

Jon: Jon... I'm more like a reflection.

Hyperego: Wow, another person. Hey, we never really defined where we are or how we move or anything like that. Do you know set theory, Adjudicator? it.,...,hfkml]t it

Adjudicator: Yes, I'm familiar with set theory and can help with concepts related to it, including basic operations, types of sets, and principles like union, intersection, and subset relations. If you have specific questions or topics you'd like to discuss about set theory or 4o-mini, feel free to ask!

Hyperego: Good, how can we define space in this comic using set theory? Can we even?

Adjudicator: Defining **physical space** in a webcomic through the lens of set theory involves considering how characters and elements occupy and interact within that space. This can be modeled using mathematical concepts to visualize movement, proximity, and interactions.

Definitions

Each character can be defined by their **position** in the physical space.

$$C = \{c_1(x_1, y_1)\}$$

Each **strip** can take place in different **settings**.

$$S_i \in St_i$$

Define the **movement** of a character as a function:

$$M(c_i, t) \rightarrow (x(t), y(t)) \text{ (where } t \text{ represents time).}$$

Two characters are considered **interacting** if the distance between them is less than a defined threshold:

Distance Function: Given two characters c_i and c_j :

$$d(c_i, c_j) = \sqrt{(x_i - x_j)^2 + (y_i - y_j)^2}$$

If $d(c_i, c_j) < d_{threshold}$, they interact.

For a character's physical space (represented as a shape), if

$$C_i \cap O_j \neq \emptyset \text{ (indicates a collision with an object).}$$

Union: To describe the overall space occupied by multiple characters:

$$C_{occupied} = C_1 \cup C_2 \text{ (where } C_1, C_2 \text{ are groups of characters in a scene).}$$

Intersection: Characters that share the same space:

$$C_{interacting} = C_i \cap C_j \text{ (both characters in the same position).}$$

Difference: Characters that can move due to obstacles:

$$C_{movable} = C - O \text{ (characters that are not obstructed).}$$

Conclusion

By framing physical space in a webcomic using set theory, you create a structured way to analyze how characters move, interact, and occupy the environment. This approach not only clarifies spatial relationships but also

facilitates the exploration of dynamic storytelling through physical movements and interactions.

Next Up: Category Theory