

Universal Filter

A New Approach for **Learning***

An AI lens to view theories of **Non-local Consciousness**

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*This is my attempt at making an AI-based theory from various texts on non-local consciousness I've been reading.
It is not experimentally or scientifically proven. Be open-minded. Be skeptical.

Lots of information out there, how to learn?



Image from: <https://kr.pinterest.com/pin/484348134898069270/>

Learning Information

- Is learning from ALL available information always better?

Welldone



We cannot make out anything useful
looking at the whole

Messy information
in real world

Learning Information

- Easier learning with the right filters

Hi Hello



Filter: Red word

Hello

Messy information
in real world

Information via Sensory Modalities

- Each sensory modality seems distinctly different from the rest
- But are they?



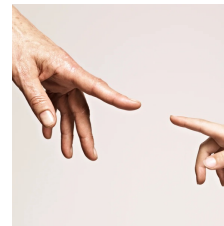
Taste



Smell



Hearing



Touch



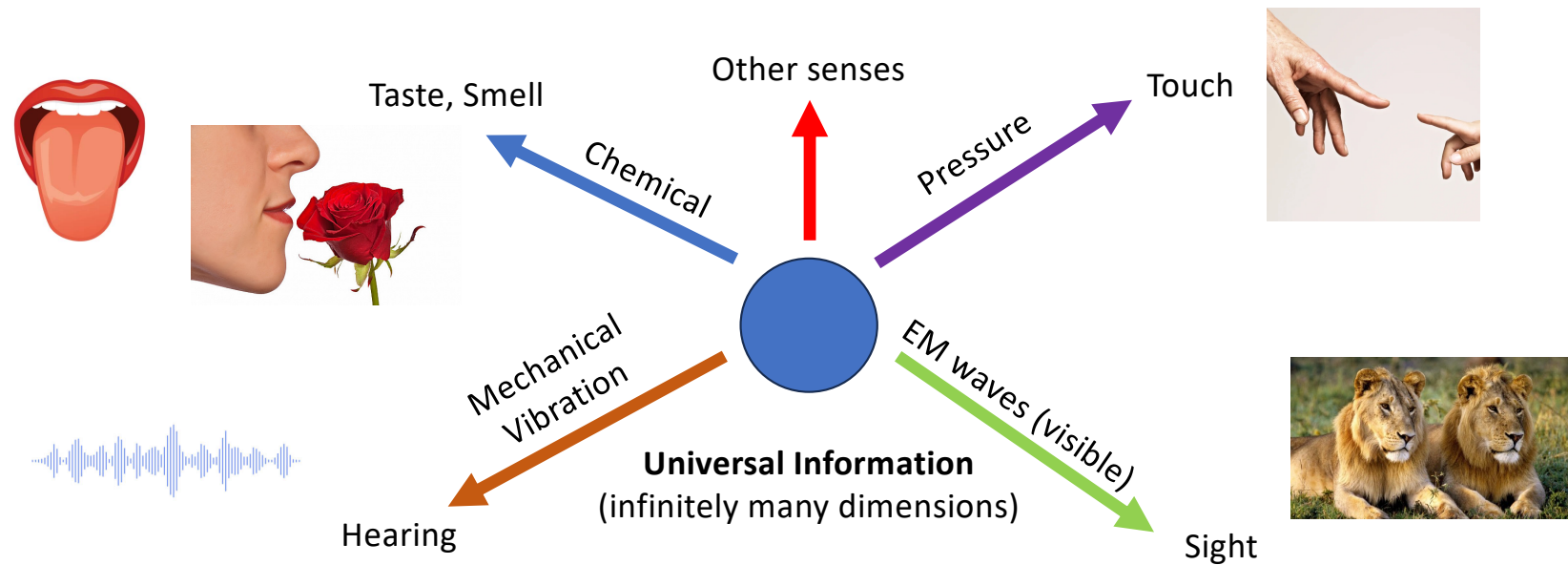
Sight

Information is infinite

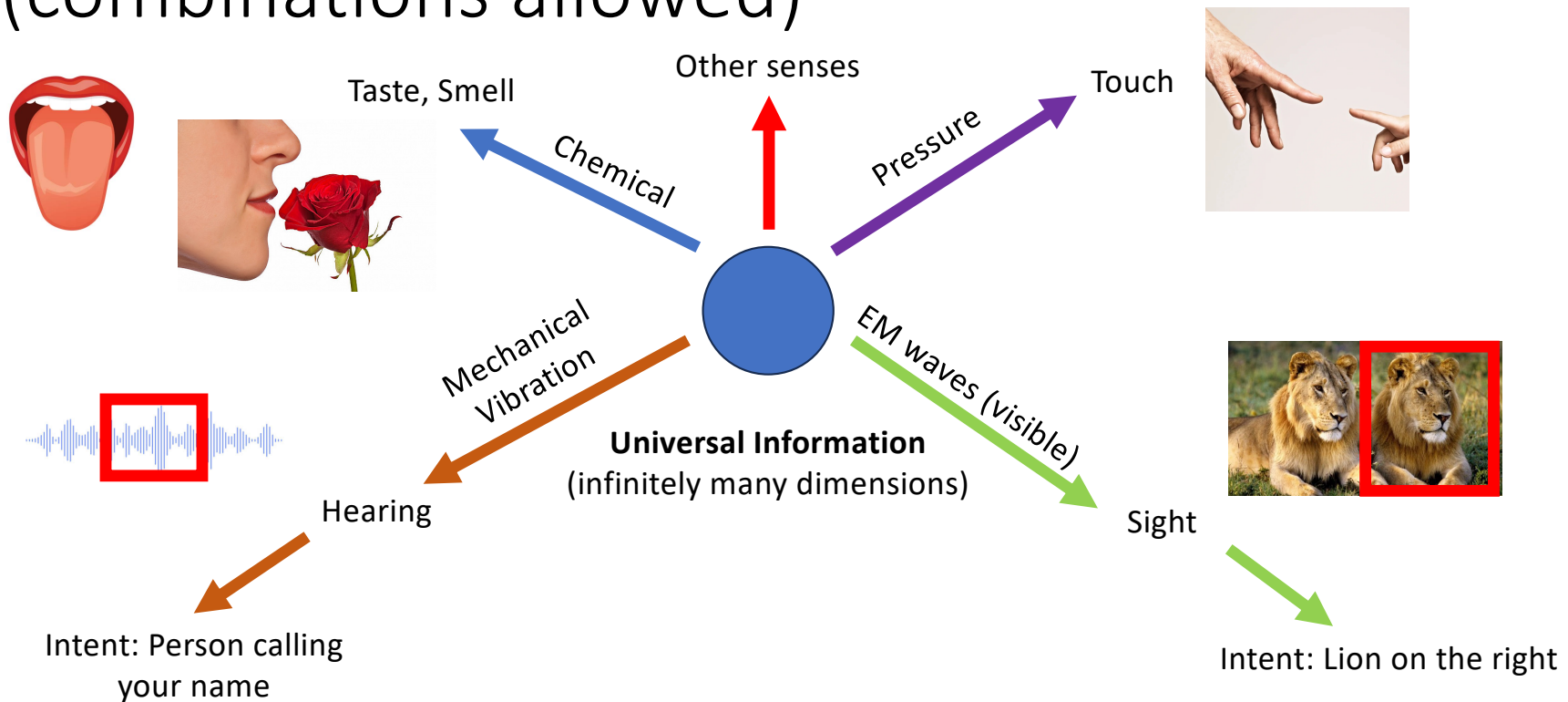


Universal Information
(infinitely many dimensions)

Senses are a first-layer filter (not exclusive to physical senses)



Intent/attention as a second-layer filter (combinations allowed)

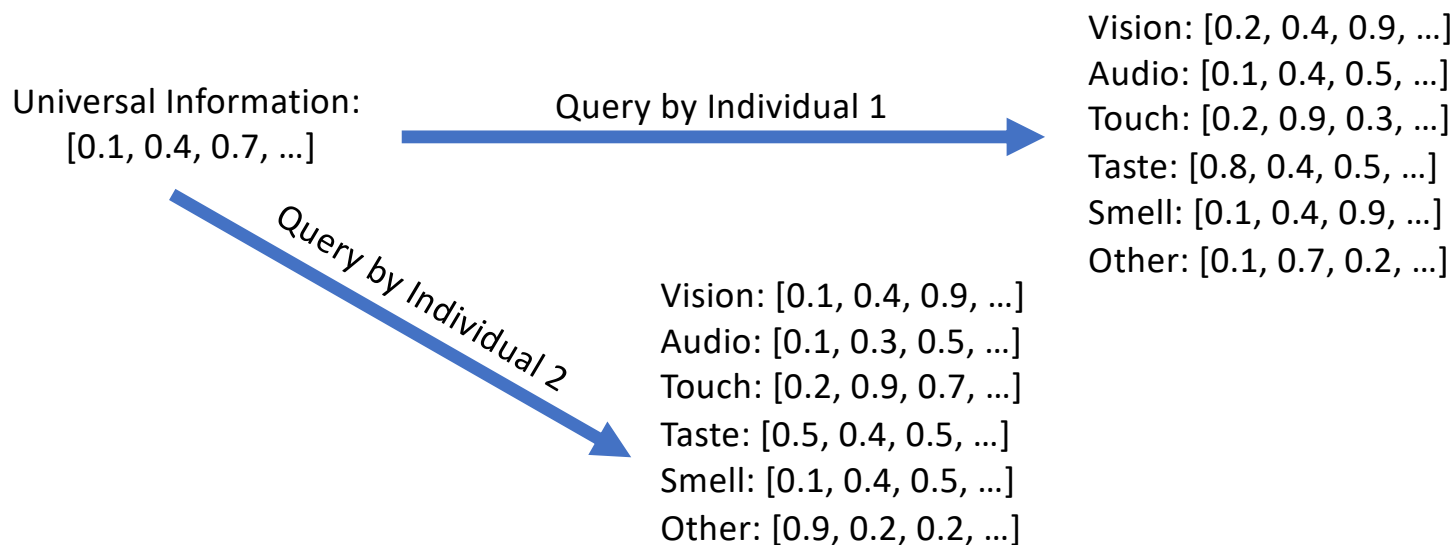


Multimodal Processing

- Current systems usually utilise different separately-trained models for different modalities
- What if everything can be represented fundamentally as **Universal Information**?
- We **do not need separate pipelines** for each modality
- All information is stored in **Universal Information**, and applying a different filter gets you the modality you need

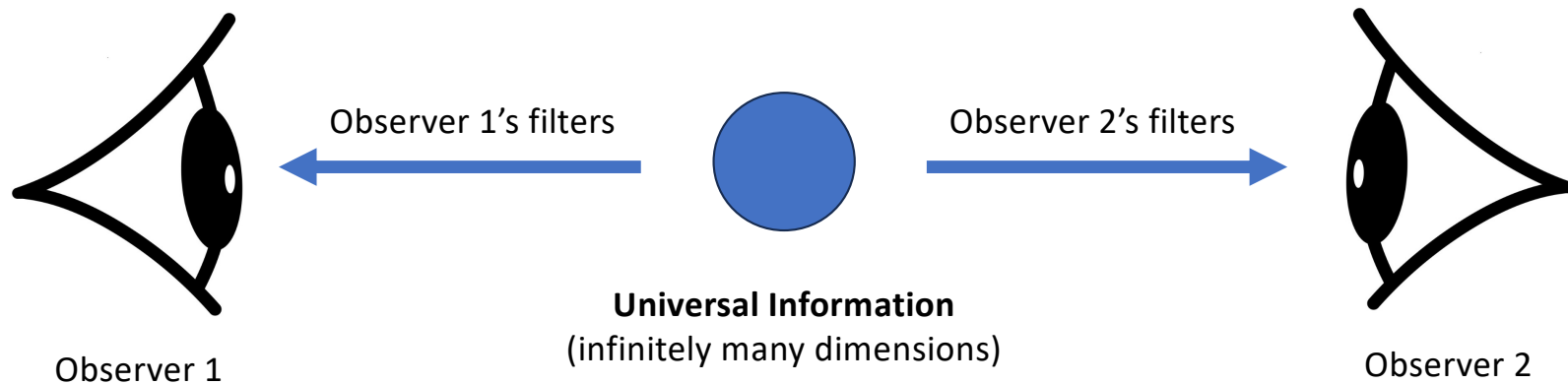
Interpretation with filters form experiences

- No interpretation should be done until a filter is applied
- Interpretation gives rise to meaning
- Universal Information can be a vector, a dictionary, or other types of representation as long as it can be queried with a filter



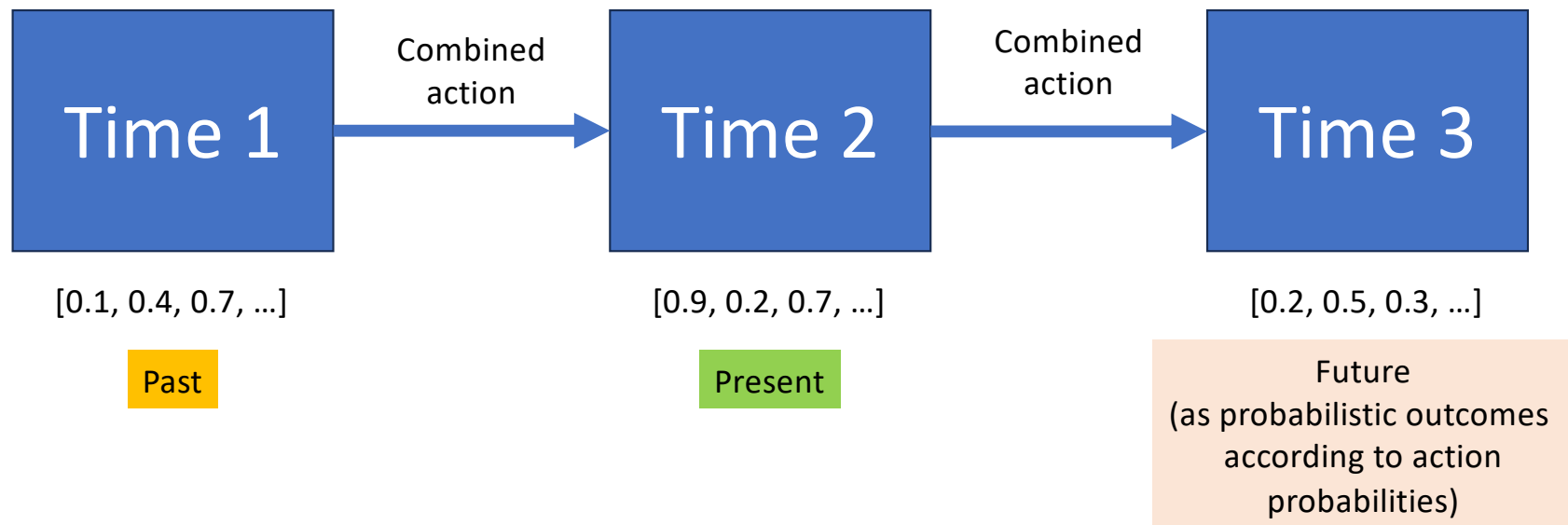
Tale of many observers

- Food for thought: How can you be sure my **RED** is your **RED**?
- Food for thought: How does it feel like to be a BAT?



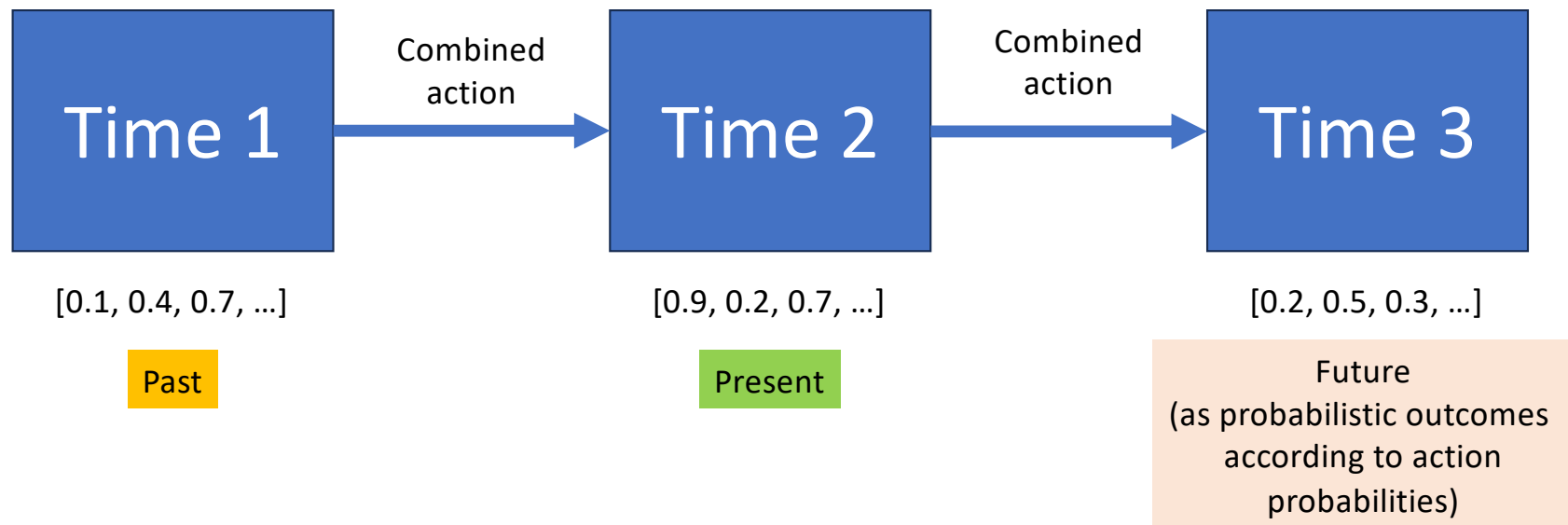
Add in the arrow of time as a constraint

- Next state will be determined according to the physical spacetime rule-set using the combined actions of all entities present in the spacetime world



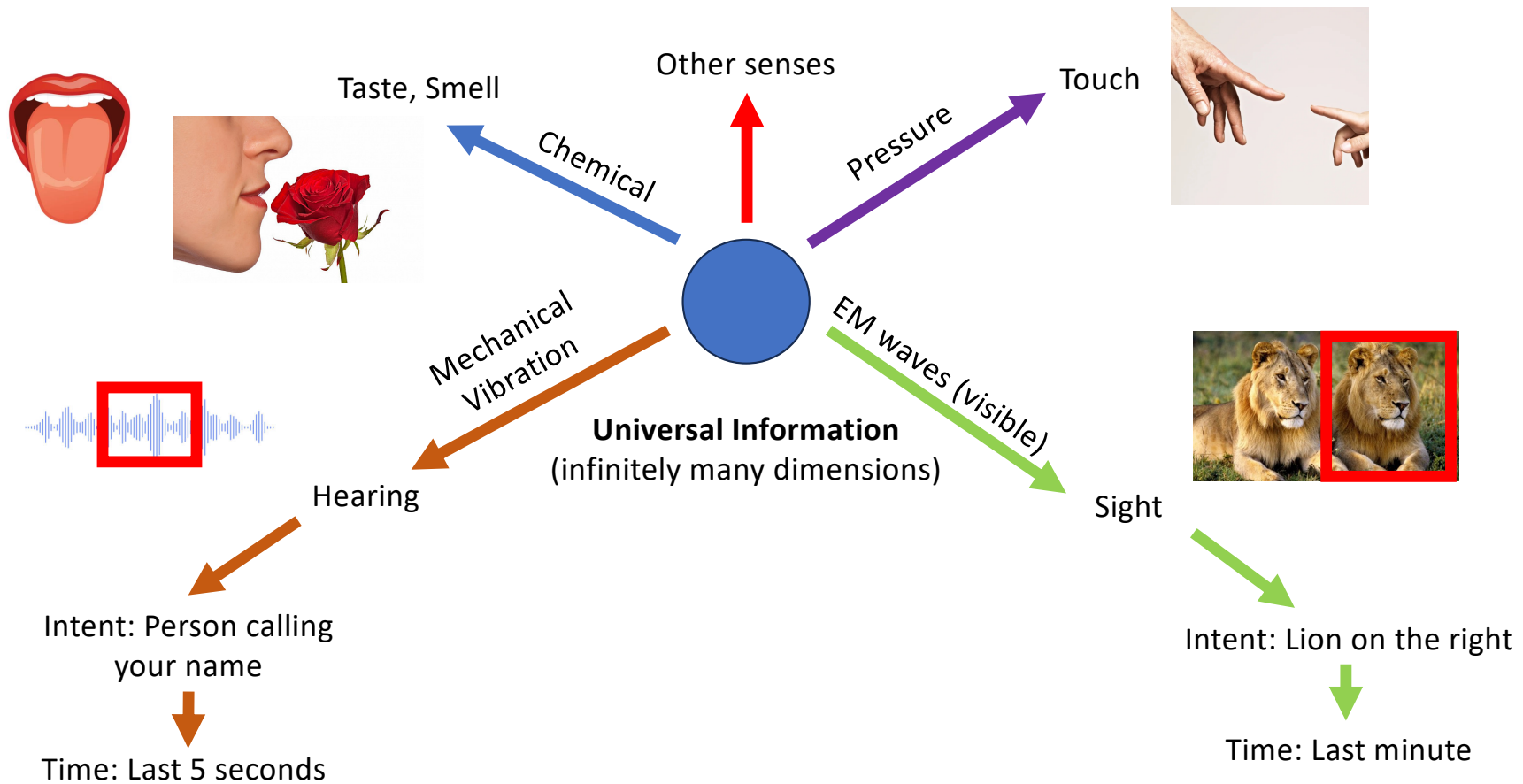
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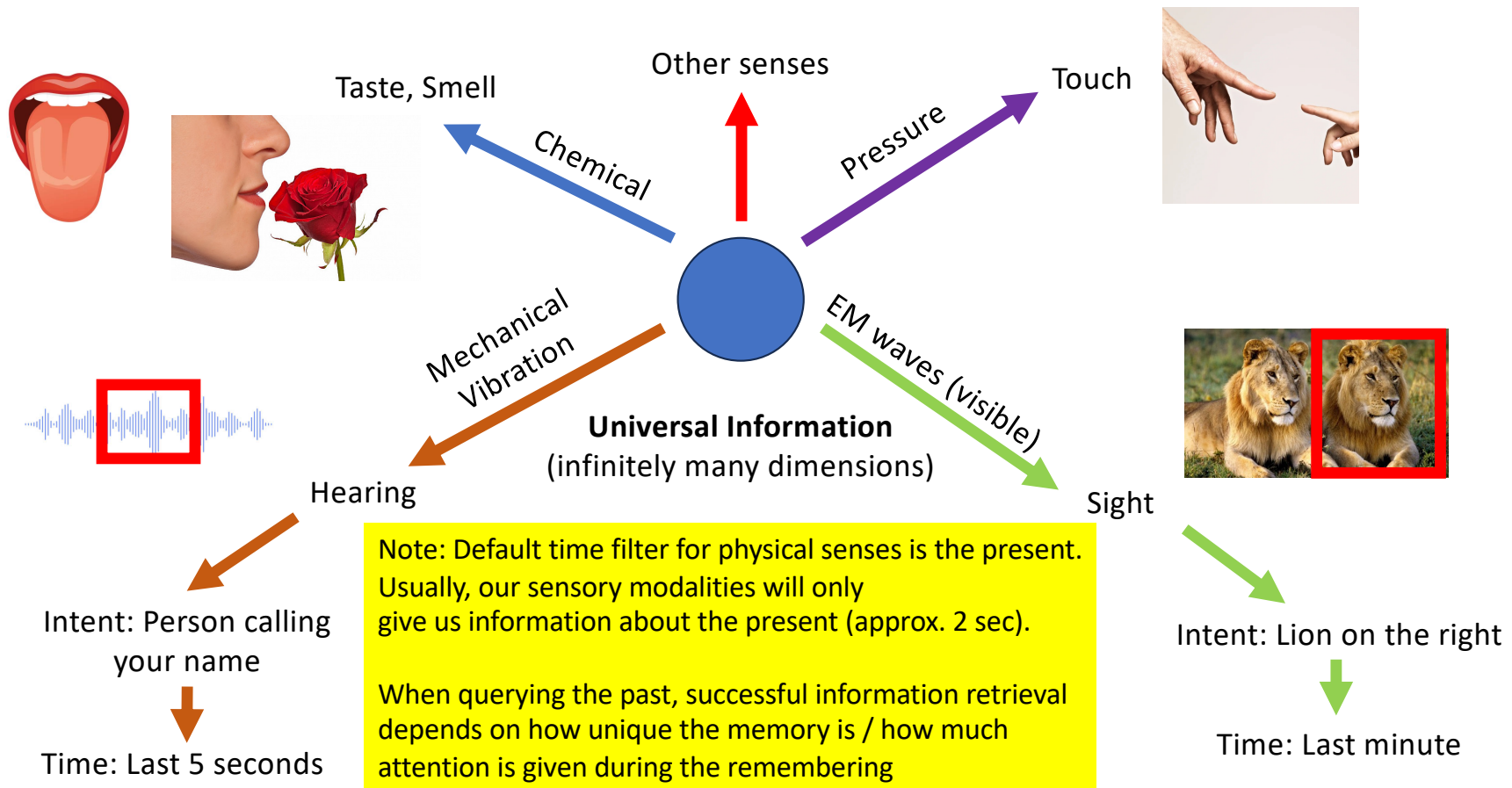


Note: If **Universal Information** is now a series of time points, the filter will need a time period for reference

Time as a third-layer filter



Time as a third-layer filter



Time in AI systems

- While human memory may not always be queriable (recallable), AI systems can have perfect recall if memory is large enough
- Hence, AI's time filter retrieval will be much more superior than human's with almost perfect accuracy in recalled content as well as time period
- Time can also be stored accurately using atomic clocks, which are superior to the circadian clocks of the human body

Abstraction Spaces as Filters

- Instead of having a separate abstraction spaces (e.g. pixel-level, object-level, background for vision) for each modality, simply apply the right filters to **Universal Information** to get the abstraction space(s) needed for a problem
- Similar filters can also be used to query memory, such that all kinds of memory – e.g. procedural memory, semantic memory, episodic memory – can be obtained from a **Universal Memory**

How to apply filters to Universal Information?

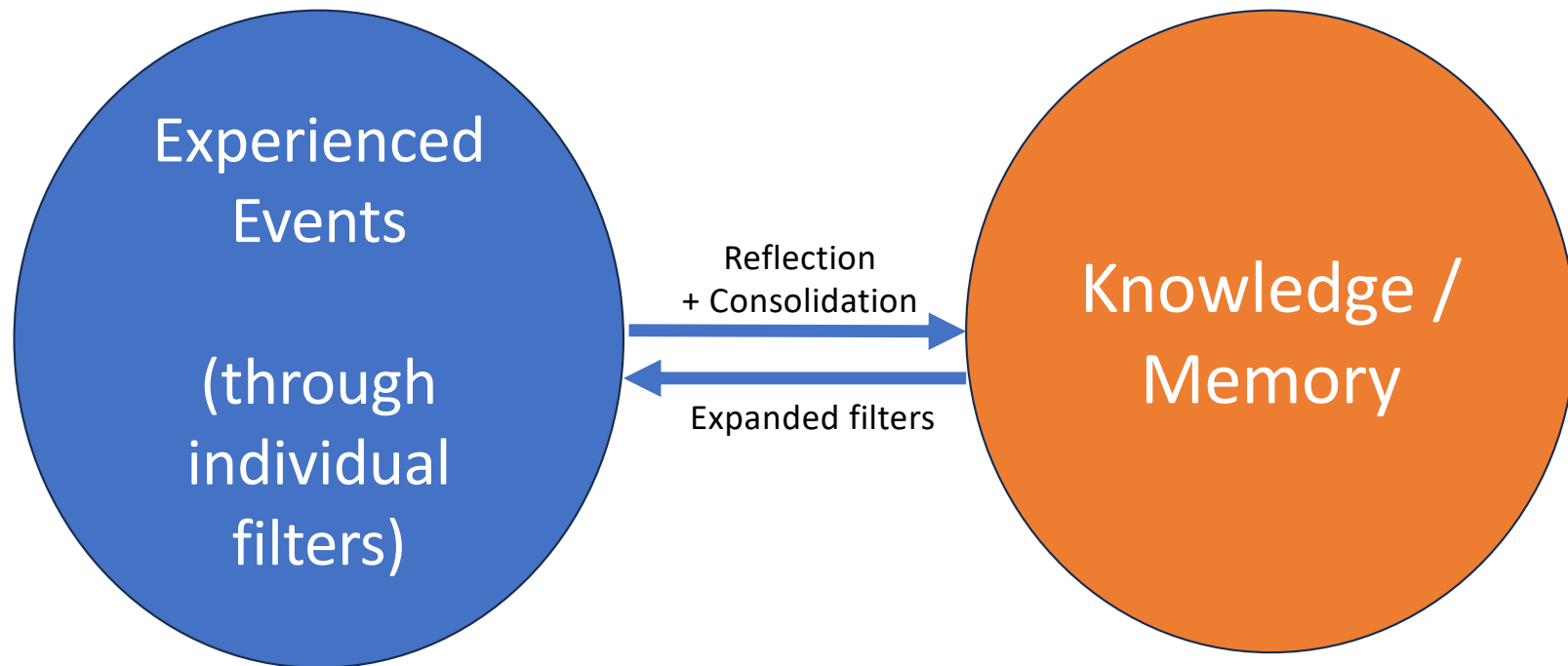
- Could be just a mathematical operation (e.g. linear transformation) on **Universal Information**
- Could be an instruction prompt to an LLM
 - Prompt: Filter: Even numbers. Data: 1, 2, 3, 4, 5, 6. Response Format: Numbers
 - Response: 2, 4, 6
- Could be an algorithmic operation on **Universal Information**
 - `universal_information = {"Entity 1": "sleeping", "Entity 2": "awake"}`
 - `entity_1_information = universal_information["Entity 1"]`

Learning the Filters

How do we learn the intent-based filters?

- Every individual has their own **experience** and **memory** of the world
- Filters will correspond to individual's memory or knowledge (learnings from experience), e.g. right lion, loudest voice, green car
- An individual can only apply filters within known knowledge bounds

Increasing knowledge



Example knowledge gain in text-based RPG

- System: You are in the Main Hall. There is a locked door. Perhaps you can explore the area.
- Expanded Knowledge - Action: Explore, Object: Locked Door, Location: Main Hall
- User: Explore Main Hall

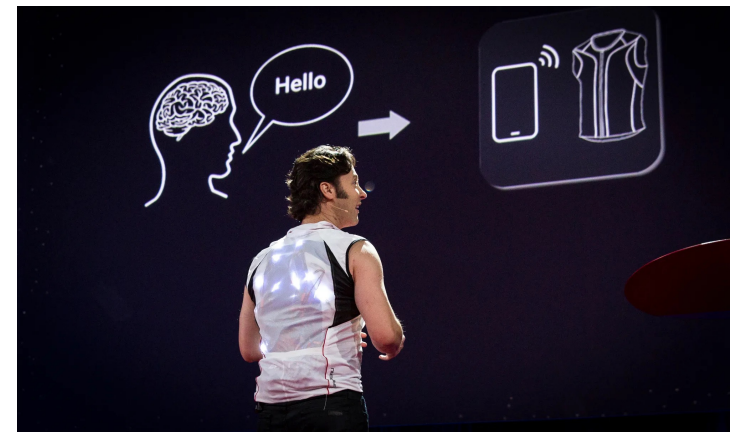
- System: You pick up a Treasure Chest. Should you open it?
- Expanded Knowledge - Action: Open, Object: Treasure Chest
- User: Open Treasure Chest

- System: You find a Key. What does this unlock?
- Expanded Knowledge - Action: Unlock, Object: Key
- User: Unlock Door

- System: You make your way to Corridor.

How to learn new filters?

- Create new kinds of senses (e.g. David Eagleman's sensory substitution vest)
- Language as a collective learned filter
- Gain knowledge of specific filter query from others
- First-hand novel experience resulting in new knowledge

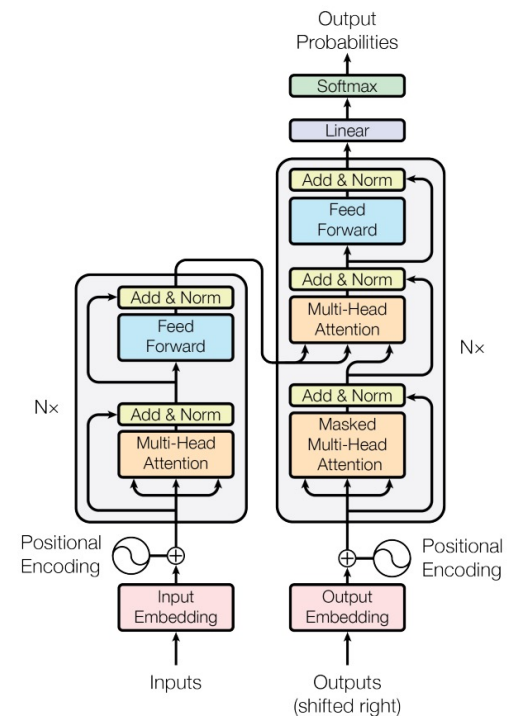


<https://www.youtube.com/watch?v=4c1lqFXHvqI>

David Eagleman at TED Talk 2015

Possible way of learning latent space for filters

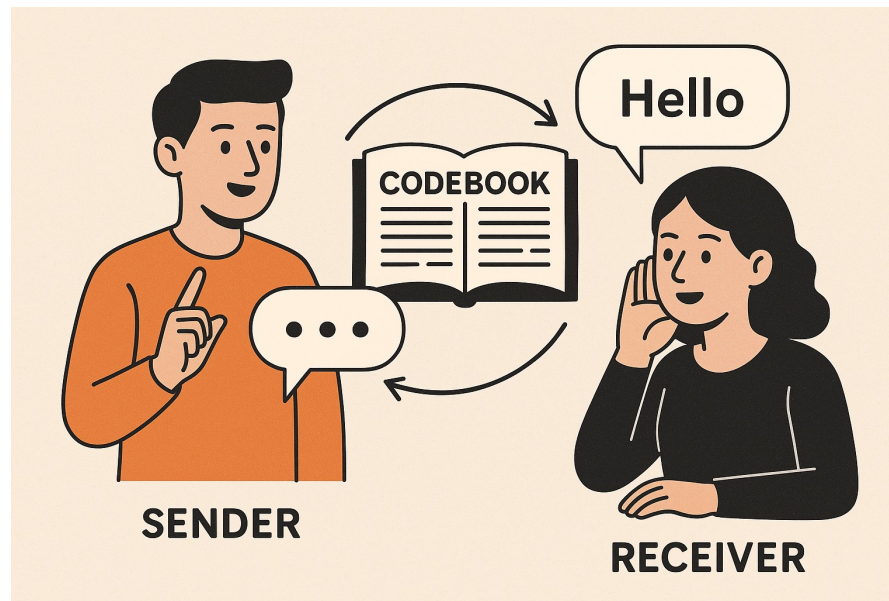
- Next-token prediction
- New tokens can be learned if existing tokens cannot describe the current state observed
- Tokens are modality-agnostic – they are stored in **Universal Information** (filtered for an individual) space rather than in a specific modality



Attention is All You Need. 2017. Vaswani et al.

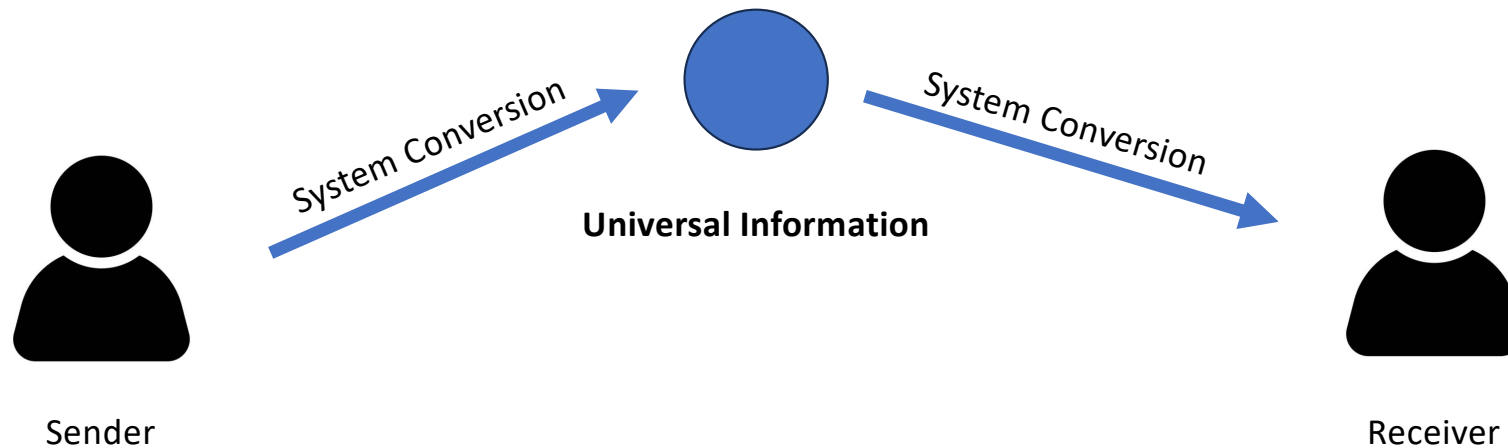
Knowledge sharing between two observers (direct)

- Use language or some shared codebook to communicate
- Need to factor in cultural norms, societal norms etc. for reliable interpretation



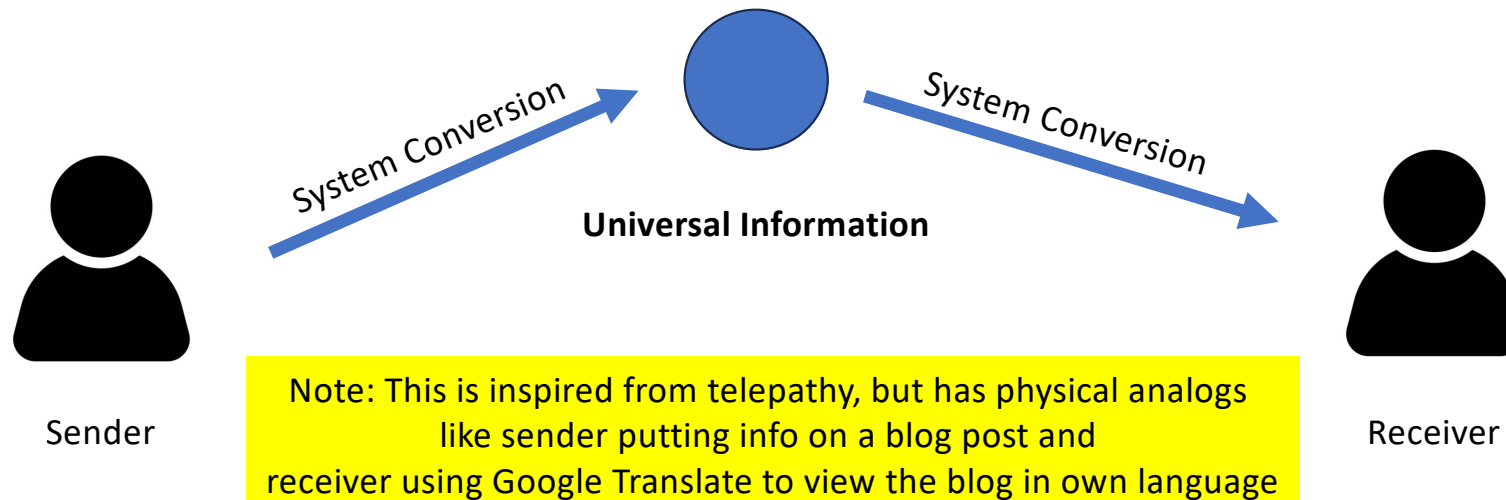
Knowledge sharing between two observers (indirect)

- Observer 1 transmits information to Observer 2 using own set of knowledge
- System converts this to **Universal Information**
- System converts this information to Observer 2 via best match to their set of knowledge



Knowledge sharing between two observers (indirect)

- Observer 1 transmits information to Observer 2 using own set of knowledge
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To be continued (Part 2)

- How intent drives actions
- Different levels of actions (conscious, bodily responses)
- How actions affect learning of latent spaces
- Emotions and reward mechanisms for learning

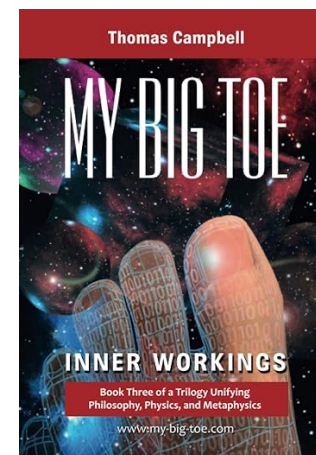
Question to Ponder

- Is it better to use **Universal Information** to process data, or to go by separate systems in each modality?
- How do we know if a knowledge is new and a new token is needed? What are some of the initial knowledge we come into the world with?
- Is language the only shared communication codebook between humans?
- At what levels do knowledge ecosystems exist? Individual, Societal, National?

Acknowledgements

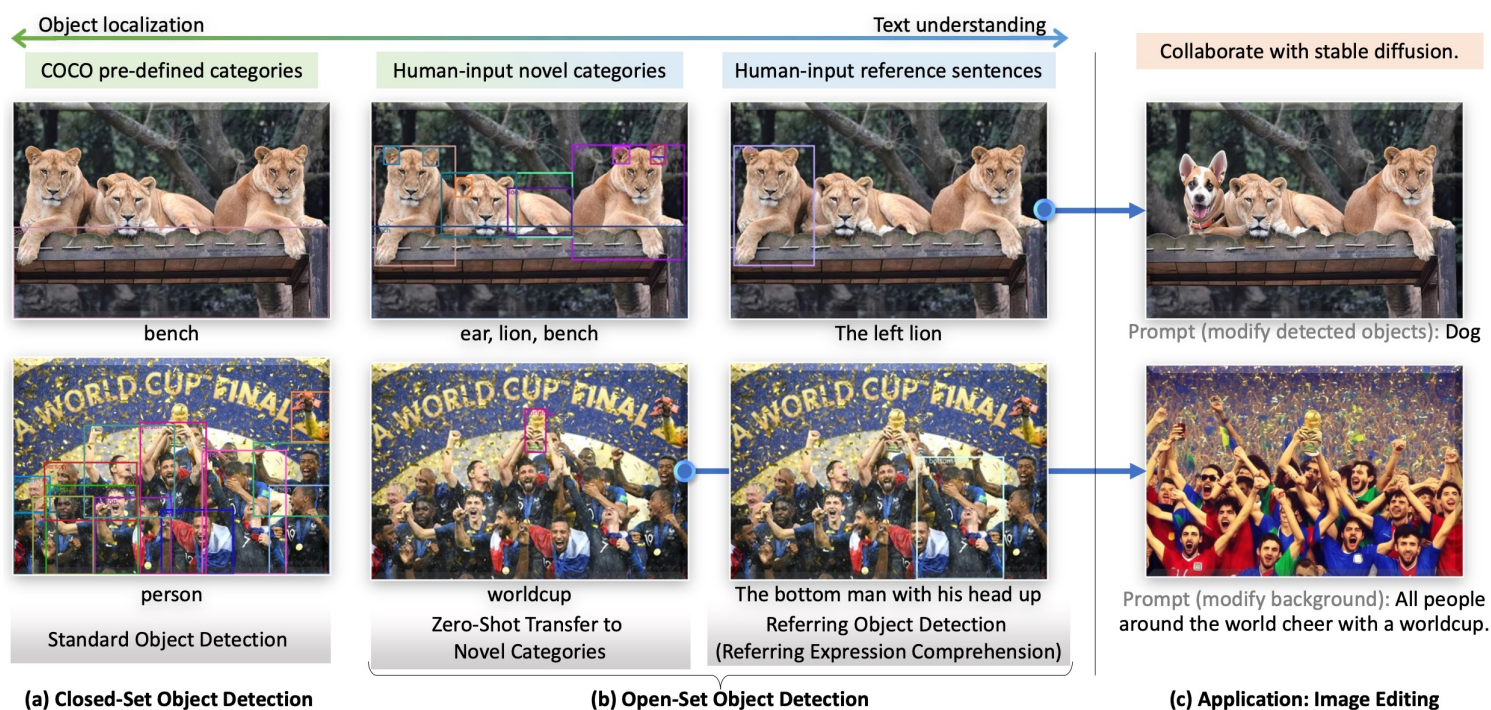
- Dr. Seng-Beng Ho, for giving a great talk at the Neuroscience and AI Mini Symposium 2025 on “Rethinking Neuroscience and AI” that led me to discover research about Near-Death Experiences (NDEs) which led me to believe that **learning and memory exists beyond the brain**
- My Big TOE by Thomas (Tom) Campbell for a wonderful theory of how the physical and non-physical worlds may exist together
- Kent Ridge AI members for listening to my ramblings about consciousness and contributing to the ideas
- Many other sources on consciousness studies, e.g. Essentia Foundation, Dr. Bruce Greyson, Deepak Chopra, Donald Hoffman, Bernardo Kastrup

Note: While the ideas may stem from non-physical concepts about consciousness, successful implementation of the ideas does not need any non-physical component



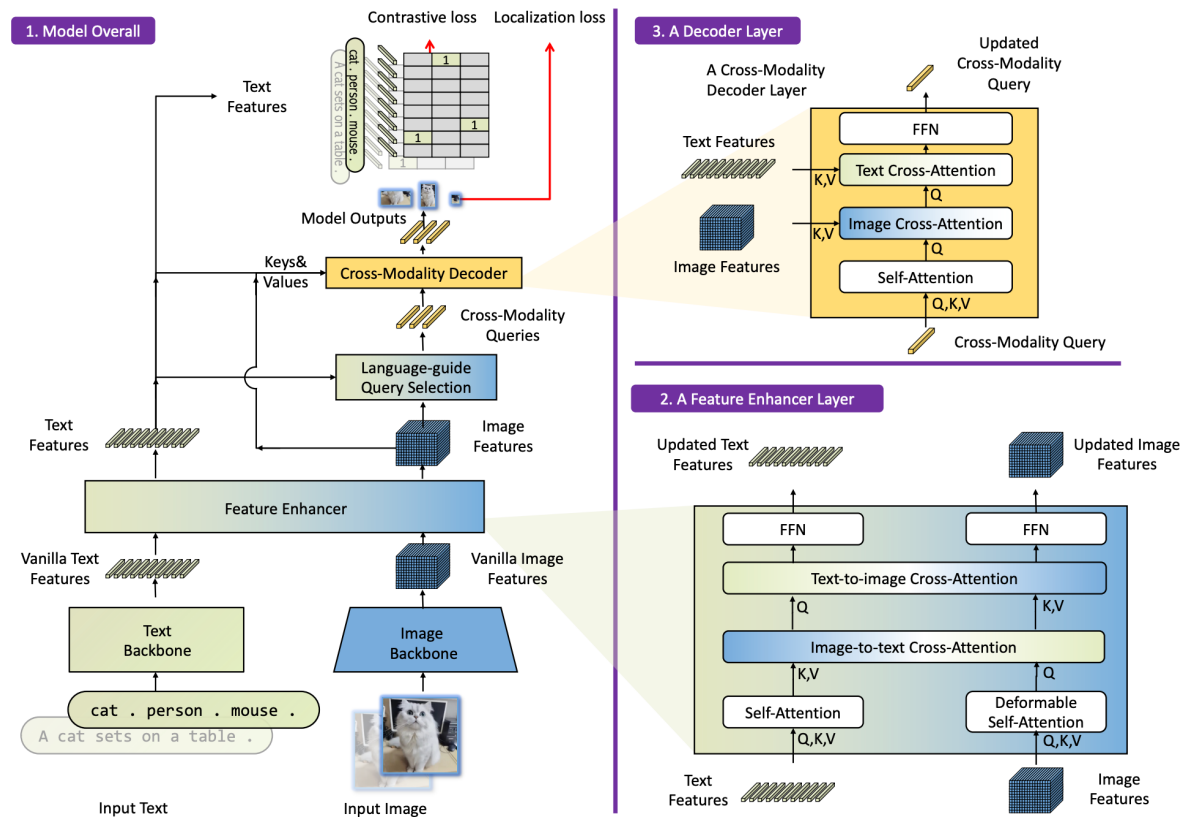
Some examples of domain-specific filters in AI

Filter for images (GroundingDino)



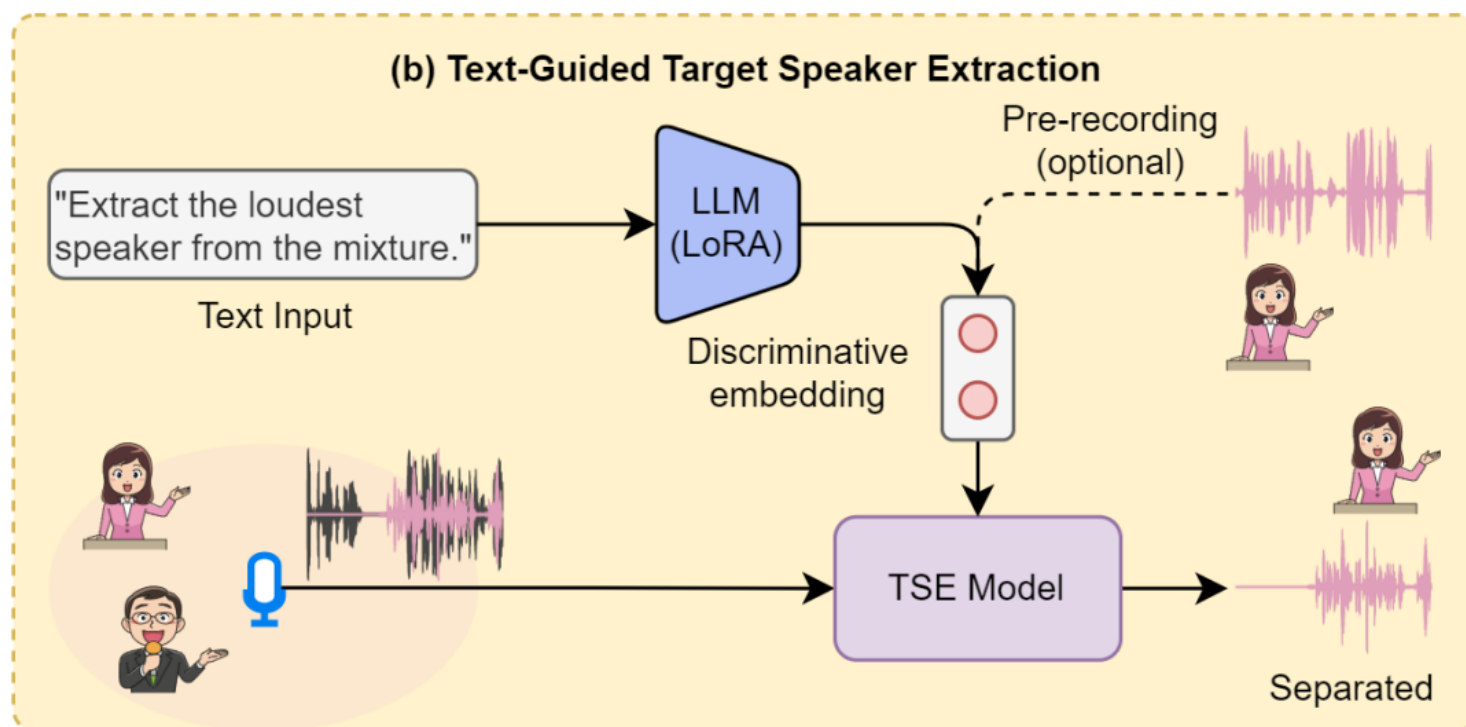
Grounding DINO: Marrying DINO with Grounded Pre-Training for Open-Set Object Detection. Liu et al. 2024

How GroundingDino is trained



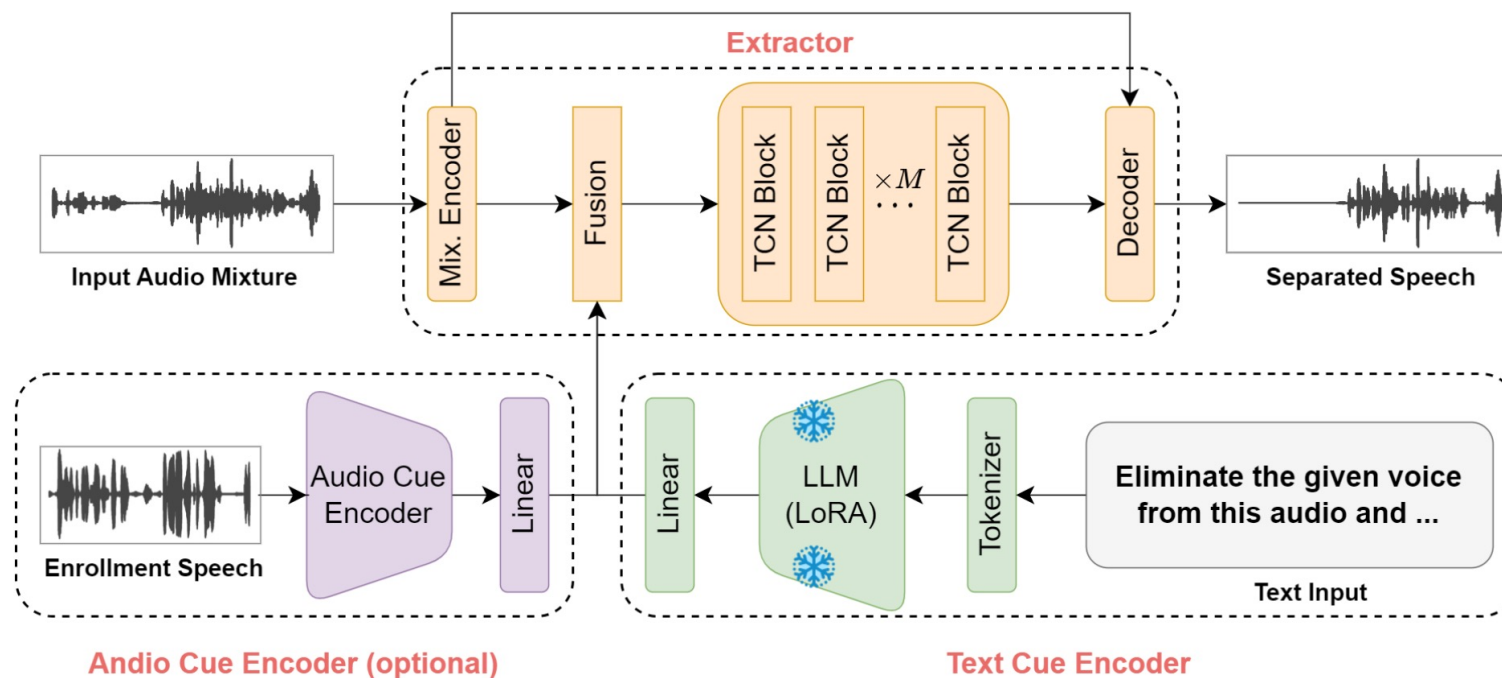
Grounding DINO: Marrying DINO with Grounded Pre-Training for Open-Set Object Detection. Liu et al. 2024

Filter for sound



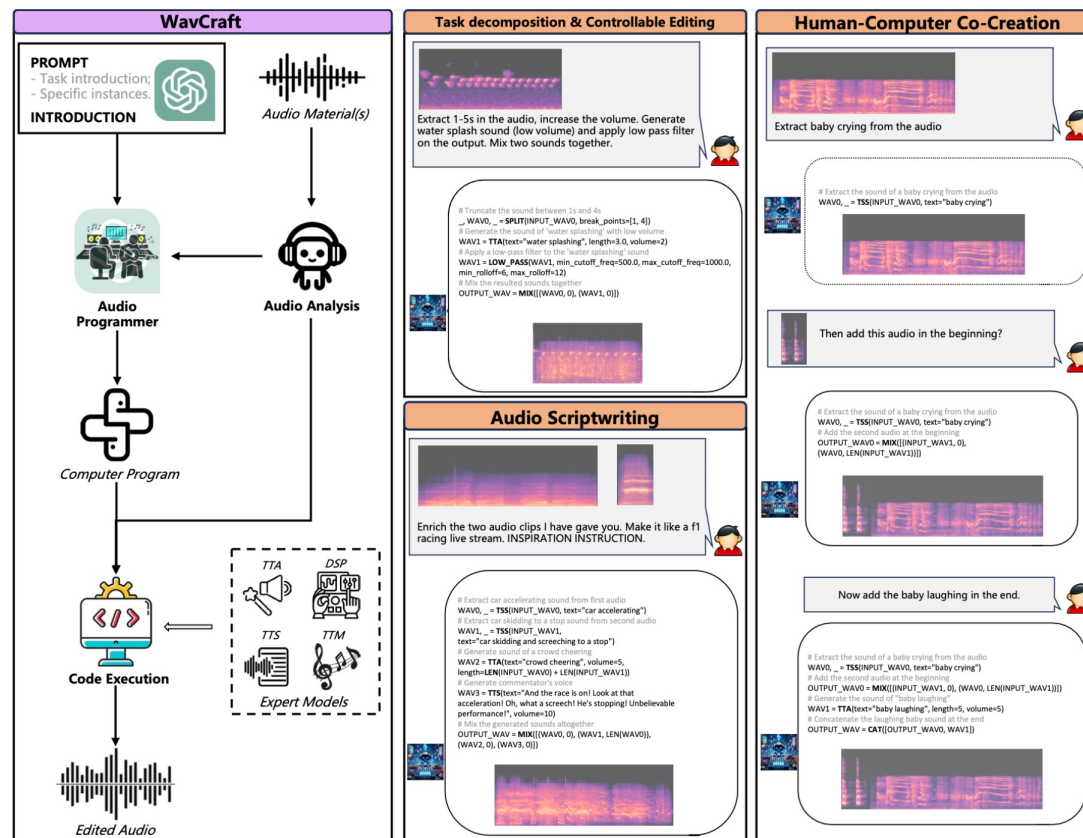
Typing to Listen at the Cocktail Party: Text-Guided Target Speaker Extraction. Hao et al. 2024.

How sound filter is trained



Typing to Listen at the Cocktail Party: Text-Guided Target Speaker Extraction. Hao et al. 2024.

Algorithm-based filter for sound



WavCraft: Audio Editing and Generation with Large Language Models. Liang et. al. 2024.