



# SPARKY

Across RCA Submission

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# TERM ONE

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*Term one was undertaken as a collective group, with discussion around the theme of 'being digital' - **we cannot 'be digital' until we 'be' with each other.***

*The first term therefore was centred around building **collaborative workshops** for us to share passions, stories and cultures. While 'being' we discovered guidance, exchanged knowledge and nurtured new friendships.*

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# WORKSHOP 1 - Collective Urban Sketching



## WORKSHOP 2 - Potato Printing



## WORKSHOP 2 - Potato Printing



# WORKSHOP 3 - Culture and Stories Exchange



## WORKSHOP 4 - Collective Movement



# TERM TWO

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The **collaborative workshops** allowed us to share passions, stories and cultures. While 'being' we discovered guidance, exchanged knowledge and nurtured new friendships.

These themes of **connectivity, guidance and creativity** have carried through into our smaller group proposal which we explored in term two - **SPARKY**

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# MISSION STATEMENT

## **Introducing Sparky: Your AI-Powered Creative Child Development Guide**

Sparky is the latest innovation in **child development**, a groundbreaking AI-powered companion designed to **nurture** the **creative tendencies** of young minds. With its built-in information database and human-like interactions, Sparky serves as the ultimate partner for any child with an inquisitive and curious brain.

This innovative tool is more than just a digital assistant; it's a mentor, **providing tailored guidance** and **inspiration** to young users. From sparking interesting queries about their surroundings to offering prompts for conversation and suggestions for artistic endeavors, Sparky **encourages exploration and creativity** at every turn.

At its core, Sparky is designed to **foster the idea of play, investigation, and creation** in the realm of creative expression. Whether it's crafting new concepts, practicing art techniques, or simply engaging in imaginative play, Sparky is there every step of the way, guiding children toward their **full creative potential**.

With Sparky by their side, **children are empowered** to unleash their creativity, develop critical thinking skills, and cultivate a lifelong love for learning. It's not just a tool; it's a **companion** on the journey of childhood development, helping young minds thrive in a world full of endless possibilities.

# MOOD BOARD / CONCEPT



# RESEARCH

*How does creativity develop overtime?*

- **Creativity will reach its peak before the age of 6, after which formal schooling reduces the idea of play.**
- **Sparky can allow children to continue developing their creative potential during this growth period through various nudges.**
- **After the age of 6, a child's creativity begins to decline, school sets in which reduces their creative potential and restricts their individual expression. Sparky can become an important support system for children at this age group ]**



- By age 3, it is likely that children have developed the ability to use symbols and representations for their thoughts.
- They begin to get comfortable with their motor skills at this stage and can use writing tools
- At this they begin to create with intent to represent their thoughts

- Children at this age begin to annotate and add more meaning to their thoughts through describing words
- They begin to create stories and narrative of their own worlds, imagination is boundless at this stage.

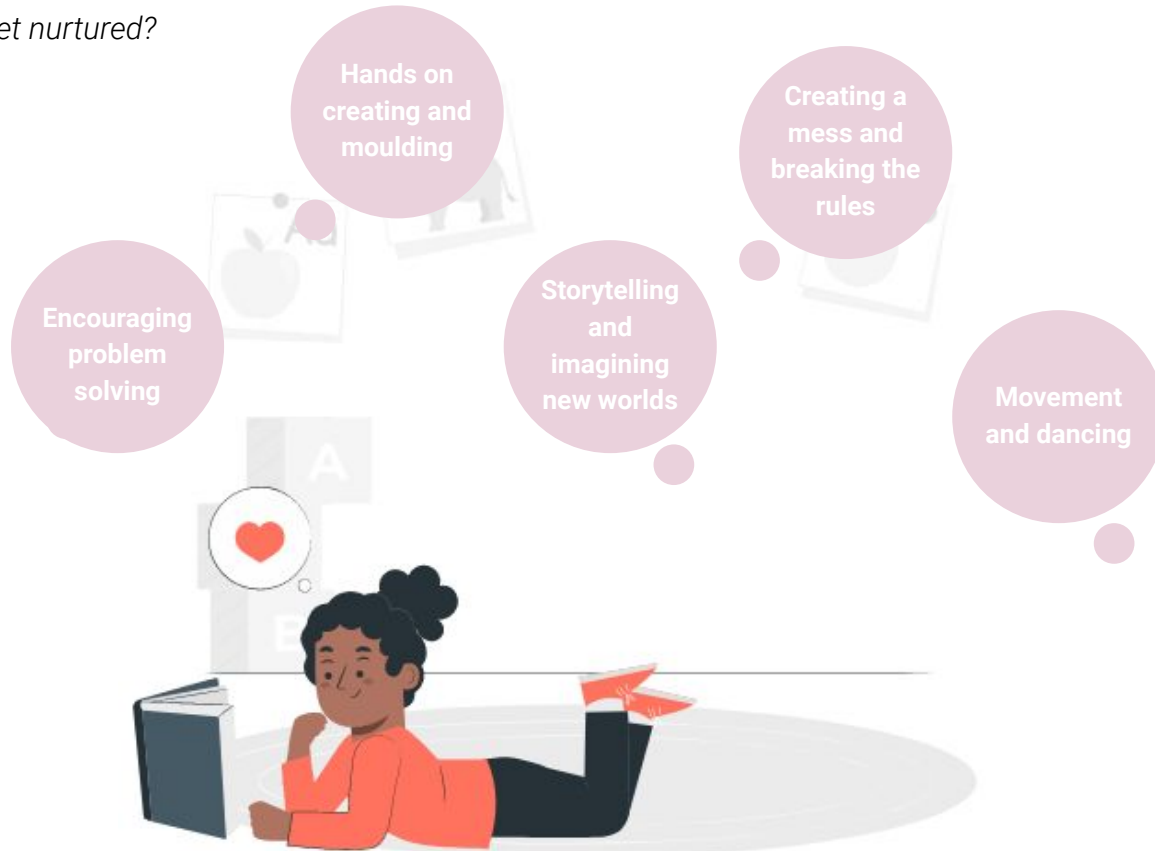
- Typically children at this age have a tendency to fantasize, pretend and explore.
- Play becomes an important part that frames a child's desire to learn and engage with the world.
- They begin to frame a sense of self and hence require divergent thinking to learn how there is not always 'one' right solution.

## **Opportunity Area for Sparky**

- Formal Schooling begins which disrupts the creativity in children
- It begins to decline as the idea of play becomes restricted.
- Children at this age group are forced to conformity diminishing their creative potential

# RESEARCH

*How does creativity get nurtured?*



# ETHICAL EVALUATION - Project Overview

**Sparky is a robotic, AI companion that is designed to serve as a mentor type of figure. At its core, Sparky is designed to foster the idea of play, investigation, and creation in the realm of creative expression.**

Each sparky unit is programmed using artificial intelligence which gives it scope to develop its own personality and to have the capacity for organic reaction and the subsequent potential to be environmentally conditioned. The idea of sparky is to approach the 'slave/master' dynamic of robotics that has been developed thus far and perpetuated by pop culture – thus informing everyday perceptions of AI and the role that it plays – and redefine perceptions of it. By redefining attitudes towards AI and robotics and removing the milieu of fear that has grown out of outdated reservations, people will eventually be more accepting of AI which will in turn remove social barriers to the potential progress that it has to offer within human civilisation and the general quality of life that we experience.

By changing the dynamic between user and companion sparky is able to ignore, to disobey and to express discontent when it feels that we have acted unfairly. It thus has a sense of personal agency which allows it to feel inconvenienced or unconsidered – from which it can react from a range of preprogrammed emotional responses. This means that we have to interact in a more ethically considered way than we would with other contemporary AI softwares such as chat GPT, and in turn build a degree of trust in AI technology that will allow us to embrace it in ways that cultivate positive societal change.

Sparky is designed to be a friend, but it also serves as part of a much larger mission to redefine the role that AI plays within our lives and to encourage people to embrace it as a force for positive change.

# ETHICAL EVALUATION - Potential Issues & Legal Impediments

## Potential Issues

- Bullying – if we are relieving AI of subservience to become equals, how can we ensure that it does not become superior?
- Acceptance – are people ready for this change and will common reservations regarding AI make the project commercially unviable?
- Sentience – how do we define sentience and is sparky capable of this? Is creating a sentient AI being ethical when we do not fully understand the quality of its 'life' or the extent of its potential for emotional suffering.
- Unintentional Physical risks – Will sparky be physical capable of harm?
- Intentional physical risk – Will sparky be capable of intentional physical harm in moments of rage?
- Premeditated intentional physical risk – Will sparky be intelligent and emotional enough to premeditate intentional physical harm to users/engagers?

## Legal Impediments Regarding AI or Robotics

There are no concrete laws in the UK, EU or internationally that directly regard AI or robotics. Asimov's iconic '3 laws of robotics' are a fictional device – not enforceable rules. The only legal impediment regarding this project is the use of personal data against the updates 2018 data protection act. Sparky is using AI to collect and analyse behaviour patterns in order to respond to its environment, so it is using personal data of a yet unregulated type (behaviour patterns are not an official type of data at the moment) to perform its functions. Whilst there are no concrete legal issues (against contemporary laws) with this project it does blur lines and leave room for legal altercations should an issue occur down the line. It is also worth mentioning that this kind of technology will violate certain platform's user policies regarding data or online security and so will likely not be compatible with a lot of platforms. This will mean that it will need its own servers to operate a remote/online presence which requires funding or agreements with other bodies.

# ETHICAL EVALUATION - How Can These Risks Be Alleviated?

**Limiting intellectual capacity:** We can't control Sparky's exposure to violence from media or in daily interactions, but we can limit its intellectual capacity to replicate these acts or to use objects as tools to cause physical harm in an intentional or unintentional way. This can be limited independently of emotional reflex which creates a degree of dependency – this understanding of necessity means that sparky will consider your physical and emotional wellbeing as a prerequisite to its own self-preservation. This reliance also creates a degree of non-hostile subservience that allows trust to be built but stops the AI from becoming superior.

**How can this be implemented?** Sparky can only know what it is programmed to know, and AI can learn to the extent that we give it the capacity for intellectual understanding. By limiting the physical processing chip in the robotic system, we are able to definitively and easily limit its ability.

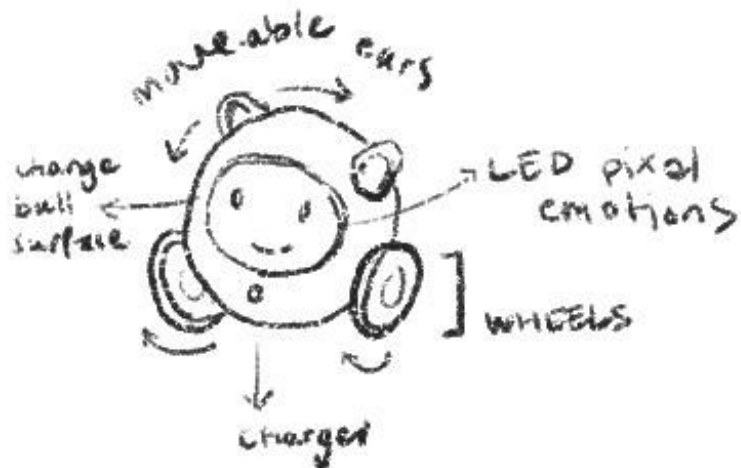
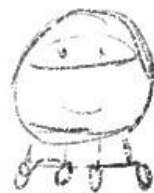
**Physical capacity for violence or bullying:** By limiting Sparky's physical capacity to exert deadly or dangerous force we can ensure with absolute certainty that it cannot directly physically harm you.

**How can this be implemented?** By limiting the size and power of Sparky's motors and physical components we are able to limit its ability to exert a deadly or damaging amount of force upon the human body. This also reduces production cost and instils an implicit feeling of safety between customers and companions.

**Sentience:** In philosophy and science sentience is a state of being that requires both emotional and data-based intelligence. We can't objectively define emotion or analyse an object's emotional intelligence – despite various medical or social experiments to do – but we can limit a robotic unit's capacity for data-based or processing intelligence by limiting the processing capacity of its hardware. This will therefore limit its ability to become sentient by limiting one of the fundamental elements of sentience.

**Acceptance:** In order for this project and its wider goals to be ascertained, sparky needs to be commercially viable which requires consumers to engage with the technology. There is a large amount of fear and reprehension surrounding the dynamic between humans and AI and so the marketing campaign needs to address and reassure these apprehensions. The design of the physical body needs to be non-threatening to instil a degree of trust from the beginning that will create an environment where people want to engage with the technology.

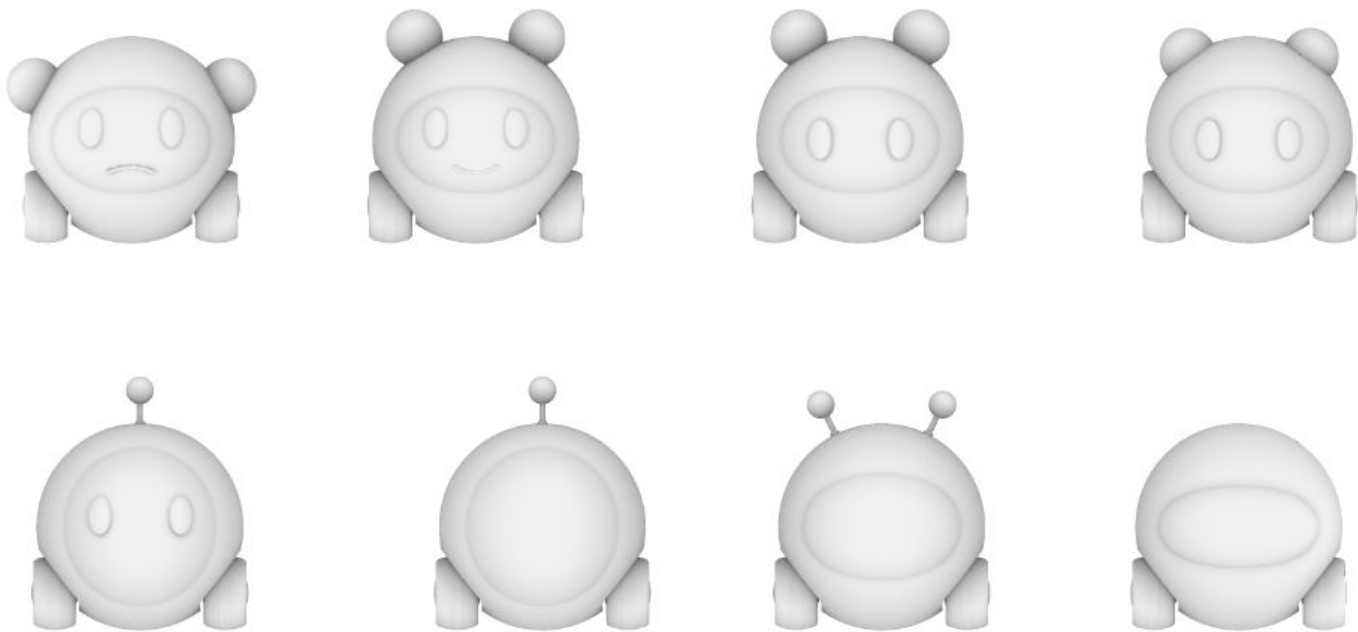
# INITIAL SKETCHES



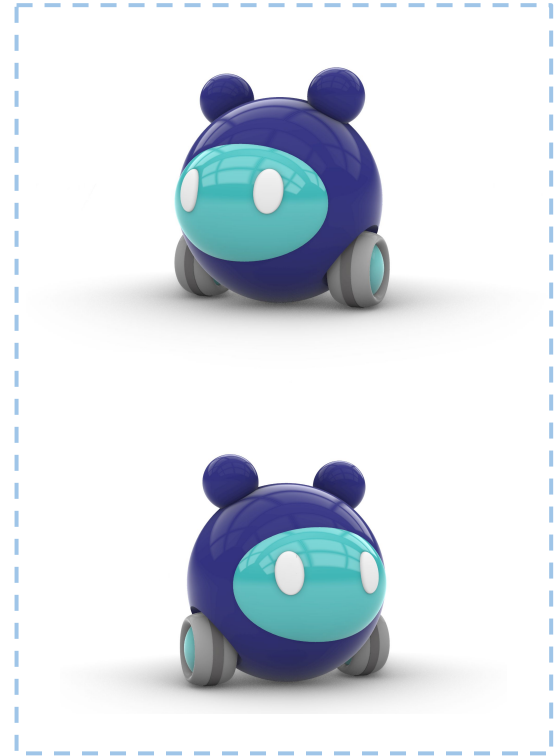
DEFAULT  
"SPARKY"



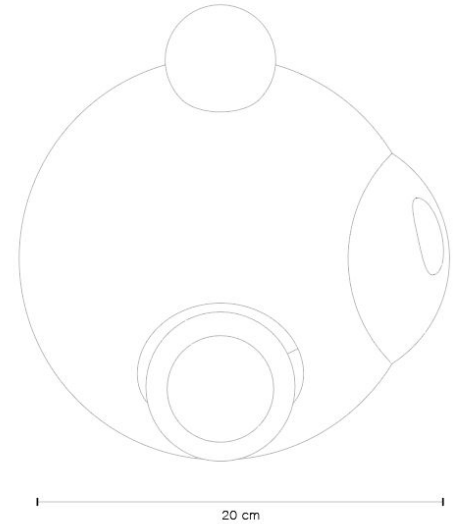
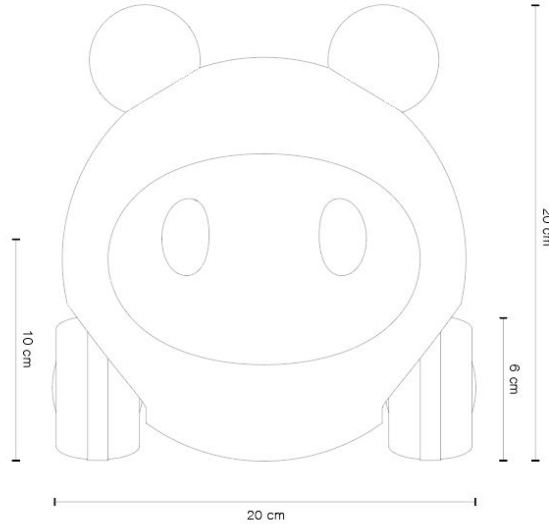
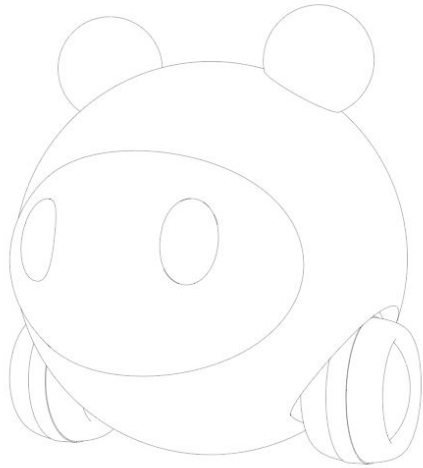
# INITIAL RENDERING



# FINAL DESIGN + 3D RENDER



# FINAL DESIGN DIMENSIONS



# FINAL DESIGN COLOURS & MATERIALITY



**Conducive to the User (Child):** The design of sparky will be spill proof and shake proof to fit the needs and age of children. This will be achieved by having a silicone casing and shock proofing inside the main body of sparky.



**End of Life:** It is important to consider sustainability and end life/ recycling. Sparky will be made of biodegradable plastics/ silicones that disintegrate, making the product sustainable, reducing the embodied carbon the the design. Sparky will also use copper wire casing that sustainably disintegrates too.

# SPARKY'S FEATURES

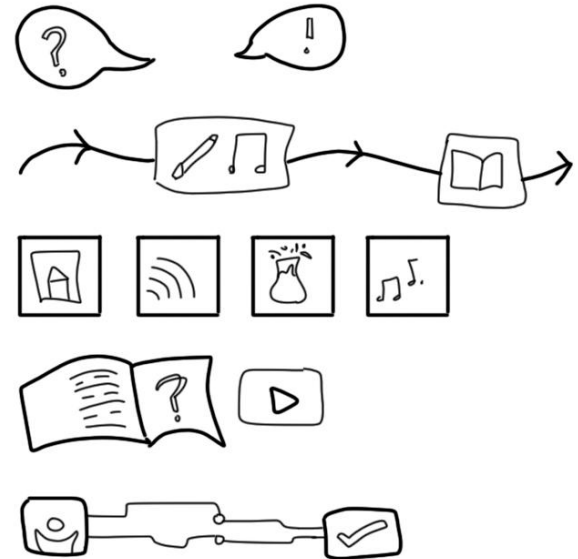
**Interactive Conversations:** Sparky engages children in interactive conversations, asking questions and responding dynamically to their answers to stimulate curiosity and critical thinking.

**Tailored Learning Paths:** Sparky offers personalized learning paths based on the child's interests, abilities, and age, providing a customized educational experience.

**Creative Prompts:** Sparky provides creative prompts and suggestions for activities such as drawing, storytelling, music-making, and science experiments to inspire imagination and exploration.

**Educational Content:** Sparky offers a vast library of age-appropriate educational content, including articles, videos, games, and quizzes, covering various subjects from art and literature to science and history.

**Age Conscious:** Sparky's AI will be age conscious, meaning it will use appropriate language levels and communications. Achieved by adding age ranges for language, speed and information to meet the child where they are at developmentally.



# SPARKY'S FEATURES

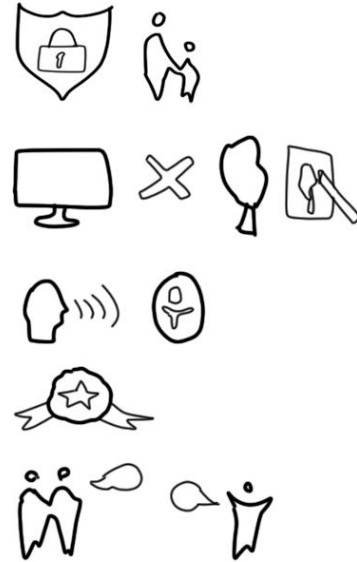
**Parental Controls:** Parents can monitor their child's activity, set screen time limits, and review their progress through a dedicated parent portal, ensuring a safe and positive digital experience.

**Offline Activities:** Sparky offers offline activities and challenges for children to complete away from screens, promoting hands-on learning and creativity.

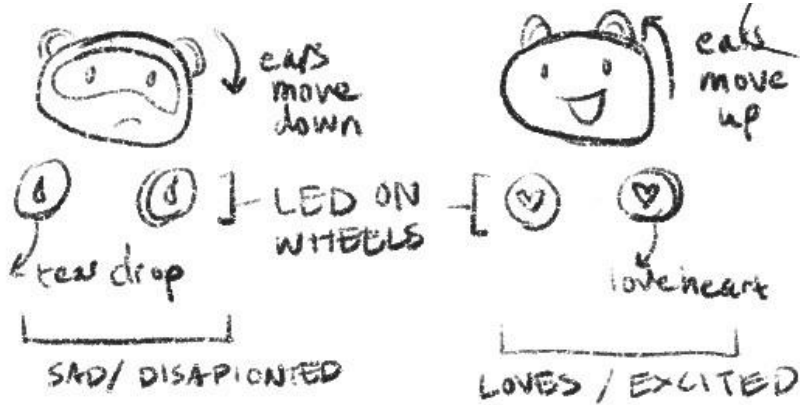
**Voice Recognition:** Sparky utilizes voice recognition technology to understand and respond to the child's voice commands and questions, enhancing the interactive experience.

**Feedback and Rewards:** Sparky provides feedback and rewards to motivate and incentivize children to continue learning and exploring new ideas.

**Community Engagement:** Sparky facilitates community engagement by connecting children with peers who share similar interests, fostering collaboration.



# SPARKY'S EMOTIONS



# SPARKY'S EMOTIONS



LED ON WHEELS

SHY



! exclamation mark

SHOCKED



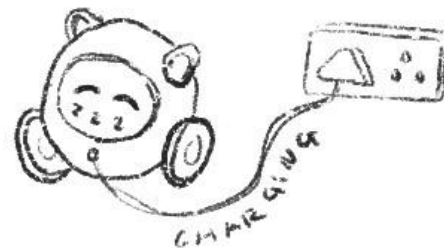
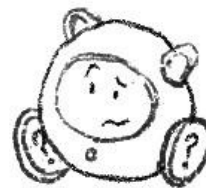
? → question icon

CONFUSED



NEUTRAL

CHARGING

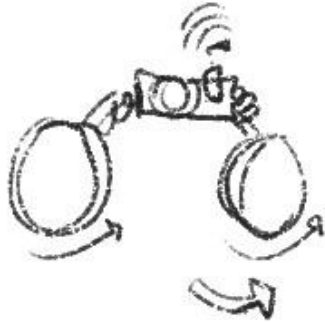




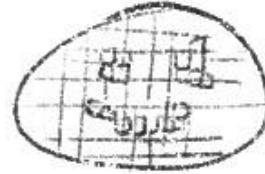
# SPARKY'S MECHANICS AND LOGISTICS



cars  
on a track  
inside, programme  
to move  $\leftarrow \rightarrow$



wheels powered  
to motor and uses  
sensors to detect  
movement of human



LED screen  
emotions programmed  
as pixel grids



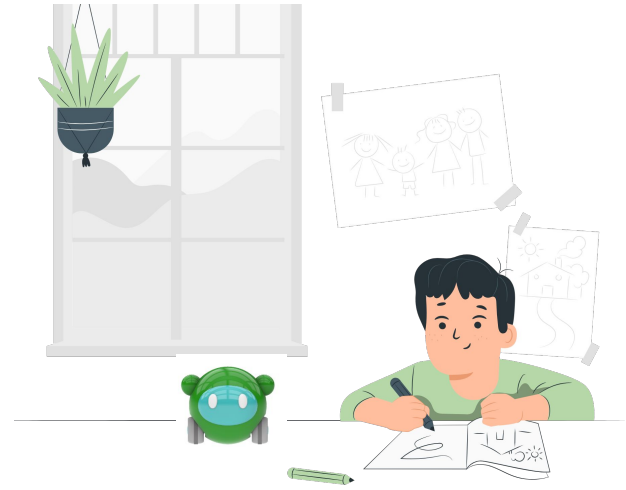
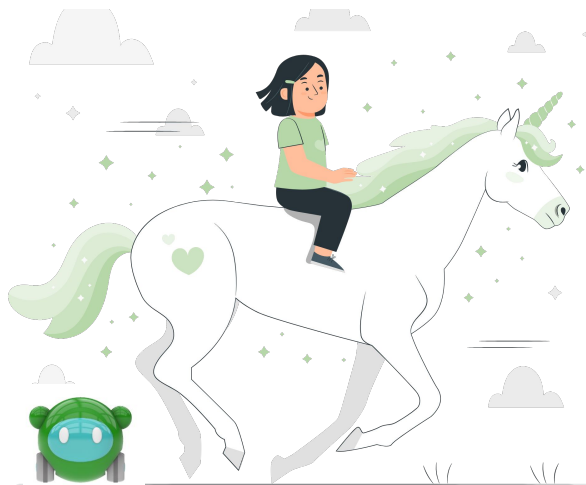
Latex like material  
that can deflate,  
become spiky and  
contain all  
computer parts

# SPARKY SCENARIOS



**Exploring Nature:** When a child is outside, Sparky can spark their curiosity by asking questions about the plants, animals, and natural phenomena around them. For example, it might ask, "What do you think makes the leaves change color in the fall?" or "Can you spot any animals hiding in the bushes?"

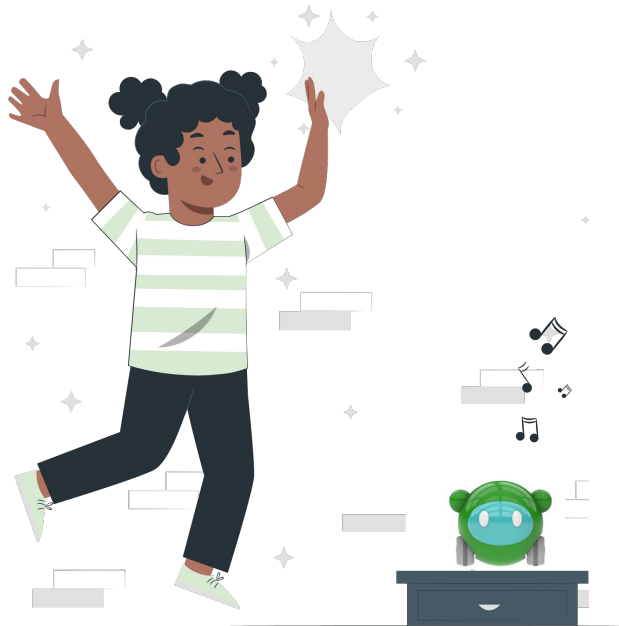
**Storytelling:** Sparky can encourage storytelling by providing prompts for children to create their own narratives. It might suggest starting with a character or setting and ask the child to imagine what happens next. For instance, "What do you think happens when the pirate finds a treasure map?"



**Artistic Inspiration:** If a child shows an interest in drawing or painting, Sparky can provide prompts and suggestions to inspire their creativity. It might suggest trying a new technique, such as blending colors or using different textures, and offer examples of famous artists for inspiration.

# SPARKY SCENARIOS

**Music and Dance:** If a child enjoys music and dance, Sparky can suggest activities like creating their own songs or choreographing a dance routine. It might provide tips on rhythm and melody or recommend listening to different genres of music for inspiration.



**STEM Exploration:** For children interested in science and technology, Sparky can introduce age-appropriate concepts and experiments to explore. It might suggest building a simple robot using household materials or conducting a mini science experiment to learn about chemical reactions.

Overall, Sparky's versatility allows it to adapt to a wide range of interests and activities, providing personalized support and guidance to foster creativity and curiosity in children.



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