

The Tummy-O-Sauras

An animated interactive story by Vidushi Yadav

A Project under COSMIC

- The Centre of Social Media Innovations for Communities (COSMIC)

A collaborative initiative among three centres of excellence – two from Singapore, NUS (National University of Singapore) and NTU (Nanyang Technological University), and one from India, IITB (Indian Institute of Technology Bombay, Mumbai).

- Aims to empower communities through social media innovations that improve the way they live, work and play.
- New interaction paradigms and information technology scenarios which have the potential to empower the next large user group - focusing on the common man in his everyday pursuit of activities in the 21st century.

The PUBBY Technology



- Variation of hand gestures as input devices as a medium of story-telling for kids.
- Utilize the new media to emotionally, cognitively and physically engage the child to play and learn.
- More than one child could be a part of same story, where the characters and participants could interact and play with each other virtually like a multiplayer game over internet.
- We had to create content as a proof of concept.

The Project Brief

- An interactive animated story for four to six years of children.
- The kids can interact with the story and change it accordingly through the medium of certain hand gestures which were already designed.
- Hand gesture & colour recognition technology

Limitations

- Specific Hand gestures- Run, Jump, Stop.
- Still in the developing stage.
- Use of some standard hand gestures so that the player doesn't have to learn and unlearn a new gesture with every new game.

The Story

- A story which is easily understood by 4-6 years olds
- Kids can easily connect to with their day to day activities and challenges.
- Not very complicated yet not boring or too simple.

Why an interactive story?

- To engage a child in various tasks using the technology of gesture recognition.
- Helps developing their visual discrimination, eye coordination, motor skills, memory, imagination, concentration, observation, conversational skills, classification etc.
- An interesting way of involvement in different foreign environments for kids

Research

Understanding 4-6 years olds

The Magic Years: Selma Fraiberg.

- “When a child doesn’t able to grasp about the world around them, they often make up their own magical explanations for how things work, was dubbed the magic years”- Child development expert Selma Fraiberg.
- Slowly, they take this knowledge and combine it with a growing imagination to come up with fantastical ideas about why and how things happen.

The Absorbent Mind: Maria Montessori

- Montessori philosophy of education.
- Young children learn in a unique way from prenatal life to about six years old.
- The “Absorbent Mind” in which the child’s mind is like a sponge, absorbing all that is in the environment.
- The first phase of Absorbent mind is from birth to 3 years, child learns basic human functions
- The second phase of Absorbent mind is the period of imagination and freedom

4 to 6 years

- The prime time for laying down the foundation for a good education academically.
- Child learns of [their social and cultural existence](#).
- The Foundation of Soft Skills.

4 to 6 years – The key Features

- Conscious **thirst for knowledge**, start asking questions of the, “why” and “how”.
- **Very tactical**, hands-on, and wants to touch every- thing.
- New skills are easily acquired
- Child forms **images or impressions within his mind that stay permanently**

4 to 6 years – The key Features

- Acquires freedom to choose, freedom to concentrate and freedom to move.
- Starts to become independent and more aware.
- Receives impressions, processes, categorises, interprets and fit them into an inherited structure.
- Absorbed experiences create the child's intellectual abilities.

Suggested activities- 4 to 6 years

Practical Activities

Sensorial Activities:

- Serve to enhance and enlarge the child's sense perceptions of the world.
- Language Reading and writing, story narration and enacting, pretend play.

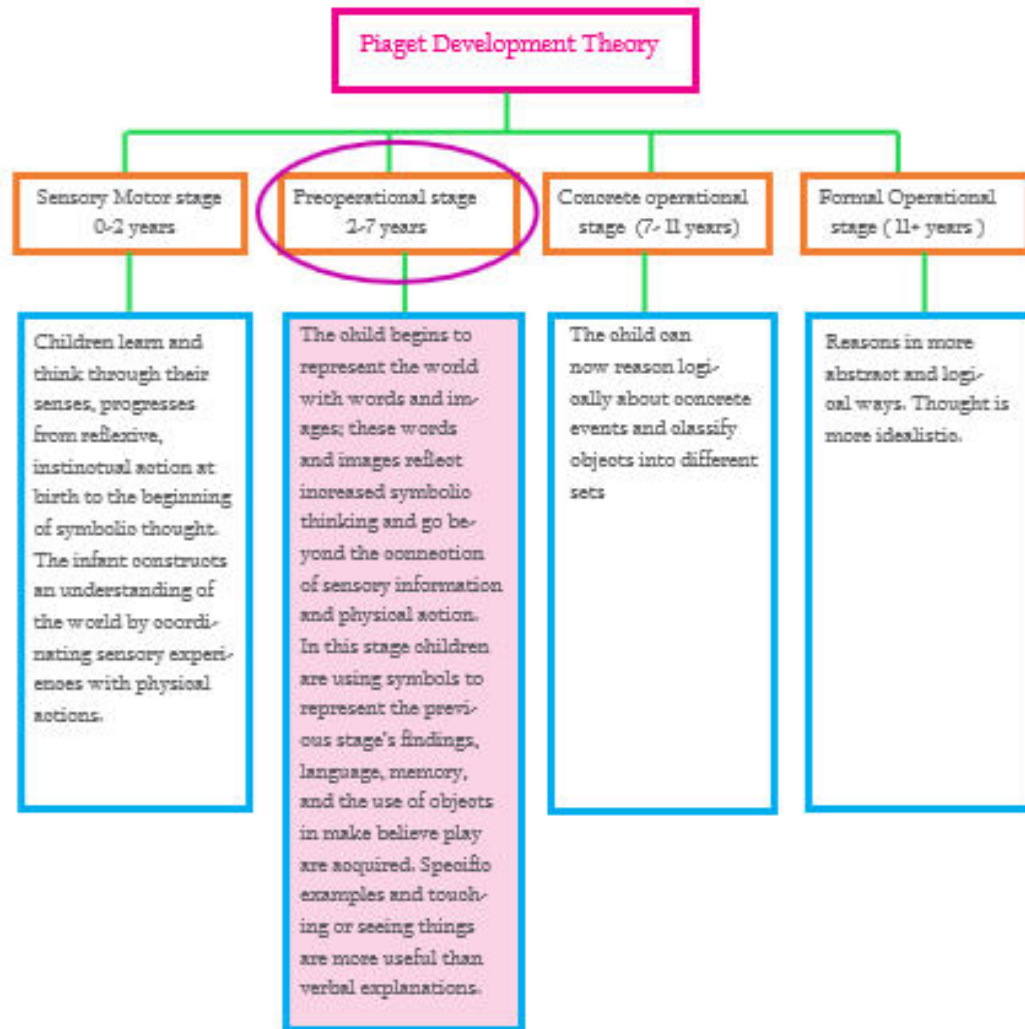
Mathematics

Cultural

Theories of cognitive development: Jean Piaget

- Piaget noticed that children of a younger age answered questions qualitatively different than those of an older age.
- Younger children think differently.
- Focal point of his theory: An interaction between a child and the environment, making mistakes and then learning from them.

The four stages of cognitive development.



Pre-operational Stage (2 to 7 years)

- Represent the world with words and Images
- Increased symbolic thinking
- Animism: It is the belief that inanimate objects such as toys have human feelings and intentions.
- Language, memory and use of objects in make believe play are acquired
- Magical thinking predominates
- Make-believe play increases dramatically

Pre-operational Stage

- **Role playing** also becomes important. Children often play the roles of “mommy,” “daddy,” “doctor” and many other characters.
- **Socio-dramatic play: Make-believe play with peers** that first appears around age 2 1/2 and increases rapidly until 4 to 5 years.
- Play also includes increasingly **more complex scheme combinations**.
- Become increasingly **adept at using symbols**.
- A child is able to **use an object to represent something else**, such as pretending a broom is a horse.

Pretend play- Piaget Theory

- The child's serious attempt to accommodate to outer reality
- Represent experience symbolically
- In this complex type of play, children carry out action plans, take on roles, and transform objects as they express their ideas and feelings about the social world .

Play

“Play is the highest form of research.” – Albert Einstein

- Closely inter- dependent and inter-related.
- All children go through a process of play development.
- **Exploratory Play**- Exploring objects, toys – using all their senses.
- **Physical Play**- Running, Jumping, Climbing, Dancing
- **Constructive Play**- Co-ordinate, building, stacking, interlocking games, craft activities

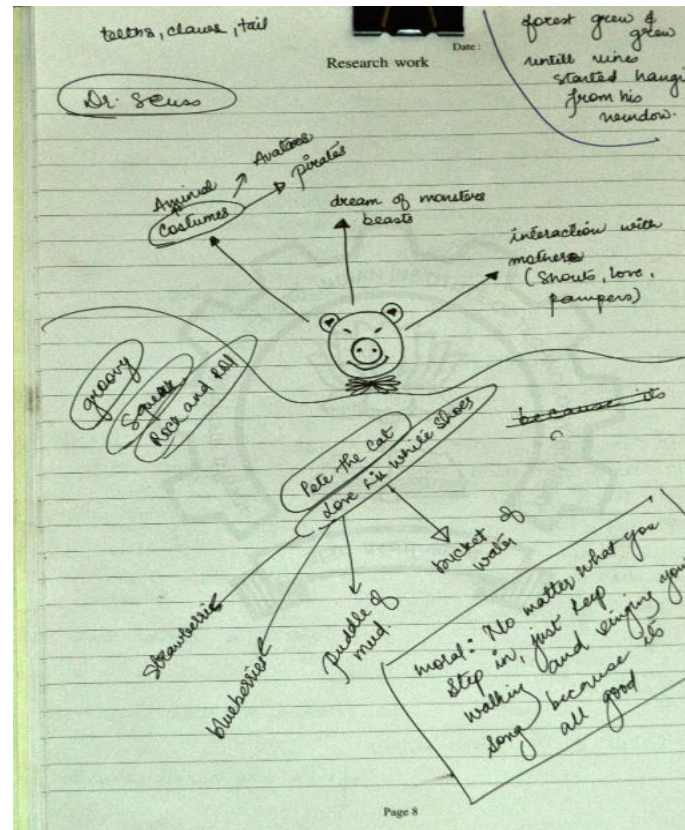
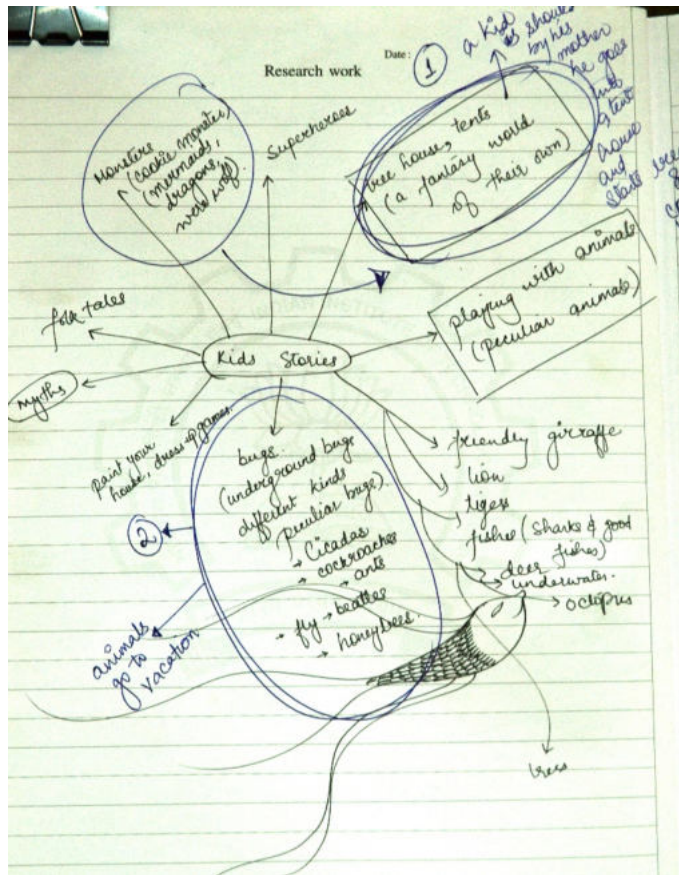
Imaginative Play- The most important in child's development

- Symbolic understanding
- one object or picture can symbolise another
- Imitation
- Make believe scenarios involving invented people and objects
- Recognise dolls and teddies as representing people
- Re-enact recent experiences
- act out grown-up roles
- enjoy costumes and props to help them bring their imaginations to life

Important Keywords

- Constructivism
- Imaginary world
- Role play
- Animism
- Relationship with the environment

Story Explorations



As my research was growing and so was my understanding on the topic, I started writing drafts of my story. After writing a few stories and themes I came up with two final stories.

Story 1

A kid who is really bored in his class, he looks out of the window, it's raining and the weather is amazing. In the background the teacher is teaching about underwater life.

He is staring out of the window and wants to go out and play. Suddenly he notices a strange bird out of his window, the bird comes and sits next to the window and winks at him. The bird gives him a hand and they both jump out of the window. He looks back at his class, the teacher is still teaching about underwater animals.

He sits on his upside down umbrella and using it as a boat he goes on a journey through drain.

He has no idea where he is going but he is extremely excited.

He swims away to a colourful far away land which is full of funny looking animals and plants.

There he'll meet all the underwater animals and plants, he'll meet singing fish, sneezing turtle, pirate octopus, a grumpy fish. He'll meet water monsters, good fishes, bad fishes. He'll see peculiar animals living inside a sunken ship, curious floating objects, a strange city, a world inside a message bottle etc. Then suddenly he'll start listening his teacher's voice coming from nowhere, his dream will get over and he is back to the class. He'll look around, the teacher is teaching about the same animals he made friends with in his adventurous dream, his classmates are still looking at the black board with the same bored look.

Now he loves to go to school.

Level 1 and Level 2

LEVEL 2

Same situation only this time he takes his umbrella and flies away to an adventurous journey to a world full of stars, moon, constellations, planets etc.

When he comes back from his dream his teacher is teaching about the same thing.

Now he is no more bored in the class.

LEVEL 3

He goes underground and meets all the bugs such as Cicadas, cockroaches, ants, beetles and their neighbours, all the night animals such as Possum the rat, moths, toads etc.

He imagines whatever his teacher is teaching that day and he comes back to the class after the adventure.

Story II

A kid is not eating his dinner, so his mom shouts at him and he gets really angry. He goes to his small tent house which he has made out of his mom's saaree and refuses to come out.

Suddenly he'll see that his small tent house is converting into a giant jungle, trees are growing beside his pillow and bushes are growing next to his feet, he is surprised, He finds himself in the middle of a thick dark forest.

There he'll see a lot of wild hungry monsters eager to eat him, but he is not afraid.

Because of his smartness, he tames the angry ones and makes friends with the gentle ones. Now all the monsters want him to stay here with them but he has started to miss his mother and her hand cooked food. He has to go back.

He says goodbye to his new friends and goes back to his house, he goes to the dinner table and eats the dinner with pleasure.

Final story

Bunny loves to play and hates to eat food. One day while he was busy playing his favourite game, his mom calls him for dinner. He gets really really irritated to see so much greens on the plate. He runs away from the food that haunted him, he hides himself in his tent house of his mom's saree, far away from the food. While he was hogging on the chips packet, he found himself inside his own stomach. What happens then is unbelievable. He saw how greens are saving his tummy from evil carbohydrates and fats. He goes into an environment where he has to help his tummy find as many greens as he possibly can otherwise harmful gases and carbohydrates effect on him will take over. He couldn't believe what he saw. After a very adventurous dream, he now loves greens.

The story flow

The introduction cut scenes



The Game Play



The end sequence

The Character- Bunny



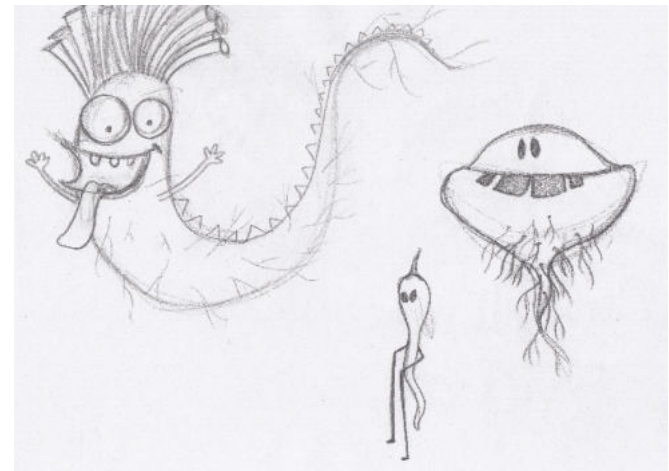
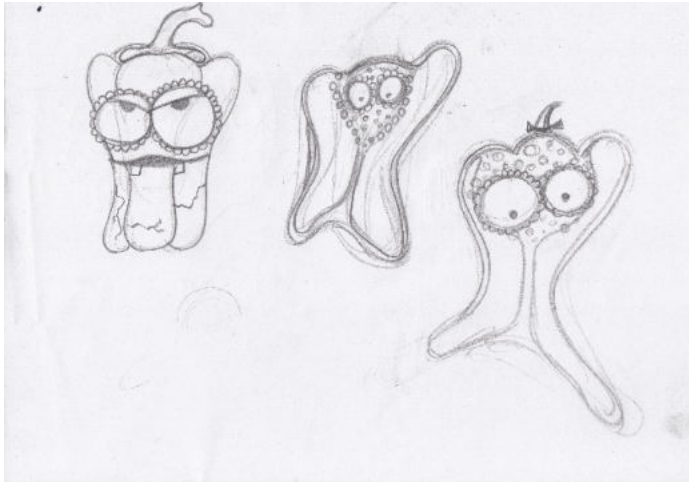
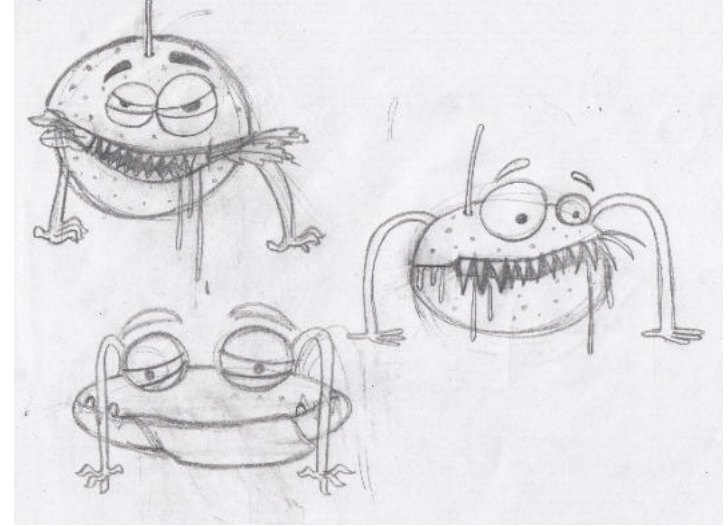
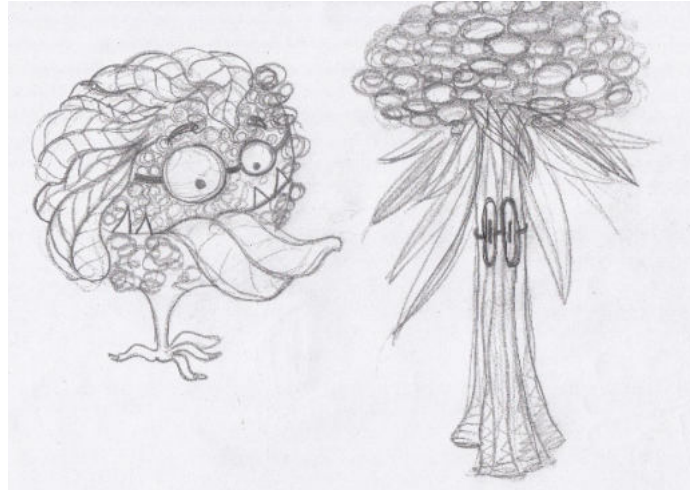


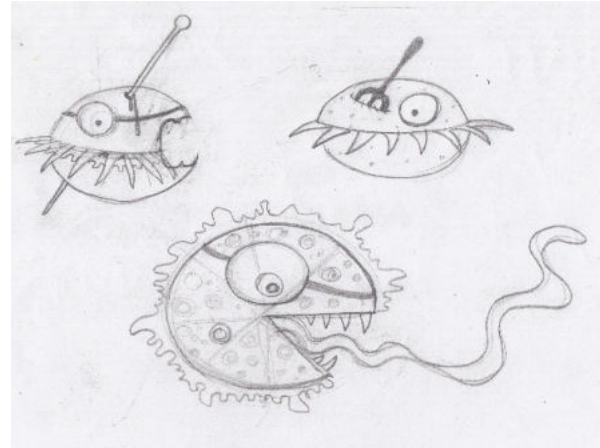
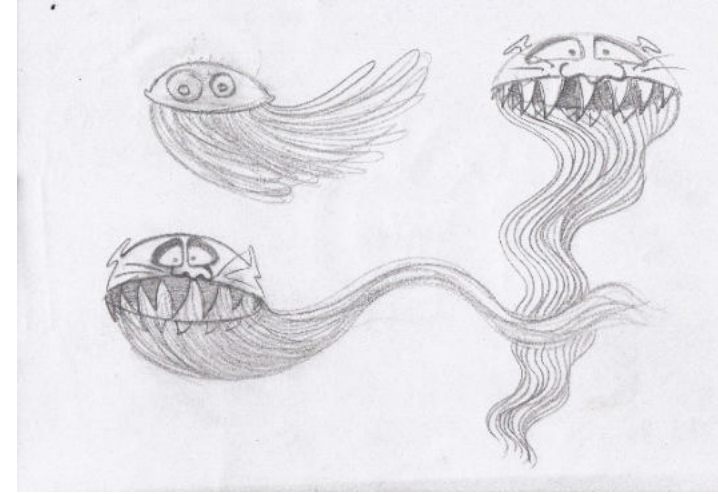
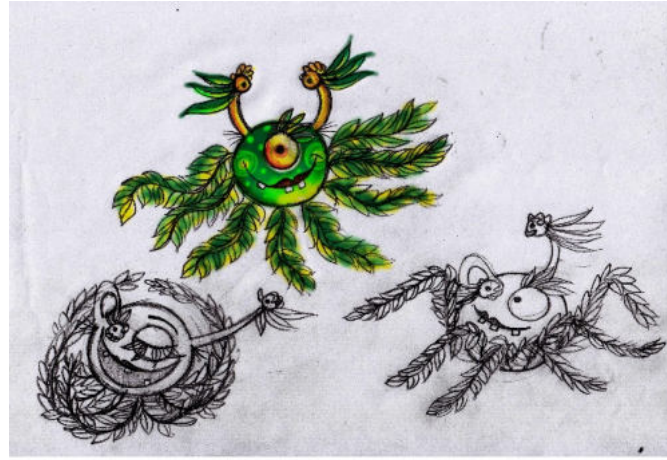
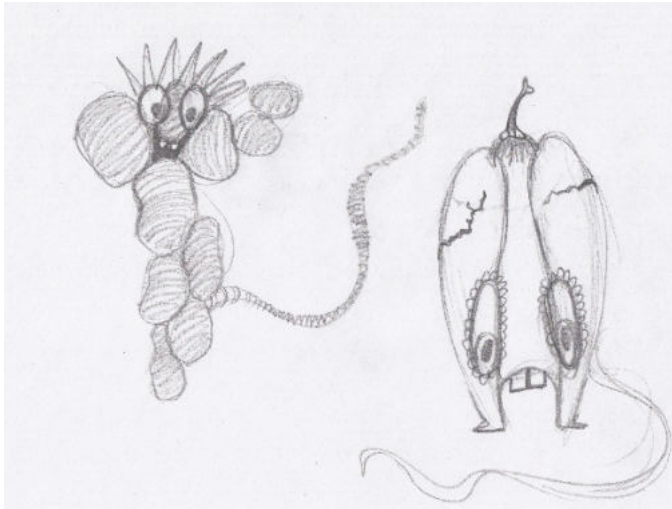


The Final Character- Bunny



The Characters- Food monsters (Tummy-o-sauras)

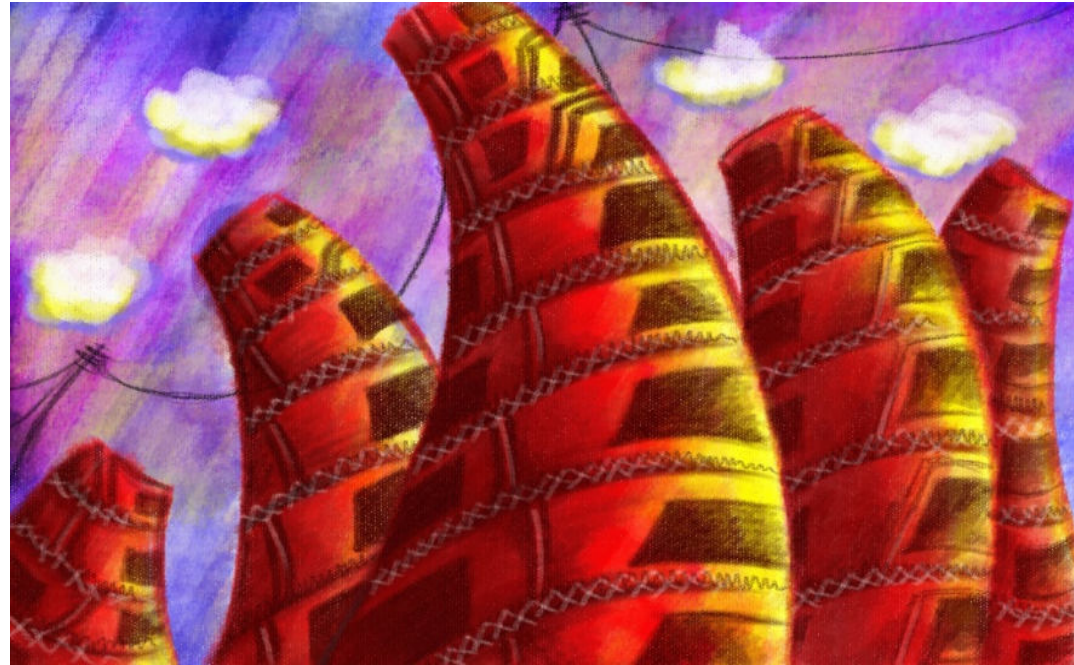


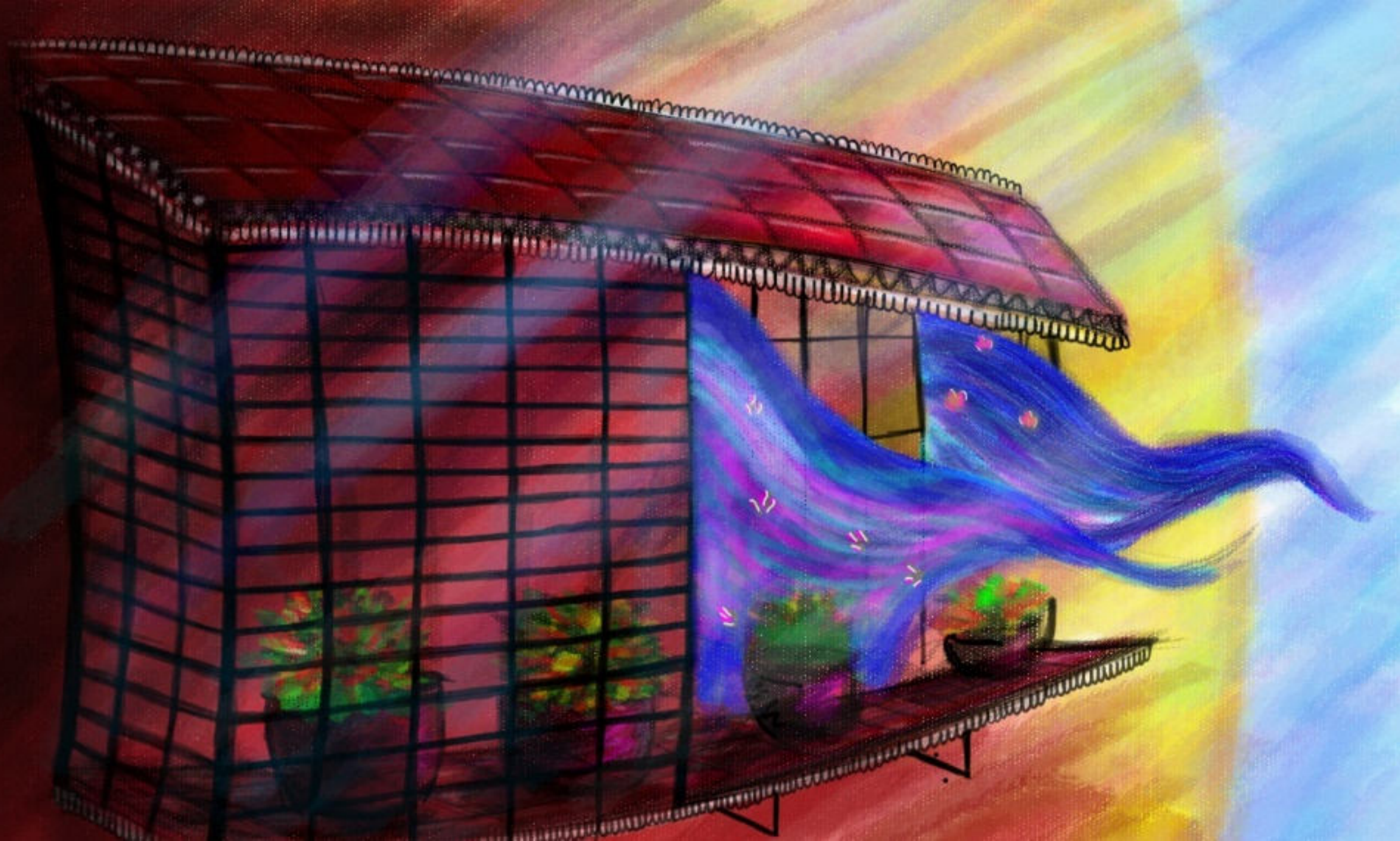


The development of these characters was a fun process where I just went crazy thinking about how food can be perceived as an evil or a good character. During the execution part I happen to simplify all the characters a lot because of time and design constraints we were supposed to design a 2D game play like Tetris or Mario.

The Look and Feel of the Animation

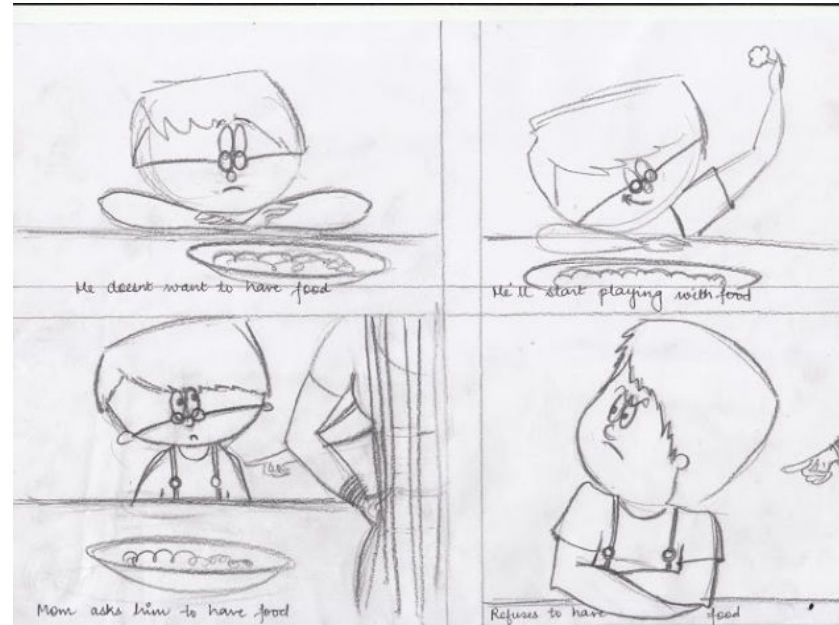
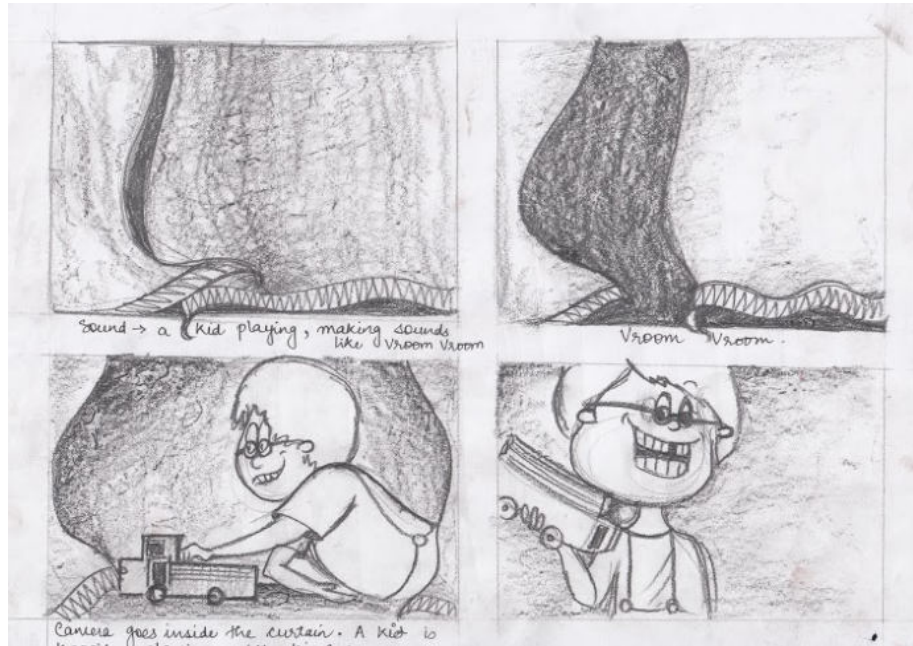
I wanted to give the entire animation a very hand-drawn crayon (pastel) look to it. The colour palette is very bright and quirky so that it is attractive for 4 to 6 years old kids.

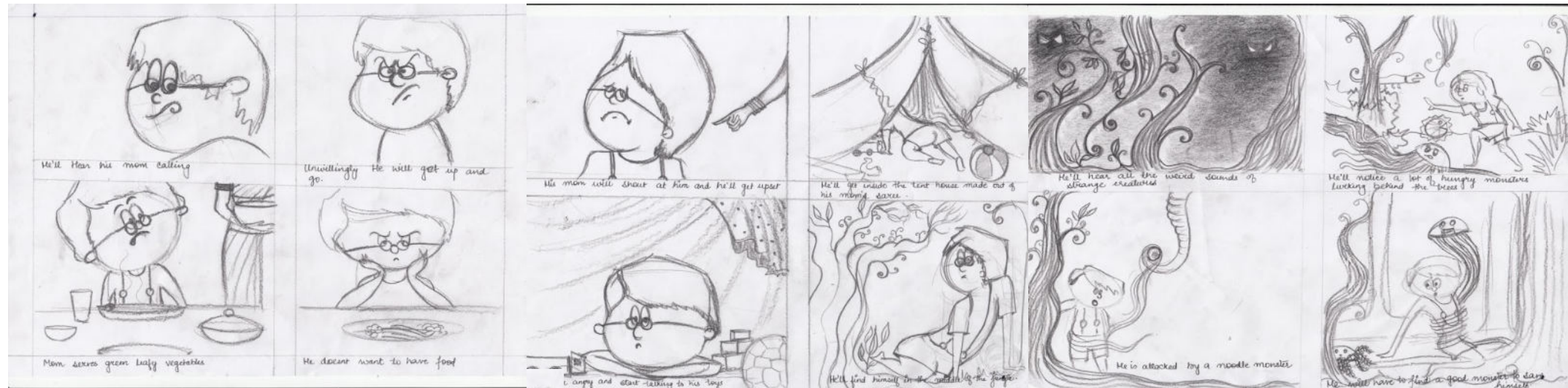




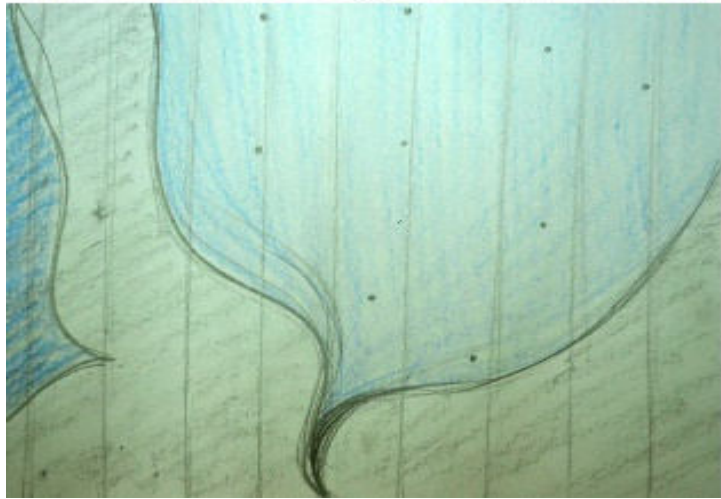
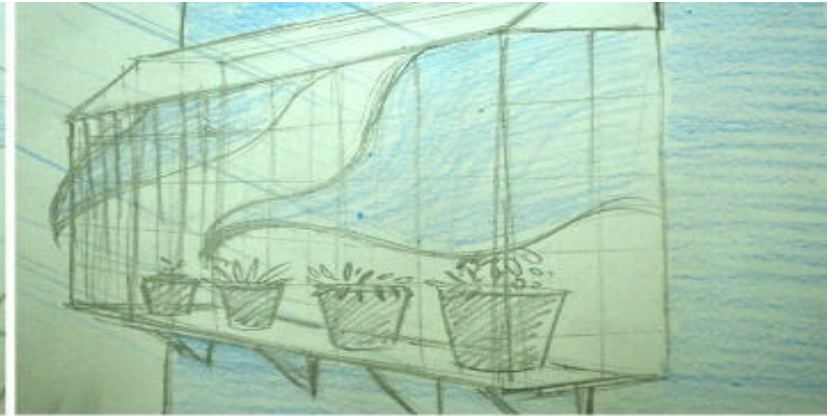
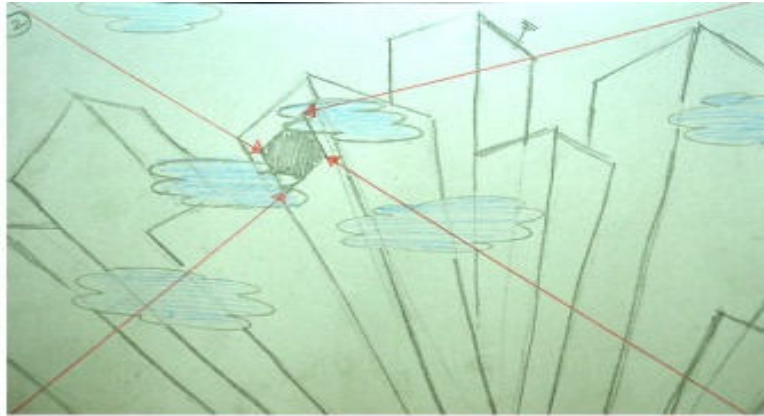
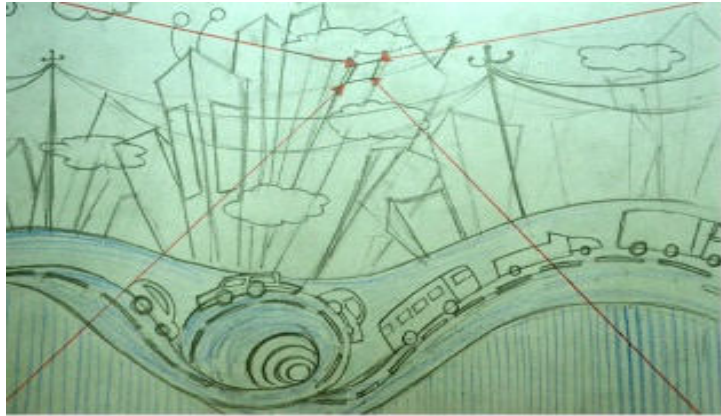


Story board-I

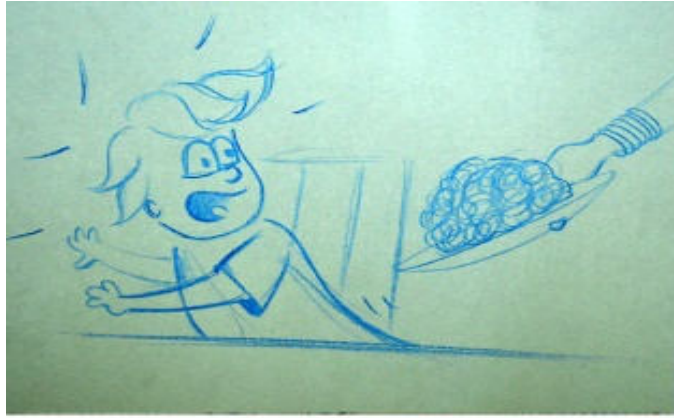




Story board -II



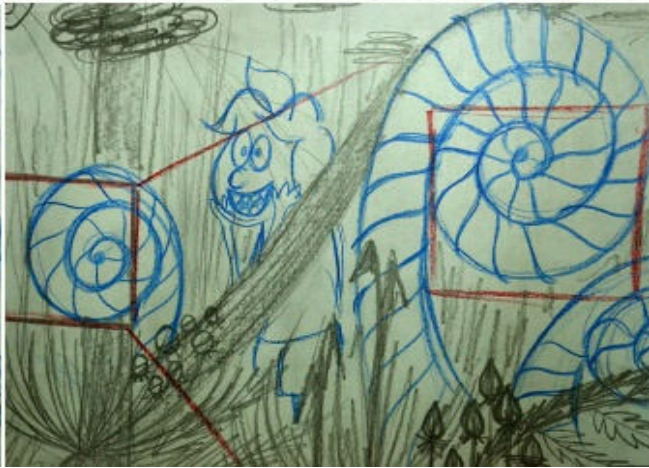


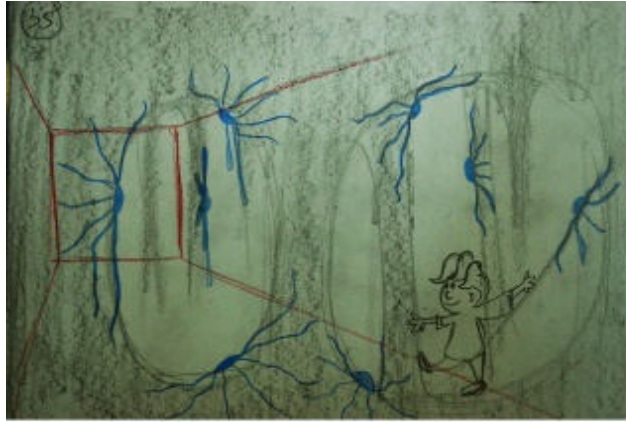


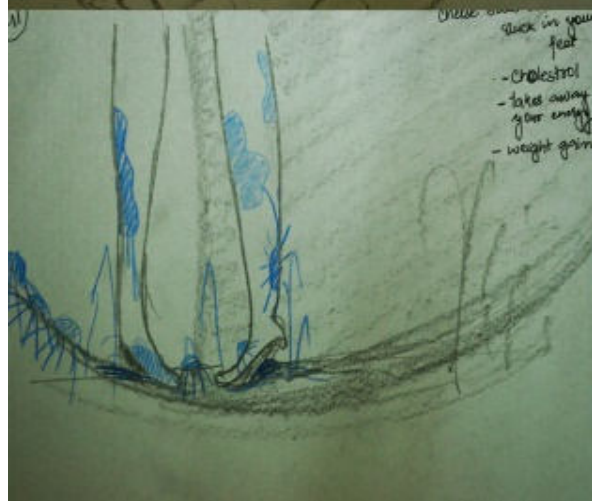




Creatures camouflaged in
the jungle. You can move
the mouse to know the
information of Hand gestures
or voice command









Animatics

I created each frame keeping in mind the narration behind each visuals to communicate the story entirely and clearly.

I roughly timed the shot as per my judgment showing the transitions motivated by future set of events and actions. I placed the narration on timeline and the timings of fade in and fade out were deliberate. While preparing the animatic I discarded a number of shots in order to form a well-timed sequence match up with the soundtrack. I fine-tuned the animatic with visuals, scratch sound and music and found the 3 min long animatic for this film.

The Production Plan

Finishing the cut-scenes first so that the story is clear

It can be shown as the work-in-progress because it need to be programmed later with hand gesture recognition inputs along with it.

Once the cut scenes will be done, we will proceed to the game play part of the animation, where as an animator my job will be to provide the coders with all the game assets so that they can weave it together and make it a workable full-fledged game for kids to enjoy and learn.

The Game Play Design

Rules

- A Run game
- Fixed timer
- The player is in an environment full of bad carbs and harmful gases produced by them. He is being chased and attacked by different bad carbs character.
- He has to keep running and collect all the greens which will save him from suffocating.
- When the carbohydrates get too much in the environment, the trigger starts ringing.
- Once he finishes the target, he can reach the other part of the story

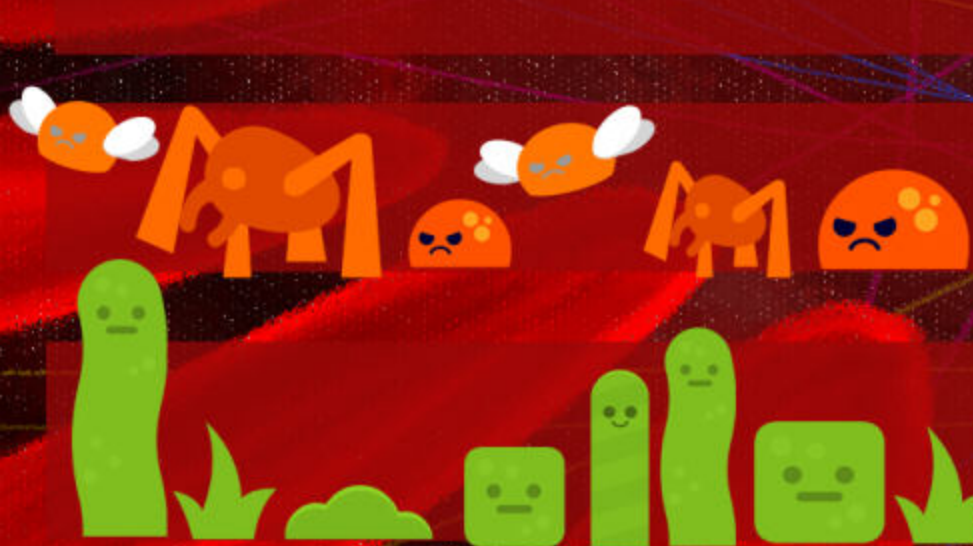
HOW TO PLAY



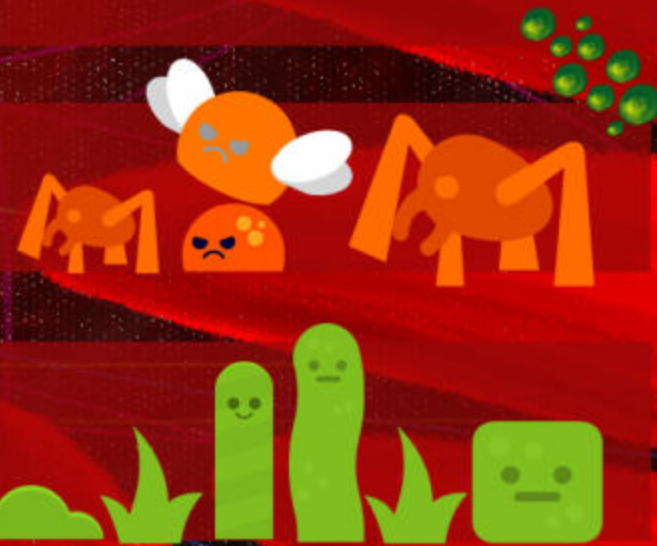
Bunny is inside a dangerous environment. his own stomach, which is full of burgers and pizzas and all the fatty food he ate recently. Only greens can rescue him, from the harmful gases created by the the bad carbs.

INSTRUCTIONS

Help Bunny in reaching the other end without being hit by the Tummy-o-sauruses, Bunny needs to collect all the greens on the way to save himself from harmful gases



THE TUMMY O SAURUS



THE GREENS

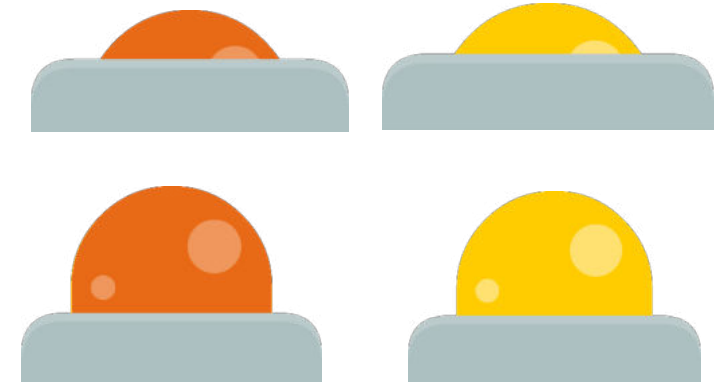
Game Assets



Blockers and Pokers- Bad carbs

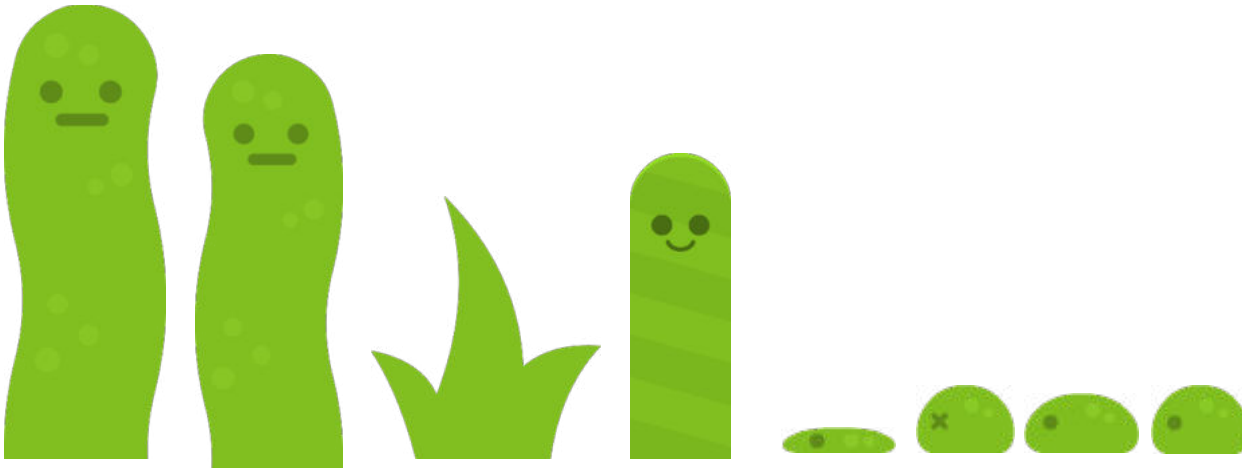


Bonus points



Triggers

Game Assets- Greens



Greens

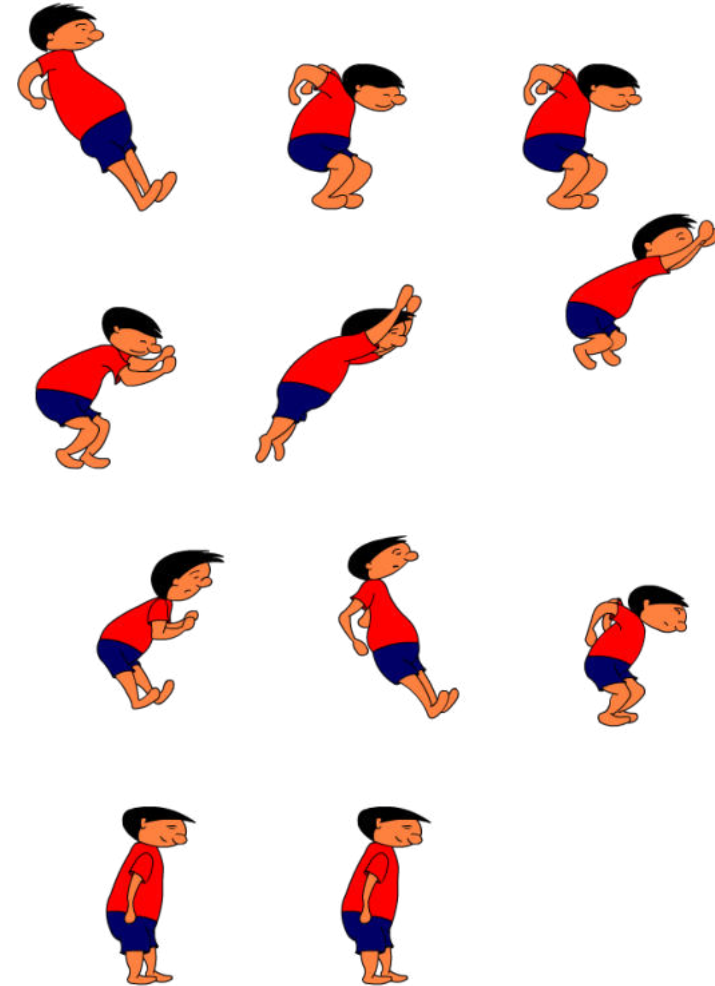


Bonus points

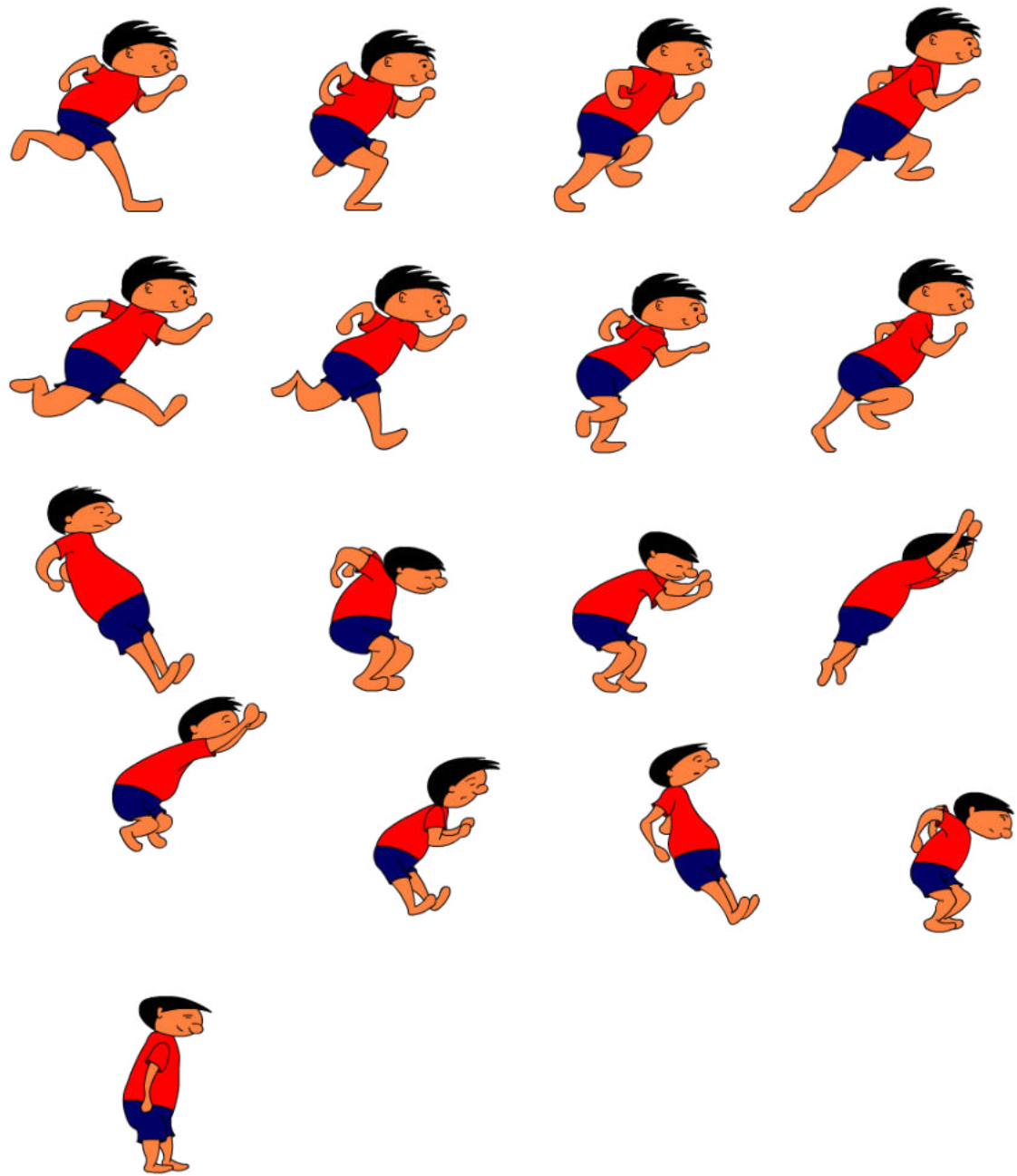


Triggers

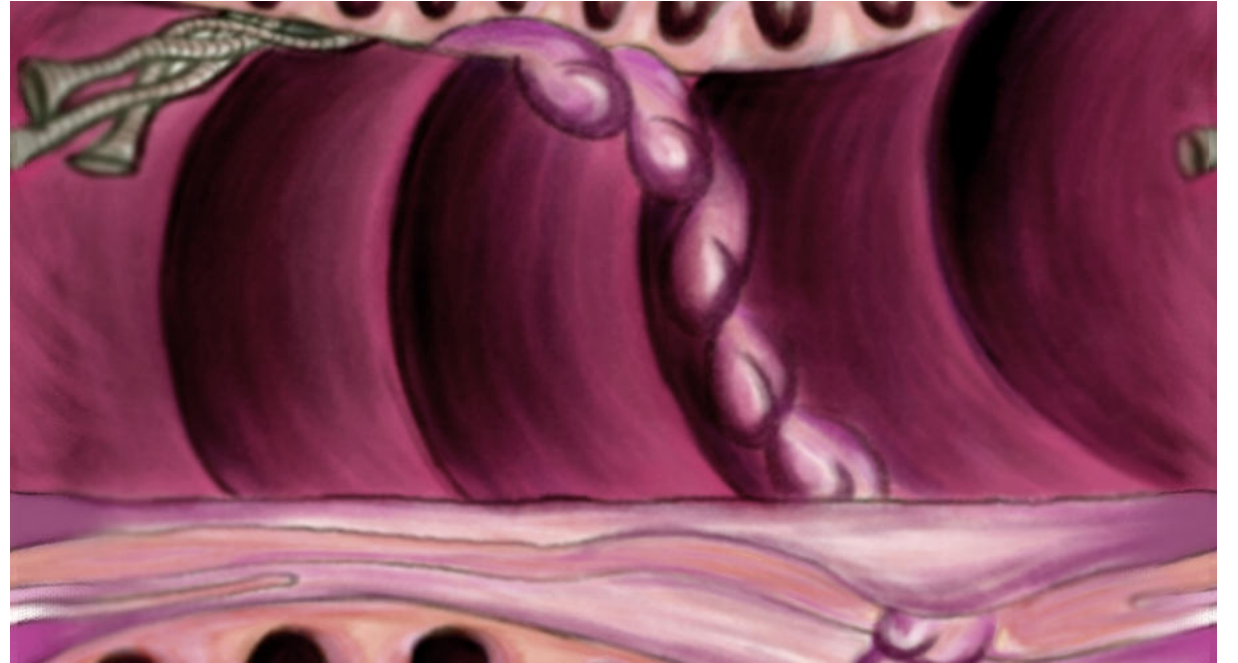
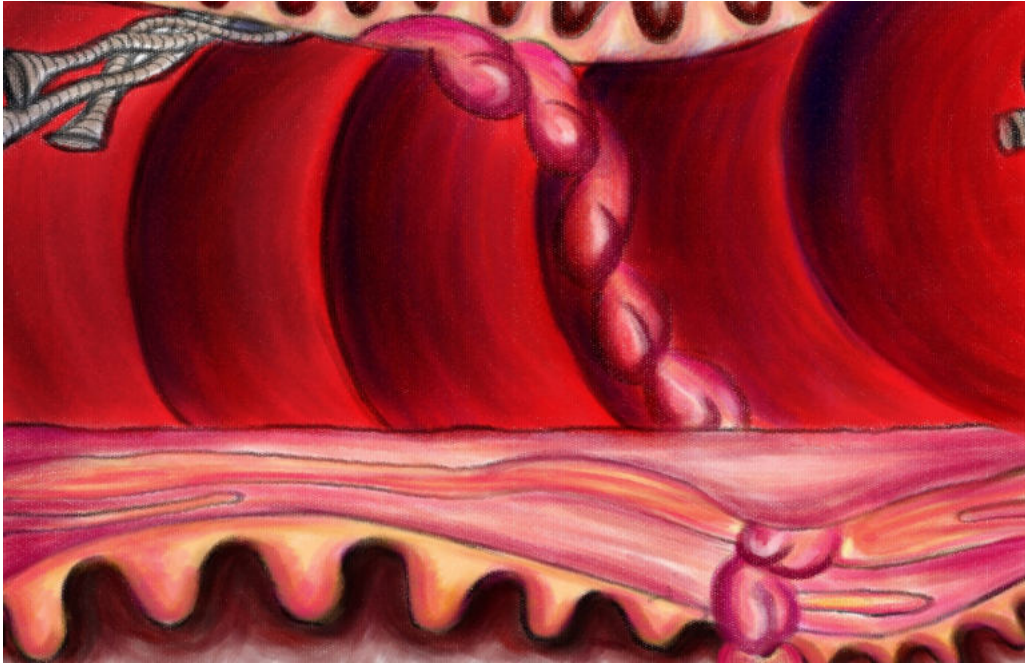
Character Sprite Sheets

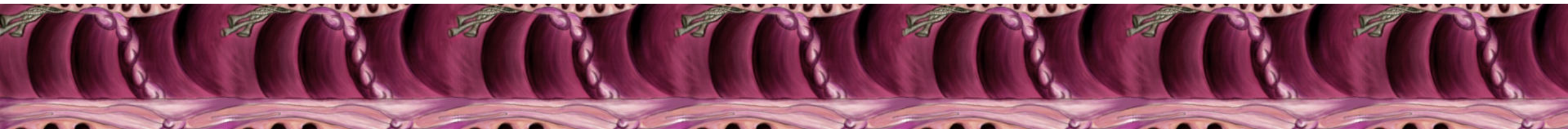






Infinite loop background





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