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| Portefolio  Robotics – Team 1 | Summary  It will be here that the journey will be described, as well as the progress, the good and bad moments, the soft skills, and finally a conclusion with the final product developed.  Catarina Jesus  Student Number: 202000594  Institution: IPS – Polytechnic Institute of Setúbal  Course: Computer Science and Engineering  I Living Lab 33  AI and robots in wellbeing for disabled people |

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# ONBOARDING WEEK 1



Who am I and why have I registered for an ILL?

My name is Catarina Jesus, I’m a student from Setúbal, Portugal.

According to my talent profile, my top skills are: Result Orientation, which means that I’m very determined and visibly result driven, I hardly ever waver from my priorities and I’m dedicated to the execution until the objectives are met; Business Awareness, which means I can understand and show commitment to the business and have the ability to comprehend and act according to the ‘principle’ and circumstances of the sector and the market; Follow-up and Control, meaning that I have the ability to monitor and control the evolution of activities and projects in terms of timing, quality and results; Goal Orientation, meaning that I have the ability to work with imposed and clearly defined objectives and drive to consider the achievement of goals as a challenge; Analysis, which means that I have the ability to gain insight into complex data through research, logical reasoning and connecting variables.

My potential skills are Active Listening, Performance motivation (effort) and Networking. The first one refers to the ability to capture relevant information from (non) verbal communication and the willingness to ask targeted questions and to consistently interact with people. Second one refers to the capacity to make efforts over a longer period and to commit incessantly to reach the targeted results. Finally, the third one refers to the ability and the willingness to develop and maintain professional relationships, inside and outside the organisation.

My challenges are Influence, Communicate and Social Attitude. First one refers to the ability and willingness to convince others in dialogue of the personal views, based on expertise or personal style, I don’t persevere in discussions, I want to have influence on others, preferably on the basis of direct and objective arguments and I will often try to convince on the basis of a purely hierarchical position. Second one refers to the ability and willingness to initiate contacts and to communicate in a clear manner, I need time to adjust in new situations so I adopt a wait-and-see attitude, I easily build contact in a familiar setting, and I can perceive to be communicate in individual contacts or in small groups. The last one refers to the ability to socially mingle effortlessly on different levels, spontaneously initiate contacts, develop and maintain relationships, I’m an introverted and have difficulties initiating contact, I don’t take any initiative in interaction and relationship and usually assume a reactive attitude and I also appear to be rigid or unaccustomed, I need time to assume a certain attitude towards others.

I don’t fully agree with the influence part because I don’t try to convince others based on a purely hierarchical position, I present my ideas, pros, and cons of them and if the other ideas at the table are better than mine and are well formulated and explained, I agree with them and change the mindset to those ideas and work with them along the way.

I registered for an ILL because I want to develop my communication skills, improve my challenges, mentioned above. I also want to have a European experience but can’t go abroad due to my class schedule. I find very interesting the fact that I can learn more about other cultures, people, and information about the Robotics Topic. I really want to improve my teamwork and challenge myself out of my comfort zone. A professor in one of my subjects told me that it would be ideal for me, I asked why, and she replied that it would be good for opening horizons, evolving as a person, deepening knowledge and skills and even improving group work and English.

What is my field of study?

I am currently pursuing a degree in Computer Science and Engineering. I’m taking second and third year classes and only have this semester and one more year to finish my degree.

This course wasn’t my first option but when I took some classes while being an external student, I grew fond of it and chose this field as the degree field. I also carried out an extensive and lengthy research to be sure that this was exactly the course I wanted to follow. As I only saw advantages and a great openness in the areas that I can follow in the job market, it became my first choice and until now, I have been enjoying it a lot.

I will not lie and say it's an easy field, because it's not, but all the work and effort pay off and it's a very enriching course.

What do I plan to do after finishing my studies?

I can’t say that I have a plan after finishing my studies. My ambition is to enter the job market and explore all the branches that I can embark on with my course and see what suits me best and what I most like to do within my field. I don’t want to limit myself to the first branch I find in my field and in the job market, I want to do a bit of everything, knowledge is the best thing that everyone can and should have. I once wanted to pursue a masters in something related to management but then I changed my mind and realized that maybe a masters within the field of ​​informatics would be the most suitable, but my course is so comprehensive that I prefer not to go for a masters, instead I prefer to explore what the job market has to offer.

Who/What motivates me?

My family, mostly my parents, is what motivates me the most, they were always there and always will be, they supported me in all my decisions, they helped me when things didn't go well, they always respected my wishes and my space and also helped me to decide when I didn't know what to do in relation to the choice of course and whether or not to go for a master's degree.

Right after them, I can say that I motivate myself a lot, I think a lot about my decisions, I consider options, I don't let myself down easily, I work hard to get where I want to be and have a good future with everything I've always wanted and to be able to help my parents when I have my own job. I can also say that on the most difficult days, I am the one who motivates me to look at things on the positive side, hoping for the best and preparing myself for the worst, if necessary.

My closest friends also play a very important role when it comes to motivating me, my success is theirs and theirs is mine and I am very grateful for everything they do for me and to see me well, I do what even for them and I will never leave them as they will never leave me.

What do I do in my free time? / What am I passionate about?

In my free time I like to go to the gym because it's where I can keep my head busy and at the same time manage to organize it, healthy mind and healthy body, and physical exercise helps me to stay focused on my responsibilities as well as on the course and on I Living Labs.

I also enjoy carrying out extensive research on the most diverse topics, knowledge is never too much so I also go to lectures given at my college and that are related to my field.

I am passionate about reading, searching, and learning information about the most diverse topics, such as robotics, software’s, hardware’s, computers, artificial intelligence and its applications.

What are my strengths?

I believe that my strengths reside in everything that is related to determination, focus and reaching a goal, having responsibilities in some field or even for a project is also part of my qualities, since I think I could manage my responsibilities well. I also believe that I’m capable of adapting easily to different circumstances and challenges, and I really like new challenges which require responsibility, determination, focus and new ideas.

What do I already know about the challenge topic (when/where/how did I first encounter it)?

Robotics is a computer science and engineering interdisciplinary field. Robotics is the study of the design, manufacture, operation, and application of robots. Robotics' goal is to create machines that can help and assist humans. Robotics encompasses mechanical engineering, electrical engineering, information engineering, mechatronics engineering, electronics, biomedical engineering, computer engineering, control systems engineering, software engineering, mathematics, and other disciplines. This field develops machines that can substitute for humans and replicate human actions. Robots can be used for many purposes, but nowadays they’re being used in dangerous situations and scenarios like bomb detection. Robots can resemble humans in appearance so they can help in the acceptance of robots in certain replicative behaviours which are usually performed by people. Robotics is a rapidly growing field, as technology advances continue. Robotics is also used in STEM (science, technology, engineering, and mathematics) as a teaching aid. NASA is using robots in many ways. Robotic arms on spacecraft can move large objects in space. Robotic spacecraft can visit other worlds. Robotic airplanes can fly without a pilot aboard. NASA is studying new types of robots. These will work with people and help them.

I first encountered this information by doing research and gathering a lot of information about the robotics field which is the focus theme in this I Living Lab. Robotics have always been a very interesting theme for me, it’s a field that grows every single day and robots are used in things and environments that we don’t even know exist. I believe that robotics is one of the main markets and area with potential to continue growing and grant more jobs because it takes a lot of research and dedication to create robots and their software.

# ON BOARDING WEEK 2

How was the Kick Off & 1. Onboarding Week for me?

The kick off session was a bit overwhelming since it was a lot of information to take in and process. Although the Educational Entrepreneurs were really friendly and tried to explain to us as much as possible in the short meeting time we had and with so many students attending. After that, we had a separate room to talk in more depth about robotics.

The Onboarding Week 1 was enlightening because we can learn more about Design Thinking, Future Skills, tools for project management and we received a learners guide to preparate for the I Living Lab and understanding the contents we’re going to need to this course.

How did self-assessment on Future Skills go?

It went really well, right now I feel like I know a lot about what future skills and their descriptions are. I also could find out which one was more applicable to my personality and way of being.

Which 3 Future Skills have I chosen & why?

Communication, reflective and cooperation are the future skills that I chose from all the future skills that there were. In my point of view, those are the main aspects that I need to improve in a personal and professional aspects because they're the most challenging and frightening aspects that I am always trying to improve since they will be needed not only in the job market that I will enter soon but also in my personal life and in the connection I have with people.

My current level & my goal level by the End of this ILL for each chosen Future Skill

I consider my level of communication a bit low considering that I’m almost ending my degree, so my goal level by the end of this ILL is to improve considerably my communication with groups and individuals.

Considering the reflective future skill, I think that my level is good but it could be better, so by the of this ILL I want to have a better reflective skill so I can understand behaviours, thoughts and values really well and therefore assess theirs consequences for actions and decisions holistically.

At first sight, my cooperation skill is good once I get to know people really well and I start to sympathise with them, although I want to develop this skill a lot more and start cooperating without knowing someone completely, since that I’m going to work with a lot of colleagues and there’s little time to get to know everyone completely.

What have I found out in my desktop research?

What will I focus on next week?

I think my main focus is learn the most that I can from every meeting with our Educational Entrepreneur. So next week I will focus on working hard with my reflection partner, once we have one, learn and understand the topics of this week, and enjoy the experience as hole, without putting fun apart and without neglect responsibilities.

# WEEK 1

REFLECTION OF WEEK 1:

This week was definitely more productive than the Onboarding weeks because we could start talking about the main objective of the ILL about AI and Robotics in Wellbeing for Disabled People.

We started by talking more to each other in order to get to know each other better. Our EEs set us some break-out rooms to break the ice and talk about the questions asked by them and some personal knowledge that we wanted to share, we started by talking in pairs and ended up the last session by talking in group.

The group rules were defined by everyone and in mutual agreement, we brainstormed a bit by gathering disability options that we can work on by improving them in some ways and we will start searching about tools that people with disabilities need to use in their day-to-day life.

How was the 2. Onboarding Week for me? How did we as a Team begin?

The Onboarding Week 2 for me was more clarifying than Onboarding Week 1 in the means that we explored more about the Design Thinking topic and that’s also when our new EE, Nita Valentin-Adrian, joined our group and we could have a new perspective from a new person.

Our EEs explained us the Six Thinking Hats by Edward de Bono and I found it very interesting in the means that we need to use the right-thinking attitude in the right place. Right now, since we’re in the preparation time we must use neutral, feelings, positives, critical, “what-if” and process controls from Facts, Emotion, Benefits, Judgement, Creativity and Process, respectively.

We also learned about Mindset and Attitudes, Skills: Methods and Tools and New Ways of Thinking, but it was not very thorough. However, I took the right time to deepen my knowledge about this topic and could conclude that the perfect balance between heart-on, hand-on and head-on is the perfect combo to achieve the perfect result for a project or affairs of our personal life.

We as a team begin to talk more with each other and about the question that were asked by out EEs. We had several ice breakers which, in my opinion, were necessary so we could be more proactive and more open about ourselves. We talked about our fears, concerns, expectations and most importantly about what group rules we wanted to implement in our group in order to complete the ILL with success and provide the best possible solution to help disabled people in their day-to-day life.

Who is my reflection partner?

Our EEs suggested that we had a reflection chain, which means that we will not work in pairs but in a chain where we can all argument and comment about each other portfolio and I’m going to be “supervised” by Zakaria Benkhazzi and I’m going to supervise Sofiia Milian.

Which skills, knowledge, strengths will help me with the DT Process?

Empathy, Collaboration, Cocreation and Stakeholder feedback are the principal aspects that we can consider as skills, knowledge, and strengths.

Empathy is the most important skill to uncover unmet needs by understanding their beliefs, values, motivations, behaviours, pains, gains, and challenges and to provide innovative solution concepts.

The first aspects mentioned will helps us unlock Creativity and Innovation, which devises feasible and viable big ideas/solutions. I also think that comprehension and understanding is also really important because sometimes it’s just not necessary to have empathy for the others, we have to comprehend and understand what’s behind that behaviour or values to really acknowledge someone or something. Sometimes people don’t want empathy, they want comprehension and understanding, they just want to be heard. We don’t always need to give people an answer, listen and understand them is more important than give them an answer, and for me this applies to everything.

What did I learn?

I learn that we need to comprehend and listen to someone so we can work together. We need to give space so people can share their ideas, ways of thinking and sometimes see things from people’s perspective is worth it and the best we can do to cooperate the right way and to overtake more difficult challenges or when we’re stuck on one task.

I also learn that we need to adapt our way of interacting according to the situation, here’s where the Six Thinking Hats by Edward de Bono enter the chat. We can combine several hats in order to take advantage of the characteristics of each one and that are indicated to the situation. We have to keep in mind that the combination of hand-on, heart-on and head-on is the key to success and if one weights more than the other two something can go wrong, and we might not have the expected result.

Fears and expectations also need to be managed and we need to acknowledge that we all have different ways to envisage fears and expectations and it's not because I face and think about things in a way that the other person faces or thinks the same way.

What surprised me?

I think what surprised me the most was the fact that my group colleagues share the same fears and concerns as myself like the way they managed to be so open and show their emotions, fears, concerns, what they like, what they don't like.

Another thing that surprised me was the ease with which we were able to communicate with each other, we decided on group rules, we decided on ideas to start researching to successfully complete the proposed challenge and also the fact that there was plenty of space for communicating ideas and requests for help if there are difficulties during the process.

Our EEs asked if anyone already conceived prototypes regardless of the theme, since I’m taking a degree in Computer Science and Engineering I answer affirmatively because I had some subjects in college that requested prototypes of different levels. After that the EEs also asked me if they give me two questions about prototypes which one would I choose, the questions were: “Can I make it” and “Will someone need it”. I chose the second one due to a subject called Person-Machine Interaction where we learned that in order to make a good prototype and then a good product we need to put the users perspective first and understand if the user needs it, since as an engineer we can make a lot of things, I don’t think a prototype would be a problem.

My sparkling moment

My sparkling moment this week was when I realized, as a part of our project, blind people always have busy hand because they must carry a cane everywhere they go so they can know the distance they’re from objects and if there’s a hole or a crosswalk or traffic lights, whatever comes in their way they can know through the cane. But what if we can prototype something that leaves them with their hands completely free and has sensors so they can know what their surroundings and distances from objects are, something that can be put in a bag or worn like a belt.

What have I found out in my desktop research?

In my desktop research I found out that there’s so many governments around the world that help people with disabilities either, with financial support or with free transport passes, health discounts, housing resources, support services and charitable grants.

There’s also a lot of equipment for disabled people which includes bathing aids, walking frames, bed levers, toilet frames, stair lifts, hospital beds, hoists and so much more, depending on the disability the person has and the help they need.

As a group we agreed to search about vision impairment, hearing impairment, autism, people of short stature and mute people.

About vision impairment here are some examples:

* Night blindness which means that people with it struggle to see at night.
* Albinism which is a condition that affects skin, hair, and eyes, so people with this condition have a reduced amount of melanin, which affects theirs colouring and eyesight, normally people with this condition have light hair colour and pale skin, and this condition can also cause poor eyesight, where there’s no treatment and it only improves with glasses, light sensitivity, nystagmus, and a squint.
* Blurred vision which can affect how people see close up or far away, in one or both eyes and glasses can help but they don’t always stop it.
* Loss of peripheral vision which means you can only see right in front of you, peripheral vision is what you can see around you without turning your head. Sometimes it can be called ‘tunnel vision’ and can be caused by glaucoma, which is a group of eye disorders that can damage the optic nerve, which then results in poor vision and there’s no guaranteed treatments that will fix loss of peripheral vision, but glaucoma can be prevented by taking medication such as eye drops. There’s a special type of lens that can be fitted on glasses to help with peripheral vision loss, but it doesn’t always work.
* Loss of central vision which can cause blurs or blind spots in your vision. It usually starts off with a small blind spot that gets bigger over time and can deteriorate very quickly. This can be caused by age-related macular degeneration and diabetes left untreated. The first one can be treated by taking eye drops which can stop your vision from getting worse. The second one can be treated by making sure you control your blood sugar levels and attend diabetic eye-screening appointments.
* Nystagmus which is a condition where the eye moves involuntarily up and down or side to side constantly. People with this condition typically can’t see movement and others may find it hard to notice too. It can also result in poor vision, such as not being able to see things that are far away, and it can get worse when the person is stressed or upset. It is usually developed during early childhood, but it can develop later on in life. It is a condition that makes it hard to see and can make you feel sick and dizzy but it’s something that you can live with, and most people can live a full and independent life.
* Colour blindness is the inability to see certain colours. Not being able to see any colours at all is very rare and the most common is seeing some colours but not all of them. he most common deficiencies in colour blindness are red and green, but it can happen with other colours. Colour blindness is a genetic condition and is passed on from parents. However, it can sometimes develop later on in life. Colour blindness is something that can be lived with, but children may struggle with certain activities in school that involve colours.

There are four classifications of visual impairment: mild visual impairment, moderate visual impairment, blindness and severe blindness and with only a doctor’s appointment with a specialist can determine which someone belongs to.

The most common equipment to help with vision impairment is the probing cane or white cane that probes for and locates obstacles in your path of travel. Depending on which hand someone uses the cane has different meanings: left one type of support cane; middle one type of “probing” cane; right using a support cane and a probing cane for outdoor travel. There are different cane tips and they’re used with different purposes.

What fascinated me the most is the fact that there is a cane that can tell the individual who uses it what is around him and that it can detect objects at the height of the whole body, especially at the height of the head.

About hearing impairments there are three basic types: conductive hearing loss, sensorineural hearing loss and mixed hearing loss.

Our ear is made up of three parts – the outer, the middle and the inner ear. A conductive hearing loss happens when sounds cannot get through the outer and middle ear. It may be hard to hear soft sounds and louder sounds may be muffled. It is often fixed with medicine or surgery. This type of hearing loss can be caused by fluid in your middle ear from colds or allergies, ear infection, or otitis media, poor Eustachian tube function (the tube that connects your middle ear and your nose), a hole in your eardrum, benign tumours, earwax, or cerumen stuck in your ear canal, infection in the ear canal, called external otitis, and object stuck in your outer ear or a problem with how the outer or middle ear is formed.

Sensorineural hearing loss, or SNHL, happens after inner ear damage. Problems with the nerve pathways from your inner ear to your brain can also cause SNHL. Soft sounds may be hard to hear. Even louder sounds may be unclear or may sound muffled. This is the most common type of permanent hearing loss. Most of the time, medicine or surgery cannot fix SNHL. Hearing aids may help you hear. This type of hearing loss can be caused by illnesses, drugs that are toxic to hearing, hearing loss that runs in the family, aging, a blow to the head, a problem in the way the inner ear is formed or listening to loud noises or explosions.

Mixed hearing loss, as the name says, is a mix of the two types explained and mentioned before. This means that there may be damage in the outer or middle ear and in the inner ear or nerve pathway to the brain. Anything that causes a conductive hearing loss or SNHL can lead to a mixed hearing loss. An example would be if you have a hearing loss because you work around loud noises and you have fluid in your middle ear. The two together might make your hearing worse than it would be with only one problem.

Autism is a complex neurodevelopmental condition. It’s characterised by differences in social skills, communication and behaviour which means that people with Autism experience differences in the way they communicate and interact socially, and their behaviour may be repetitive or highly focussed (the term ‘restricted, repetitive patterns of behaviour’ is often used to describe this). People with Autism also tend to experience differences with their senses that can affect the way they feel about and respond to their surroundings. Autism is not a disease or illness.

Autism is also known as Autism Spectrum Disorder (ASD). ‘Spectrum’ refers to the wide range of characteristics, skills, and abilities that different people with Autism have. No two people are affected by Autism in exactly the same way. Every person experience Autism differently and has different support needs. Although the core characteristics of Autism can cause a range of challenges, it is important to recognise that they can also result in unique skills and capabilities.

While Autism is a life-long condition, with appropriate and tailored support, children and Adults with Autism can make significant progress and live fulfilling lives. Consequently, it is imperative that people with Autism have access to specialist services that understand their needs and are experienced in developing their skills and strengths.

Usually, people who have Autism experience differences in these areas: social communication, behaviour (repetitive and restricted patterns of behaviour) and thinking and learning.

Communication differences have always been considered a core feature of Autism and are often broken down into two categories:

* **Receptive communication** involves the ability to make sense of what others mean through their verbal language, facial expression, body language and other non-verbal cues. People with Autism may find some or all these elements of receptive communication challenging.
* **Expressive communication** refers to how we express our needs, wants, thoughts, ideas, and feelings to others. Some people with Autism experience significant delays in developing language, while others may have an incredibly well-developed vocabulary and be able to talk about specific topics in great detail. Some people with Autism may be non-verbal or have limited speaking skills, while others express themselves mainly through talking.

Communication involves a sender and a receiver of information – making it inherently social. In social situations there are many nuances that guide our interactions with others, and unspoken rules that change based on the situation and people involved. People with Autism often find it difficult to recognise and understand social cues and may not instinctively know how to adjust their response to suit different social contexts.

In the behaviour aspect are included repetitive actions, strong interests, and sensory processing. Repetitive Actions involve doing or saying something repeatedly. Depending on the person, these repetitive behaviours may be very obvious or quite subtle and can include movements, sounds, routines and rituals. Strong Interests are also often associated with Autism. Sometimes people talk about ‘intense’ or ‘restricted’ interests. Many people with Autism have interests and passions that are a lot more intense and focused than others experience, often from a young age. Some people with Autism also become attached to objects, or parts of objects, and an interest in collecting is also quite common. Interests can change over time or be lifelong. Having a strong or highly focused interest can be an incredible strength and if supported can be channelled into meeting new people, studying, or building a career. In combination with other Autism characteristics, it can also pose some challenges however (like limiting the person’s involvement in other activities or impacting them socially). Sensory Processing refers to the way the nervous system gathers, understands, organises, and uses information from our senses (e.g. sight, hearing, touch, taste, smell, balance and body awareness), and turns it into a response.

About thinking and learning we can talk about theory of mind, central coherence, and executive function skills. Theory of Mind is a term used to refer to the awareness that other peoples’ minds are different from our own or the ability to see things from another person’s point of view. It involves being able to recognise and understand the thoughts, beliefs, desires, and intentions of other people and how they relate back to us. Central Coherence is about pulling information together and making sense of it based on the situation or circumstance. It means being able to look for the ‘big picture’ and overall meaning, rather than getting side-tracked by the ‘nitty gritty’ or tiny details. Executive Function Skills help us to organise, focus, remember and respond appropriately to multiple internal and external messages, and adjust our plans so that we can reach our goals.

Three main symptoms of autism are difficulty with communication and interaction with other peoples, restricted interests and repetitive behaviours and symptoms that affect their ability to function in school, work, and other areas of life.

People with autism usually were recommended to do some kind of therapy. The first therapy may not work, and you need to find one that fits your needs and also what your specialist recommends.

Dwarfism is short stature that results from a genetic or medical condition. Dwarfism is generally defined as an adult height of 4 feet 10 inches (147 centimetres) or less. The average adult height among people with dwarfism is 4 feet (122 cm). Many different medical conditions cause dwarfism. In general, the disorders are divided into two broad categories:

* **Disproportionate dwarfism.** If body size is disproportionate, some parts of the body are small, and others are of average size or above-average size. Disorders causing disproportionate dwarfism to inhibit the development of bones.
* **Proportionate dwarfism.** A body is proportionately small if all parts of the body are small to the same degree and appear to be proportioned like a body of average stature. Medical conditions present at birth or appearing in early childhood limit overall growth and development.

It's important to be sensitive to the preference of someone who has this disorder. Short stature disorders do not include familial short stature — short height that's considered a normal variation with normal bone development.

Signs and symptoms of disproportionate dwarfism are often present at birth or in early infancy. Proportionate dwarfism may not be immediately apparent. There’s no cure for dwarfism, so the treatment focuses on the prevention, management, and treatment of medical complications as well as social and family support.

What will I focus on next week?

Next week I will focus on continuing improving my soft and communication skills by continuing talking with my colleagues and with our EEs and also improving my English. I want to comprehend and understand people more and why are they the way they are, what they feel and how they think.

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