the successful introduction sets the good environment for further interactions and engagement.</p>
Related Use Cases	<ul style="list-style-type: none"> - Play a game. - Do a quiz. - Start a conversation. - Teach a song.
Assumptions	<p>Children are willing to interact with FriendBot. Adult is present to initiate and supervise the introduction.</p>

Open Issues	Privacy Concerns: Make sure it is okay to ask kids for their names and ages. Friendly Interaction: Pepper should talk and act in a way that all kids find friendly and nice.
Priority	High priority, as the successful introduction sets the good environment for further interactions and engagement.
Related Use Cases	<ul style="list-style-type: none"> - Play a game. - Do a quiz. - Start a conversation. - Teach a song.
Assumptions	Children are willing to interact with FriendBot. Adult is present to initiate and supervise the introduction.
Open Issues	Privacy Concerns: Make sure it is okay to ask kids for their names and ages. Friendly Interaction: Pepper should talk and act in a way that all kids find friendly and nice.

Use Case #2: Play a game

UC-ID and Name	UC-02 [Play a game]		
Created By	Rebecca Farah	Creation Date	14/10/2023
Actors	The robot (companion) and the kids (user)		
Trigger	The kids indicate to the robot that they want to play a game.		
Description (Objectives/Goals)	Pepper the robot will ask the kids to play a game in order to create an interaction between the kids.		
Preconditions	1. There are children present. 2. The robot is functional and powered on.		

Postconditions	<ol style="list-style-type: none"> 1.The robot played a game with the kids. 2.the kids were engaged by the game. 3.the robot created a playful environment.
Action Sequence (Success Scenario)	<ol style="list-style-type: none"> 1. The kids express their desire to play a game with the robot. 2. Pepper presents the available game “guess the character”. And asks the kids if they are ready. 3. The kids confirm that they are ready. 4. Pepper displays a photo on the screen and asks, “is this character Mickey or Minnie?” 5. The kids respond with the name of the character. 6. The game concludes, and the kids receive feedback from the robot. 7. Pepper asks the kids if they enjoyed the game. 8. The kids give their opinion. 9. The use case ends.
Extensions	<p>3a. No matching games are found:</p> <p>3a1. The Robot alerts the user that no matching games are available and suggests alternative activities.</p> <p>3a2.The user chooses to either select a different game or return to step 2 of the normal flow.</p> <p>5a. The kids decide to exit the game prematurely:</p> <p>5a1.The Robot acknowledges the user’s decision and offers alternatives, such as selecting a new game or returning to the main menu.</p>

Requirements	<p>The robot must have the ability to recognize and respond to the kids input.</p> <p>The robot should provide feedback and rewards at the end of a game.</p> <p>Games should be age appropriate.</p> <p>The robot should be able to provide game-related information and instructions.</p>
Storyboards	 <p>The storyboard consists of three panels illustrating a game interaction between a robot and two children in a classroom setting. In the first panel, a boy says 'yes' and a girl asks 'Are you ready to guess the character?'. In the second panel, the boy says 'this is Mickey' and the girl asks 'Is this character Mickey or Winnie?'. In the third panel, the boy says 'yes' and the girl says 'You are a smart kid. Did you enjoy the game?'.</p>
Priority	Medium
Related Use Cases	<ul style="list-style-type: none">-Introduce self-Do a quiz-Teach a song
Assumptions	<p>The robot can effectively recognize and respond to kids requests.</p> <p>Users have previously been registered or recognized by the robot.</p>
Open Issues	Pepper should be friendly with the kids

Use Case #3: Take a quiz

UC-ID and Name	UC-03 – Take a quiz		
Created By	Charbel bou akar	Creation Date	05/11/2023
Actors	<i>Children</i> <i>Pepper (Friend bot)</i> <i>Parents</i>		
Trigger	Children indicates that he want to take a quiz and stand in a specific area.		
Description (Objectives/Goals)	Pepper will do a multiple choices quiz to the kids also it will correct the wrong answer so that the children know the right answer and have a better outcome.		
Preconditions	<ul style="list-style-type: none">. Pepper is set up in the room.. Pepper's tablet is connected to the internet.. Children are present in a specific spot .		
Postconditions	<ul style="list-style-type: none">. Children have engaged in an educational quiz with Pepper.. Progress and scores are recorded.		
Action Sequence (Success Scenario)	<ul style="list-style-type: none">. Children enter the playroom.. Pepper greets and gathers the children around.. Pepper displays quiz categories on the tablet.. Children select a quiz category.. Pepper asks the first quiz question.. Children by talking with Pepper.. Pepper continues to the next question when the kids says “next question”. Pepper maintains a scoreboard for the records.. Pepper will correct when the answer wrong.		

	<ul style="list-style-type: none"> Children leave the Specific area.
Extensions	<p>If a child needs extra help, Pepper provides additional explanations.</p> <p>If an issue with Pepper's functionality arises, an adult can intervene.</p> <p>If the child move outside the Specific area Pepper will reset the quiz waiting for a new trigger.</p>
Requirements	<ul style="list-style-type: none"> Pepper must have access to questions and categories for quizzes A child-friendly tablet interface must be created
Storyboards	<p>The storyboard consists of three panels illustrating a quiz interaction in a room with a robot (Pepper) and two children.</p> <ul style="list-style-type: none"> Panel 1: The robot asks, "are you ready to take a quiz?". The girl responds, "yes". Panel 2: The robot asks, "what is 4+5?". The girl responds, "12". Panel 3: The robot says, "No! the correct answer is 9".

Priority	High priority due to the educational and developmental value for children.
Related Use Cases	UC-03 : Play a Game .
Assumptions	<ul style="list-style-type: none"> • Supervisor are present in the room. • Pepper is properly maintained and functional. • Children are aware of Pepper and know of how it moves.
Open Issues	<ul style="list-style-type: none"> • Ensuring content remains up-to-date and age-appropriate.

Use Case #4: Tell a story

UC-ID and Name	UC-04 [tell a story]		
Created By	Roudy Aoun	Creation Date	14/10/2023
Actors	<ul style="list-style-type: none"> • <i>Children</i> • <i>FriendBot(Pepper)</i> • <i>Parents</i> 		
Trigger	<i>The children want to start a conversation with the robot</i>		
Description (Objectives/Goals)	<i>The primary objective is to foster friendships between the robot and the children and between the children.</i>		
Preconditions	<ol style="list-style-type: none"> 1. The robot should be loaded with appropriate content for children 2. The presence of children 3. The robot must be in an active and operational state 		

Postconditions	<ol style="list-style-type: none"> 1. A positive connection between the robot and the children, with the children considering the robot as a friend. 2. The children should have gained new knowledge or insights from the interaction 3. The interaction should have encouraged and demonstrated the children's use of creativity and imagination through play and storytelling. 4. The children must improves their communication skills.
Action Sequence (Success Scenario)	<ol style="list-style-type: none"> 1. Pepper is activated and enters a state of readiness, preparing to engage with children. 2. Pepper ask the children about the topic of the conversation 3. Children are interested to know something cool about animals 4. Pepper displays photos about animals on the tablet and the question about each one. 5. Children are listening to pepper and interact with him. 6. Pepper put the children into groups to interact and to build friendships between them. 7. Pepper now will do the actions of some animals for the children to know which this animal is. 8. The conversation concludes by a new topic that pepper will choose. 9. Use case ends.
Extensions	<ol style="list-style-type: none"> 1. If a child expresses discomfort, fear, or unwillingness to engage with the robot, the robot should immediately adapt and back off, ensuring the child's emotional well-being. 2. If the interaction takes place in a supervised environment, and the supervisor wishes to direct the focus of the interaction or provide guidance, pepper should accommodate their requests and preferences.

Requirements

1. *Sensors*
2. *Voice and Speech Recognition*
3. *Age-Appropriate Language and Behavior*
4. *Educational Content*

Storyboards

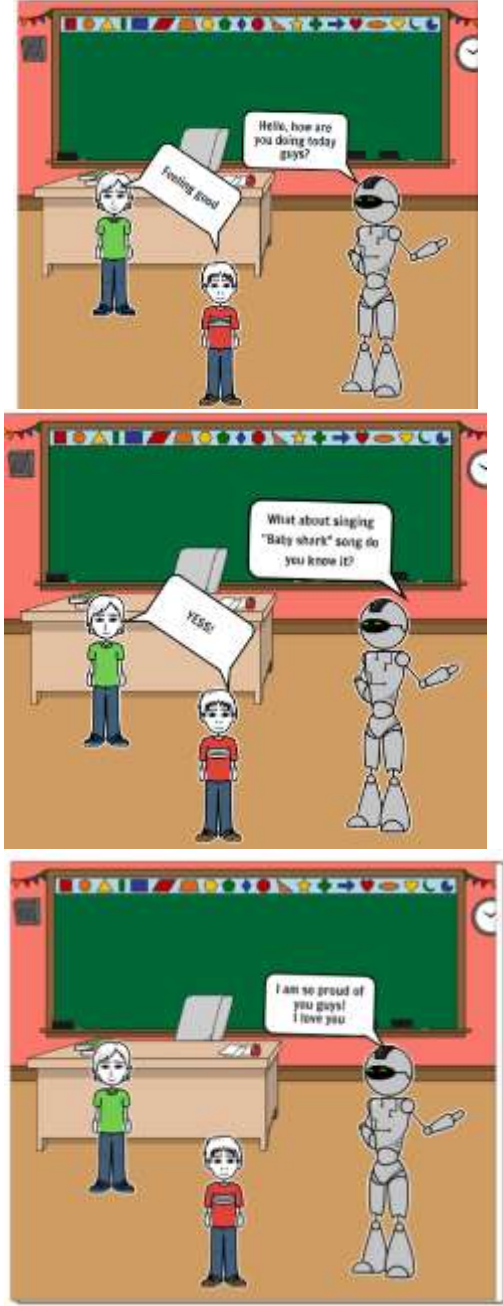


Priority	the primary goal of this use case is to provide social support, enhance children's social development, or assist children with specific needs
Related Use Cases	UC-05[Get feedback from professionals]
Assumptions	<ol style="list-style-type: none"> 1. The interactions take place in a safe and supervised environment. 2. The use case assumes that interactions with the robot will have educational benefits for children, such as promoting social development, communication skills, and creativity.
Open Issues	<ol style="list-style-type: none"> 1. Designing interactions that are culturally sensitive and inclusive is a challenge, as cultural norms and values may vary widely among different groups of children. 2. Content remains age-appropriate.

Use Case #5: Teach a song

UC-ID and Name	UC-05 Teach a song		
Created By	Maroun Akiki	Creation Date	13 October 2023
Actors	<i>Two children</i> <i>Pepper</i> <i>Parents</i>		
Trigger	The parents start the conversation by saying “Hello”		
Description (Objectives/Goals)	<i>Pepper wants to create a funny and cute scenario and teach our children some songs, he will make sure the children are enjoying their time.</i>		

Preconditions	<p><i>The state of the system or user BEFORE executing the use case</i></p> <ol style="list-style-type: none"> 1. Pepper the Robot is powered on and operational. 2. The robot's sensors and communication systems are functioning correctly. 3. There are children present and parents watching
Postconditions	<p><i>The state of the system or user AFTER executing the use case</i></p> <ol style="list-style-type: none"> 1. Pepper the Robot successfully sang the songs with children. 2. Pepper made sure each child was enjoying his time. 3. Pepper has created an engaging environment
Action Sequence (Success Scenario)	<ol style="list-style-type: none"> 1. Start with parents greeting pepper 2. Make sure about their mood(bad or good mood) 3. Shall inform them which song to sing(very known song) 4. Shall sing it 5. Wave his hands and make sure the children are excited 6. Check if the children love it and ask to repeat it 7. Repeat it or move to another song 8. Congratulate each child for his performance
Extensions	<ol style="list-style-type: none"> 4. Children are not singing the song <p>He will try to make them engage throughout asking them to dance and sing</p> 6. if the children didn't like the song <p>He will move to another one</p>

Requirements	<ul style="list-style-type: none">• Functional sensors for recognizing the presence of children and detecting their responses.• Clear and child-friendly voice for effective communication.• Parents initiation of action by saying “Hello” in the beginning.
Storyboards	 <p>The storyboard consists of three panels set in a classroom with a green chalkboard and a desk. In the first panel, a robot teacher with a speech bubble that says "Hello, how are you doing today guys?" is talking to two children. One child, a boy in a red shirt, has a speech bubble that says "Feeling good". In the second panel, the robot teacher has a speech bubble that says "What about singing 'Baby shark' song do you know it?" and the boy in the red shirt has a speech bubble that says "YES!". In the third panel, the robot teacher has a speech bubble that says "I am so proud of you guys! I love you".</p>
Priority	Ensure the children have a positive learning experience while learning the song.


Related Use Cases	<ul style="list-style-type: none"> - Play a game. - Do a quiz. - Start a conversation. - Introduce self.
Assumptions	<ol style="list-style-type: none"> 1. The children have the will to learn. 2. The robot is in proper working condition. 3. The children engaged properly with pepper
Open Issues	<ol style="list-style-type: none"> 1. Facing technical issues during the session. 2. Adaptability of the robot to different learning speeds and skill levels.

Personas

Persona #1: Georges

		“I want to be an astronaut.”	
Demographics	Name	Georges	
	Age	6	
	Character	Hyperactive, very smart, clownish.	
Motivation	Hobbies	Outdoor activities	
	Sports	Running, playing football, boxing	
	School	Performs well at school.	
	Challenges	Creates a chaotic environment in class, causing his friends to lose concentration.	
Social Environment	Background	Average income, the father is an accountant and mother is a stay-at-home woman. He lives in a small hometown and all the neighbors know him well.	
	Parents	Georges is treated well. His parents punish him often after not following the given rules or orders. His uncle fulfills all his desires and obeys every command Georges gives.	
	Friends	He has many friends at school and in his neighborhood. He is the boss among his friend group and almost everyone has to follow his orders.	

Persona #2: Maya

		“Everyone forces me to speak.”	
Demographics	Name	Maya	
	Age	5	
	Character	Shy, doesn't talk often.	
Motivation	Hobbies	Reading and Drawing	
	Sports	Dancing	
	School	Performs well in individual work but faces difficulty when working in groups and social interactions.	
	Challenges	Very minimal interaction with teachers, and school responsibilities.	
Social Environment	Background	Father is a soldier, works for long hours and is absent most of the time. Mother is a teacher in Maya's school.	
	Parents	Maya's parents are extremely strict, prioritizing her school grades and discipline. They want her to become a doctor in the future.	
	Friends	At school, Maya doesn't have many friends; she only has one girlfriend who always stays by her side.	

Persona #3: Ray



“I am the boss here.”

Demographics	Name	Ray
	Age	8
	Character	Aggressive, violent
Motivation	Hobbies	Watching “WWE”, plays “Pubg”
	Sports	Boxing
	School	Struggles to achieve high grades at school and attempts to skip classes but consistently gets caught.
	Challenges	He struggles with anger management problems, resorting to physical aggression when provoked. Consequently, he faces multiple expulsions from school throughout the year.
Social Environment	Background	His family has a good income and big house. His father is the CEO of a big company, his mother doesn’t work, only cares about social events and her physical appearance.
	Parents	Ray’s parents are indifferent, relying on a nanny to care for him daily. The school has recommended that they seek help from a psychologist for Ray.
	Friends	At school, Ray has a small circle of friends who constantly complain about being mistreated by him. However, they are afraid to stop talking to him.

Persona #4: Elias



“I don’t want to play.”

Demographics	Name	Elias
	Age	4
	Character	Emotional
Motivation	Hobbies	Watches “YouTube” and “Coco melon”
	Sports	Scooter, Bicycle
	School	Average, he’s still young to figure out if he really likes studying.
	Challenges	He becomes highly emotional and breaks into tears instantly, creating a barrier between him, the teachers, and other children. Once he starts crying, he becomes unapproachable, making it difficult for anyone to communicate with him.
Social Environment	Background	His family lives on a modest income in a small apartment. His mother works as a cashier, while his father is employed as a technical worker in a manufacturing facility.
	Parents	Elias’ parents are very caring, they work daily on strengthening his personality in this cruel society.
	Friends	Elias has very little friends because everyone mocks him and takes advantage of him in school.

Persona #5: Celine



“I like to play and study.”

Demographics	Name	Celine
	Age	8
	Character	Friendly, Caring
Motivation	Hobbies	Plays puzzles and other brain-teasing activities
	Sports	Dance, Rollers
	School	Celine excels academically with exceptional grades and actively engages in class discussions. She prefers independent study and seeks assistance from her parents rarely.
	Challenges	Celine faces bullying from her classmates because she prioritizes studying and actively participating in class. They pressure her to waste time and be more talkative, which often leads to trouble for them.
Social Environment	Background	Average income but the family lives in a healthy environment with nice neighbors around. Celine has 2 older brothers that take care of her.
	Parents	Celine's parents are incredibly supportive. They encourage her to freely express her talents and pursue her passions, allowing her the space to achieve her goals in life.
	Friends	Some of Celine's friends deeply appreciate her, valuing her for who she is. However, there are other children who choose not to befriend her due to their judgment of her high achievements.

Design Block:

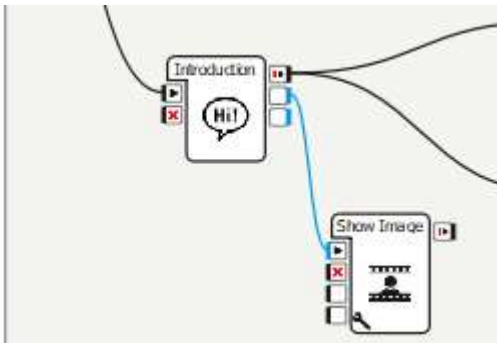
The project is divided into 3 phases:

- 1- Introduction
- 2- Activity Choices
- 3- Activity chosen.

Introduction

In the initial interaction, Pepper will introduce itself, saying, "Hello kids I'm Pepper, your friendbot, and I'm here to make our time together super enjoyable." Following this introduction, Pepper will encourage the child to share some personal details by asking "What's your name?" with a joyful tone, creating a comfortable environment for the child. Continuing the friendly conversation, Pepper will pose another question, "How old are you?" These simple and engaging questions are designed to allow the child to introduce themselves in an interactive and age-appropriate way, setting an enjoyable experience with Pepper. And finally in the introduction phase, Pepper will ask the child if he/she is happy to be here:

If the child says yes, Pepper will applaud, otherwise Pepper will say a sweet message and go to the next phase. Even if the child says that he is not happy to interact, Pepper will continue the interaction because when playing with children, they may misjudge an activity before having the time to really enjoy it. So even if the child said that he is not happy, the interaction will continue.



Here are the blocks used for the introduction:

- We have the block "Introduction" containing the dialog between Pepper and the child with different paths based on the answer given by the child.
- During the dialog, different pictures will appear on the screen, which needs the "Show Image" block to display the pictures.

```

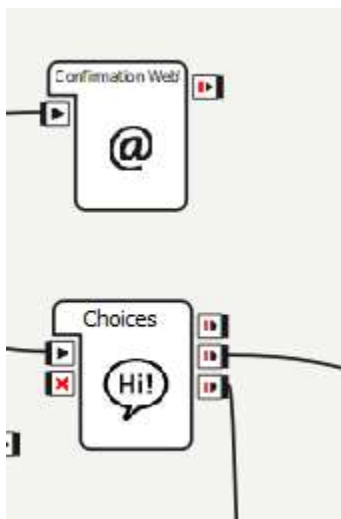
1  topic: ~introduction()
2  language: enu
3
4  concept: (greeting) ^rand[hello hi "hi there" "hey" "hey there"]
5  concept: (name) [philip sarah joey]
6  concept: (thanks) ^rand[thanks "thank you"]
7  concept: (age) ^rand[4 5 6 7 8 9]
8  concept: (break1000) \pau=1000\
9
10 #proposals
11 proposal: $showImage=pics/hello.JPG \RSPD=85\ Hello kids, I am Pepper your FriendBot. I am here to enjoy
    our time together. \pau=300\ \RSPD=100\ ^nextProposal
12
13 proposal: $name What is your name?
14 u1: (~name) $name=$1 I am so happy that you are here $name
15 ~break1000 |
16   ^goto(age)
17
18 proposal: $age $showImage=pics/thinking.png how old are you?
19 u1: (~age years) So $name is $1 years old.
20   ~break1000 ^goto(happy)
21
22 proposal: $happy $showImage=pics/happy.JPG Are you happy to be here?
23 u1:(yes) \RSPD=85\ Oh my god me too! \pau=200\ Let us all applaud together \RSPD=100\
24 ^run(applause) $onStopped=1
25 u1:(no) Oh I'm so sorry \pau=200\ I hope this will change later on. $onStopped=1
26
27 #dialog
28 u: (e:onStart) ^nextProposal
29

```

In the dialog of the introduction, we have different concepts and proposals with the various u1 that describe the paths after receiving a specific answer from the end user.

Activity choices

Following the friendly introduction, Pepper will transition to an interactive phase by displaying a web page on the screen. This page will feature two buttons, presenting the child with exciting choices. Pepper will enthusiastically say, "What would you like to do today, my friend? You can choose between playing a fun game or learning a song!" This way, the child gets to pick what they like, making the time with Pepper more enjoyable and personalized.



The child will choose one of the options and will be leaded to the different blocks of the implementation:

Learn a song or Play a game and as we can notice, the choices dialog block has 2 outputs that lead to the different choices taken by the child.

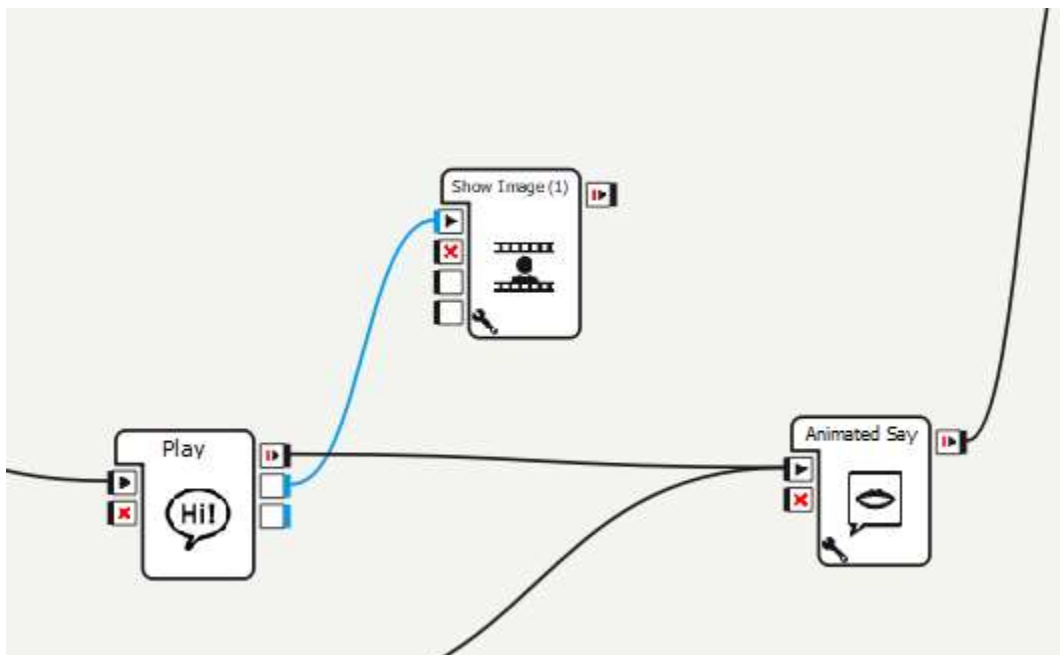
The web page includes Pepper's picture with a "What would you like to do? Click on the tablet to choose" and 2 buttons.

The child can either press the button to choose or say "Play/Learn".

```
confirmation/confirmation_enu.top
1  topic: ~confirmation()
2  language: enu
3  include: lexicon_enu.top
4
5  proposal: %PlayProposal ~joyful Good choice! You chose to play a game! $playOutput=1
6  proposal: %LearnProposal ~joyful Nice! Let's sing together! $learnOutput=1
7
8  u:(e:onStart) \pau=400\ \RSPD=85\ What would you like to do? Click on the tablet to choose! \RSPD=100\
9
10 u:(play) ^gotoReactivate(PlayProposal)
11 u:(learn) ^gotoReactivate(LearnProposal)
12
13 u:(e:playAGame) ^gotoReactivate(PlayProposal)
14 u:(e:learnASong) ^gotoReactivate(LearnProposal)
15
16 # Defining extra concepts out of words or group of words
17 #concept:(hello) [hello hi hey "good morning" greetings]
18
19 # Catching inputs and triggering outputs
20 #u:(e:onStart) $onStopped=1
21
22 # Replying to speech
23 #u:(~hello) ~hello
24
```

After the web page, we have a separation between 2 scenarios,

1- Play a game



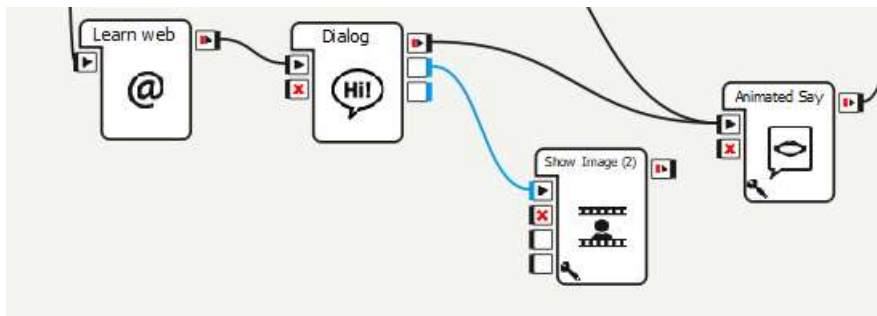
Before starting the game, Pepper will ask if the child would like to play, if the child says yes, the game will start, otherwise, the interaction will end.

The game is named “Guess the character” where Pepper will display pictures of animated characters and give the child 2 choices and based on the answer given by the child Pepper will answer either by congratulating the right answer or correcting the wrong answer to educate the children even when they are playing.

In this usecase, the conditional dialog is written in the dialog block, and we need the Show Image block to display the animated character’s pictures when the game starts.

When the game ends, Pepper will say “Goodbye” while waving his right hand.

2- Learn a song



The interaction between the child and Pepper will start when Pepper displays a picture of animated cute sharks and asks the child if he knows the baby shark song, whatever is the answer, Pepper will let the child know that they will sing it together either to learn it or to dance and have fun.

When the song starts playing, Pepper will start moving and dancing to encourage the children to dance with him and to not feel intimidated if they dance because they will take Pepper as an example and act likewise.

Here is the dialog when the child presses “Learn a song” on the tablet or says “Learn”.

```
songdialog/songdialog_enu.top
1 | topic: ~songdialog()
2 | language: enu
3 | include: lexicon_enu.top
4 |
5 |
6 | concept: (greeting) ^rand[hello hi "hi there" "hey" "hey there"]
7 | concept: (thanks) ^rand[thanks "thank you"]
8 | concept: (break1000) \pau=1000\
9 | concept: (break500) \pau=500\
10 | concept: (yes) [yes "all right" sure "why not" ok certainly "very well" yep yes definitely amen]
11 | concept: (no) [no nope "don't want" "no way" never "not at all"]
12 | concept: (hello) [hello hi hey "good morning" greetings]
13 | concept: (good) [good nice enjoy love like]
14 | concept: (bad) [no bad]
15 |
16 |
17 |
18 | u: (e: onStart) ^nextProposal
19 |
20 | proposal: ^break1000 ^joyful We will learn the Baby Shark song. Do you know it? ^showImage=pics/sharks.jpg
21 |   ul: (-yes) ^break1000 okay great dance with me while singing ^showImage=pics/shark.jpg ^run(song)
22 |   ^nextProposal
23 |   ul: (-no) ^break1000 ^joyful i'll help you learn it just repeat after me ^break500 and dance
24 |   ^showImage=pics/shark.jpg ^run(song) ^nextProposal
25 |
26 | proposal: ^showImage=pics/hello.JPG did you like it?
27 |   ul: (-yes) ^joyful oh that's nice ^break500 i love you guys ^onStopped=1
28 |   ul: (-no) ^neutral oh that's sad, i hope you will like it next time ^onStopped=1
```

Below is the schema of our project implemented on Choregraphe 2.5.10.7.



- In conclusion, creating Friendbot a remarkable robot companion tailored to enhance children's interactions., fostering collaboration, and bringing joy to young hearts reaffirms our commitment to providing innovative solutions that positively impact social experiences.
- The project highlights the potential for technology to play a meaningful role in promoting positive interactions among children