



Team Cat

Milestone I

Karl Jorge Cleres Andreo

Elif Dilara Aygün

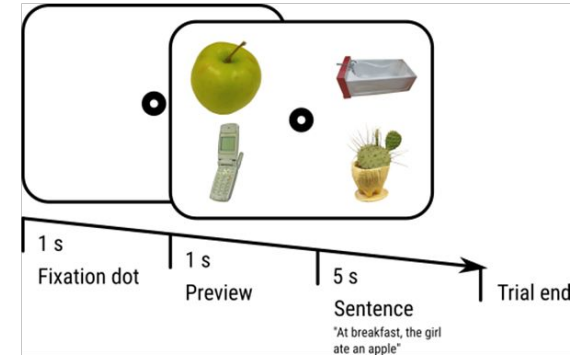
Yanhong Xu

Bowen Zhang

Visual Word Paradigm

Basic Idea:

- The brain is predicting incomplete sentences
- Check where people look in the image before they hear the complete sentence



• Research questions:

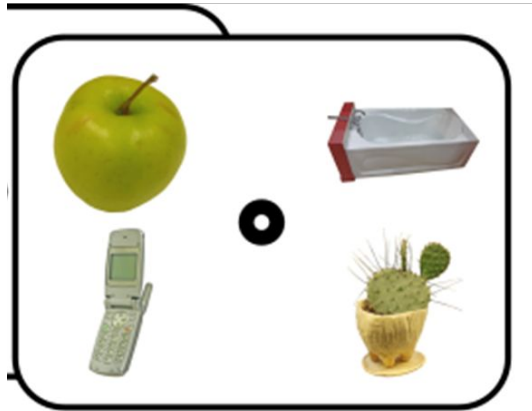
- Are the results of the visual word paradigm applicable to images with motion?
- Does motion lead to overstimulation and therefore have a detrimental effect on target matching?
- Does motion lead to faster target identification?

• Hypothesis:

- Due to competition effects, target match is higher in normal images than in the ones with motion
- Participants fixate objects without motion under condition faster than in the ones with motion

Visual Word Paradigm

- Experimental conditions:
 - Classic visual world paradigm
 - Our spin → add pics with motion
- Eye-Tracking-Measures:
 - $\frac{\# \text{ fixations on target}}{\# \text{ fixations on non target}}$
- One factor:
 - Target Match with 2 levels:
 - Single image condition
 - Image with motion condition



*„The person ate an **apple**“*
*„The girl picked up the **phone**“*
*„I got stung by a **cactus**“*
*„The man takes a **bath**“*





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Milestone II

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central research question

Are the results of the visual word paradigm presented by Huetting & Altmann replicable and do they persist when adding moving objects to the experiment?

conditions

(1) static stimuli



(2) stimuli with motion



balancing

$\frac{2}{3}$ static stimuli

$\frac{1}{3}$ stimuli with motion

static stimuli

s. w. motion

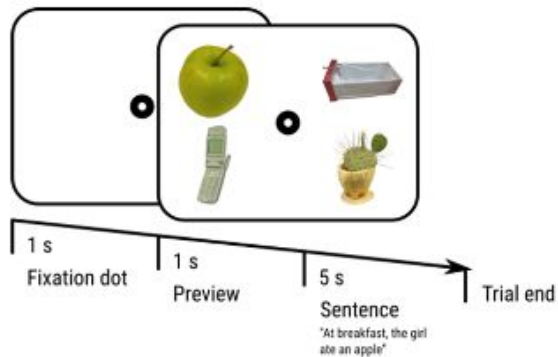
(1) within subject design

(2) between subject design

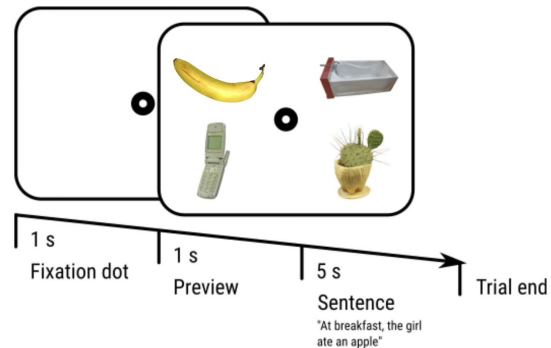
randomization:

random ordering of stimuli within
OpenSesame

Experimental procedure replicaton



- 64 images
16 critical instructions
32 trials
- 16 full match
 - 16 semantic match



FULL MATCH

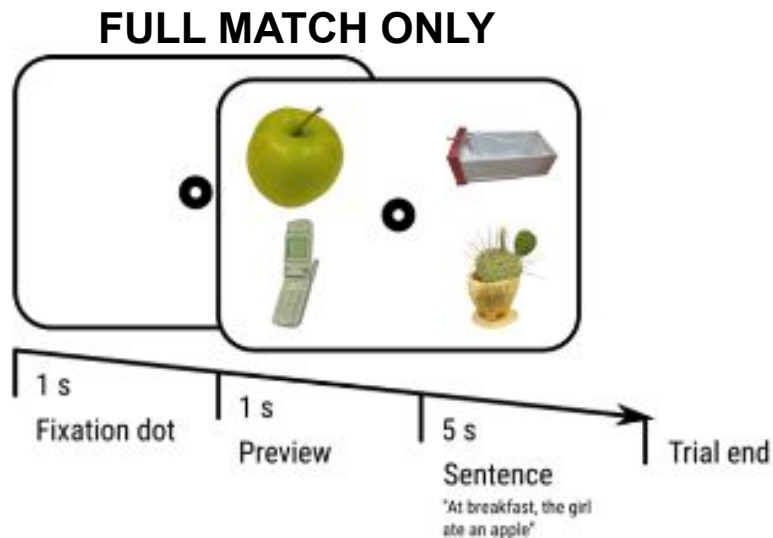


At the casino,
the girl picked the card.

SEMANTIC MATCH



Experimental procedure “testballoon”



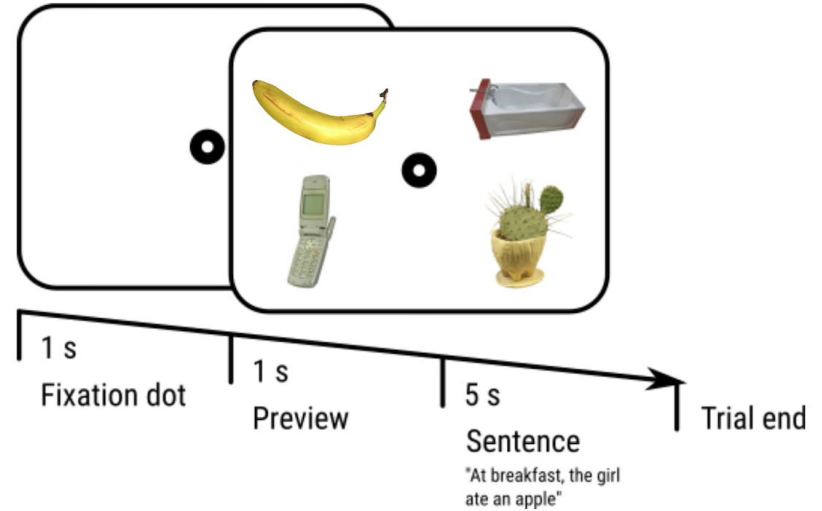
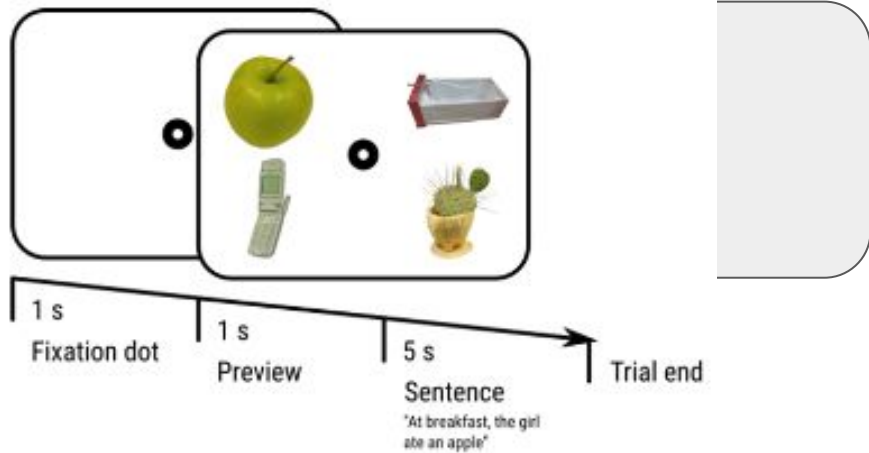
- 64 gifs
- 16 critical instructions
- 16 trials
 - full match only



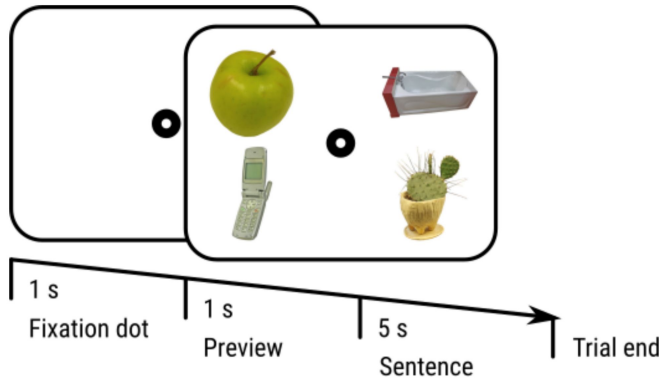
At the casino,
the girl picked the card.



Experimental procedure



Static stimuli



Full match: "At breakfast, the girl ate an **apple**".

Semantic match: "At breakfast, the girl ate a **banana**".

Stimuli with motion



"The person washed a green apple".

"The girl picked up the phone".

"I got stung by a cactus".

"The man takes a bath".

At the casino, the girl picked the card



At the farm, the girl picked the egg.



NOTES:

- (1) Between subject design for test balloon
 - (a) 70% of all participants: replication
 - (b) 30% of all participants: test balloon
- (2) Altmann, G. T., & Kamide, Y. (1999). Incremental interpretation at verbs: Restricting the domain of subsequent reference. *Cognition*, 73(3), 247–264. [http://dx.doi.org/10.1016/s0010-0277\(99\)00059-1](http://dx.doi.org/10.1016/s0010-0277(99)00059-1)

<https://www.sciencedirect.com/science/article/pii/S0010027704001866#bbib6>



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Milestone III

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Karl Jorge Cleres Andreo

central research question

Do people still make anticipatory eye movements¹ when presented images with motion instead of static ones?

1: as presented by Altmann & Kamide, 1999

conditions

(1) static stimuli



(2) stimuli with motion



randomization:

random ordering of stimuli within
OpenSesame

latin square design:

The presentation of the static and motion stimuli is reversed for two groups of participants



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Milestone IV: Pilot data

Yanhong Xu

Elif Dilara Aygün

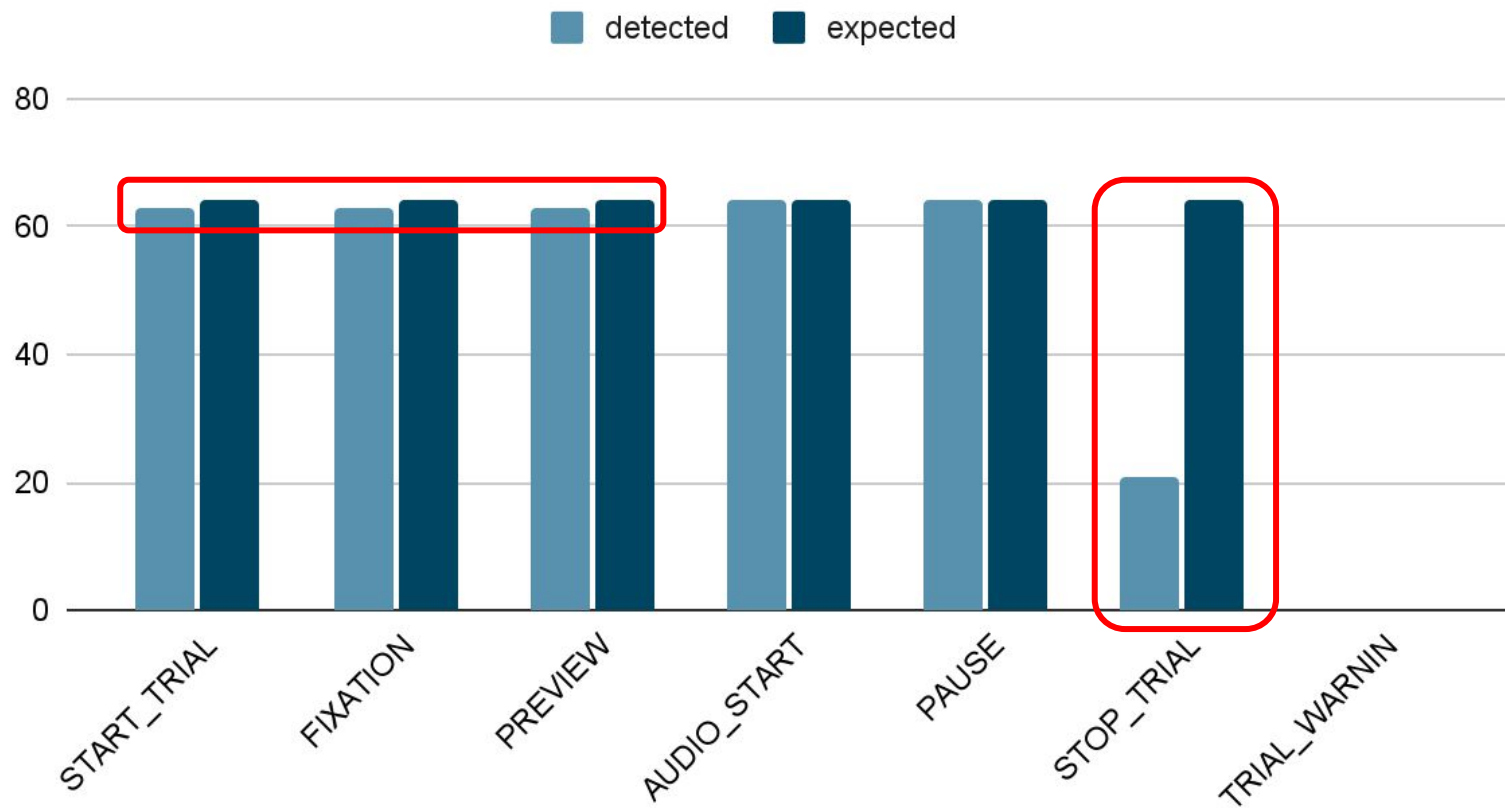
Karl Jorge Cleres Andreo

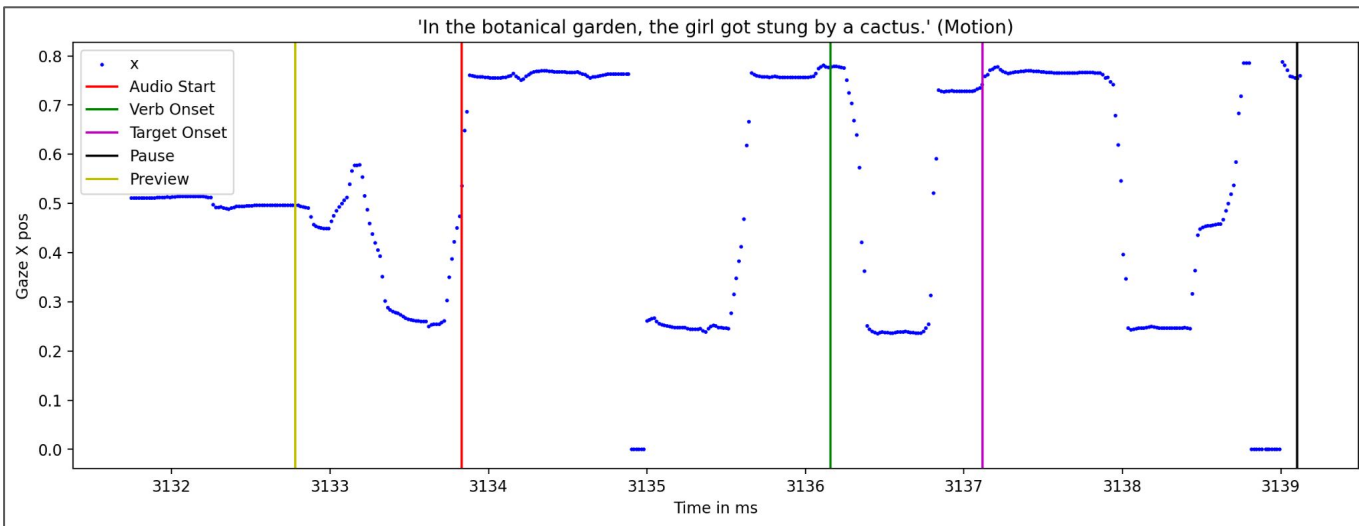
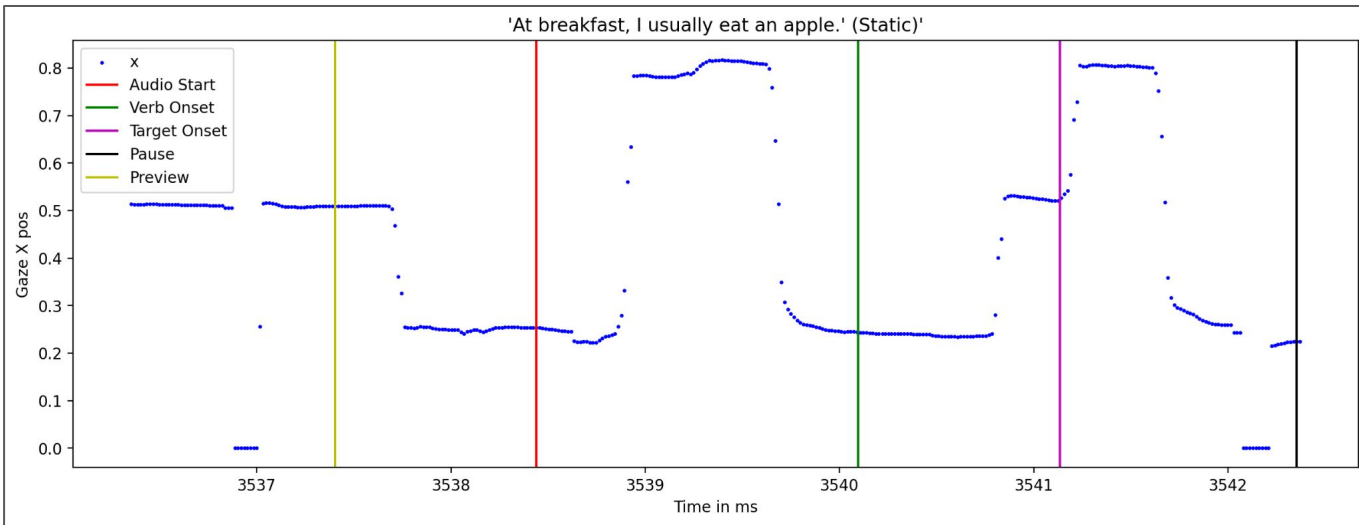
Sanity Checks

- Issues we encountered:
 - Not everything was logged
- Assumption: psychopy was not working on lab computer, had to change to pygame (legacy) last minute
- Balancing/Randomization errors:

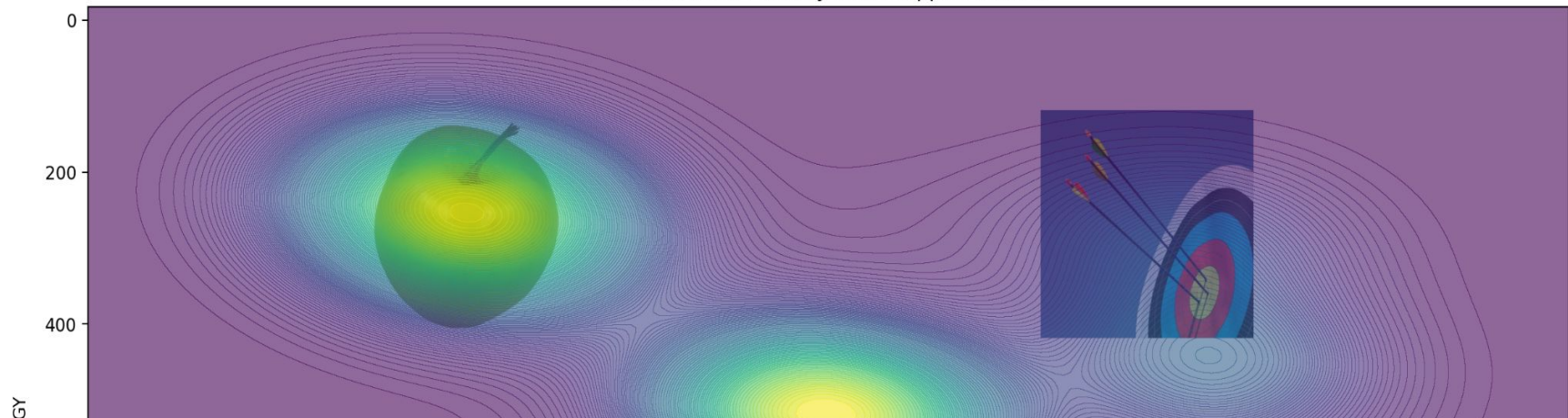
We only had 1 trial run, so there was not much to balance / randomize.

Logs

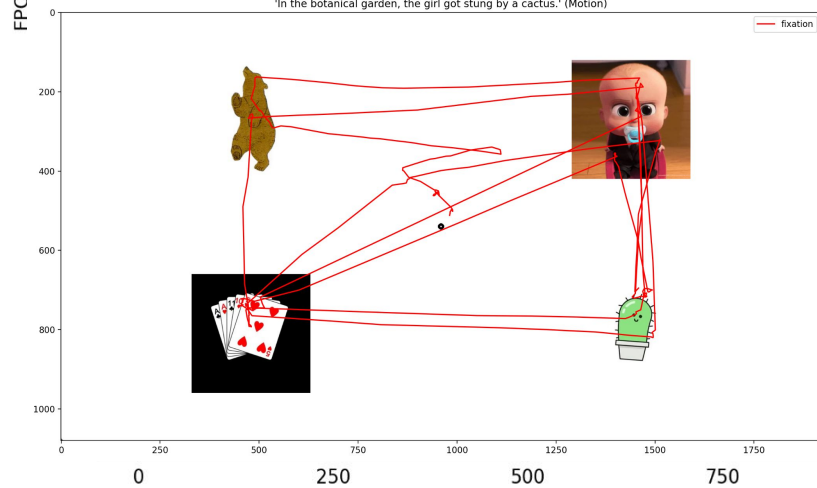




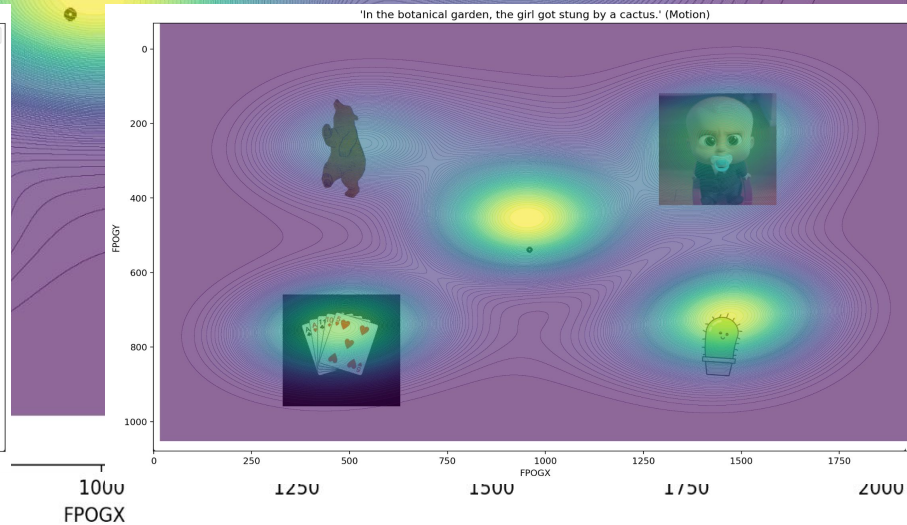
'At breakfast, I usually eat an apple.' (Static)



'In the botanical garden, the girl got stung by a cactus.' (Motion)



'In the botanical garden, the girl got stung by a cactus.' (Motion)



Takeaway lessons

- Remove fixation dot when stimuli are being shown
- Make sure, there is only one matching object per stimulus
- Some gifs are faster on the lab computer → slow down
- Discuss PyGame vs. PsychoPy Kernel (lab computer)



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Milestone V: Analysis Pipeline

Yanhong Xu

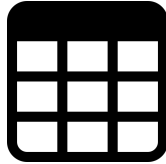
Elif Dilara Aygün

Karl Jorge Cleres Andreo

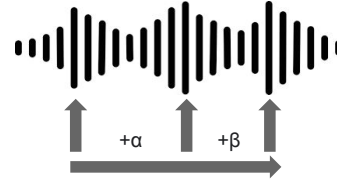
Preprocessing and analysis pipeline



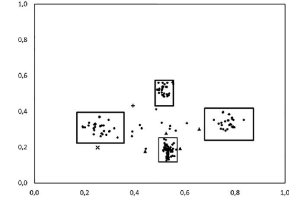
1. Fixation detection
alg. (velocity based)



2. log parsing
(to dataframe)



3. compute verb/
critical word onsets



4. analyze areas
of interest

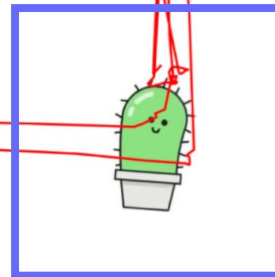
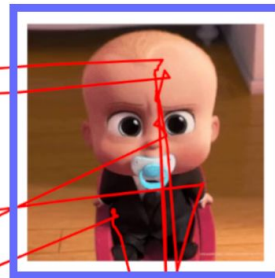
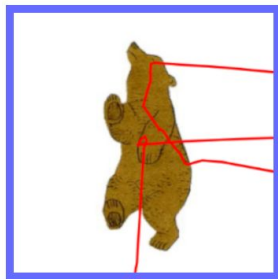
Metrics

$$\frac{\text{fixations on target}}{\text{total fixations}}$$

- more noise resistant compared to looking at first saccade movement after onset

1920 x 1080 px

— fixation



sub stimulus
300 x 300 px

areas of interest
350 x 350 px

Expected results

- overall, higher amount of fixations on targets (see pilot data)
- % of fixations on target lower for motion stimuli

Preliminary results

- Scanpath plots
- total amount of samples at main area of interest vs. rest of screen

Visualizations

- heat maps
- scanpath plots

Preliminary results

- Scanpath plots
- total amount of samples at main area of interest vs. rest of screen