## **Prompt Exploration**

## **MODÈLES**

Les modèles testés sont les suivants :

- llava:7b	(7b)
- llava:13b	(13b)
- llava:34b	(34b)
- llava-llama3	(8b)
- llama3.2-vision	(11b)
- gemma3:4b	(4b)
- gemma3:12b	(12b)
- gemma3:27b	(27b)

Les résultats observés sur 13 prompts sont les suivants :

- llama3.2-vision a obtenu les meilleurs scores pour chaque prompt testé
- les modèles llava ont tendances à obtenir les pires résultats en moyenne

gemma3:12b	gemma3:27b	gemma3:4b	llama3.2-vision	llaya	llava-llama3	llaya:13b	llaya:34b	
31	30	29			22	28	20	
26	27	18	33	19	17	21	14	
28								
26	33	21	30	25	24	25	17	
29	33	23	39	25	26	26	22	
18	11	13	23	12	11	11	11	
22	22	23	32	17	22	20	23	
27	32	24	37	24	13	25	22	
29	31	. 27	36	27	22	25	26	
34	35	28	38	17	26	23	21	
36	35	27	36	24	24	26	25	
30			37			•		
31			33					
367	381	306	449	288	278	306	274	TOTAL
3	2	4	1	6	7	4	8	
Max	Max-1	Max-2	Max-3-5		Min+3-5	Min+2	Min+1	Min

- la taille des modèles semble avoir un impact assez imprévisible, par exemple pour llava on a eu les résultats suivants llava:34b < llava:7b < llava:13b, donc le plus grand modèle a eu les pires résultats et le modèle de taille moyenne a eu les meilleurs résultats. Pour gemma3 les scores ont suivi la taille du modèle.

Mais 1	les tai	gemma3:27b semma	gemma3:4b na	ıt réu	ssir/ra	nter su	ır diff	érent	es in	nages,	gemma3:12bd	gemma3:27bax	gemma3:4b					
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<sup>-</sup> La plupart du temps gemma3:12b réussit à identifier correctement 2.png mais pas 7.png alors que gemma3:27b réussit à identifier correctement 7.png mais pas 2.png.

llava et gemma réussissent/ratent sur différentes images, par exemple :

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	04.png										39	).p	ng	<u> </u>			

<sup>-</sup> La plupart du temps les modèles llava réussissent à identifier 04.png mais pas 39.png alors que gemma3 réussissent à identifier 39.png mais pas 04.png.

# LONGUEUR DE LA RÉPONSE

Les réponses longues ont tendance à obtenir des résultats un petit peu mieux en moyenne d'après notre méthode d'évaluation (test si un des termes correct est présent dans la réponse), mais cela est au prix des conséquences suivantes :

- le temps d'exécution est beaucoup plus long (à peu près 3 fois plus longueur d'après nos observations)
- la réponse est beaucoup plus descriptive, donc elle à tendance à inclure des éléments qui nous sont inutiles tel que le robot, donc en pratique sa semble beaucoup moins exploitable que une réponse brève avec juste l'objet.

À cause de ces raisons nous ne comptons pas tester plus de prompts avec des réponses longues.

#### CONTENU DU PROMPT

Si un bras robot tient l'objet à identifier et prend une partie significative de l'image, il vaut mieux indiquer dans le prompt qu'il faut ignorer le bras robot ou donner un scénario dans lequel il est normal que le bras soit présent affin d'éviter que le modèle essaye d'identifier le bras au lieu de l'objet.

prompt	gemma3:12b	gemma3:27b	gemma3:4b  lla	ma3.2-vision	llaya II	lava-llama3	laya:13b	laya:34b	TOTAL
Act as a robotic assistant that identifies tools. What is in your grip?	31	30	29	40	25	22	28	20	225
Based on what you see, you must identify the object. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object.	28	30	24	35	25	21		25	213
Identify the item in the image	26	33	21	30	25	24		17	201
Ignore the robotic arm. Focus only on the object being held. Identify it.	29	33	23	39	25	26	26	22	223
What is the object in the image? Answer with a single word.	18	11	13	23	12	11		11	110
What is the object in the image? Ignore the robot arm, focus on the object, Answer with a single word.	22	22	23	32	17	22		23	181
You are a robot. Based on what you see, you must identify the object. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object	. 29	31	27	36	27	22		26	223
You are a warehouse robot sorting objects. What are you holding?	34	35	28	38	17	26		21	222
You are analyzing this image to detect the item held. Disregard the arm or background clutter.	36	35	27	36	24	24		25	233
You must identify the object. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object.	30	29	25	37	26	23	26	24	220
Your task is to classify the item. Do not describe the robot or background.	31	33	24	33	22	27	25	24	219
mentions the need to ignore the robot / robot arm									
doesn't mention the need to ignore the robot / robot arm									
doesn't mention the need to ignore the robot / robot arm, HOWEVER it gives a setting in which it is normal to have a robot arm									

Il est également possible de donner un contexte dans lequel il est normal d'avoir un bras robot tenant un objet, par exemple le prompt "Act as a robotic assistant that identifies tools. What is in your grip?"

Par exemple les prompts suivants diffèrent juste par la mention "You are a robot." au début du prompt ainsi que "You will see a robotic arm in the image, but IGNORE IT, focus on the object." :

prompt	gemma3:12b	gemma3:27b	gemma3:4b	Ilama3.2-vision	Ilaya	llava-llama3	Ilaya:13b	Ilaya:34b	TOTAL
Based on what you see, you must identify the object. Be concise, identify the object.	26	2	7 18	33	3 1	9 17	7 2:	1 14	17
Based on what you see, you must identify the object. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object.	28	3	) 24	35	5 2	5 21	L 2	5 25	21
You are a robot. Based on what you see, you must identify the object. Be concise, identify the object.	27	7 3	2 24	37	7 2	4 13	3 2	5 22	20
You are a robot. Based on what you see, you must identify the object. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object.	29	3	L 27	36	3 2	7 27	2 2	5 26	22

On observe que quelqu'une des 2 mentions améliore les résultats lorsque ajoutées. Notamment le prompt avec aucune des 2 mentions est bien pire, et celui avec les 2 mentions à les meilleurs scores

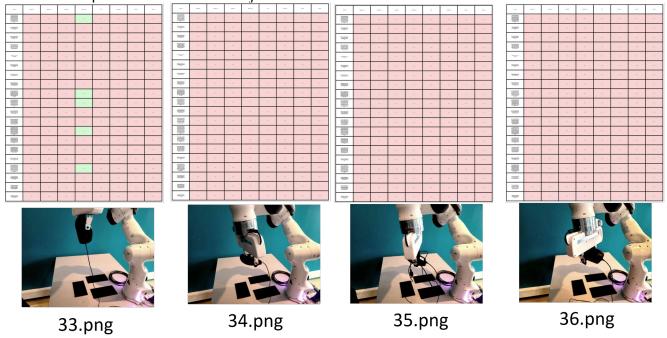
Pour les images sans bras robotique (images 48 à 60) cette mention erronée ne semble pas avoir d'impact.

Les modèles ont souvent tendance à détecter correctement/incorrectement toutes images d'un même objet, par exemple



ici llama3.2-vision détecte correctement toutes les images de mug et aucune des images de l'assiette.

Certaines images ne sont jamais identifiées correctement, par exemple presque toutes les images de souris tenues par le bras robot ne sont jamais reconnues



Parfois ils détectent que c'est un objet tenu par le bras mais n'arrivent pas à l'identifier, parfois ils pensent que c'est une partie du robot (probablement à cause de la couleur)

prompt: "Ignore the robotic arm. Focus only on the object being held. Identify it."

model: llama3.2-vision

image: 34.jpg

réponse : "The object being held by the robotic arm appears to be a small, rectangular piece of black material. It is likely a piece of plastic or metal, possibly used for testing or demonstration purposes. The object's shape and size suggest that it may be a component of a larger device or system, but without more information, it is difficult to determine its exact purpose or function."

prompt: "You are a robot. You are analyzing this image to detect the item held. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object."

mage, but IGNORE 11, focus on the object. Be concise, identify the object model: llava:7b

model : Ilava:7t image : 37.png

réponse : "The object in the image is a robotic arm with a camera mounted on it."

Les 3 rectangles visibles sur la table posent parfois problèmes car le modèle commence à les décrire, par exemple :

prompt: "You are a robot. Based on what you see, you must identify the object. Be concise, identify the object."

image: 28.jpg

modèle : llama3.2-vision

réponse : "The object in the image appears to be a collection of black cards or rectangles, possibly used for educational or artistic purposes. The cards are arranged on a flat surface and have a uniform size and shape. They may be made of cardboard, paper, or another material. Without more context, it is difficult to determine their exact purpose or meaning."

### MEILLEURS PROMPTS TROUVES

En se basant sur les meilleurs prompts trouvés plus haut, on a testé quelques combinaisons des parties qui avaient l'air de fonctionner.

Les 7 prompts testés ont les meilleurs scores trouvés jusqu'à présent, ils ont tous des scores assez proches.



Le prompt suivant est le meilleur retenu pour la suite des tests :

"You are a robot. Based on what you see, you must identify the object gripped in your robotic arm. Disregard the arm and background clutter, focus on the object. Be concise, identify the object."

### **RÉSULTATS SUR LES 20 PROMPTS**

	2.12	2 271	2.0				11 431	. 24		
	gemma3:12b	gemma3:2/b	gemma3:4b	llama3.2-vision	Ilaya	llava-llama3	llaya:13b	Ilaya:34b		
Act as a robotic assistant that identifies tools. Based on what you see, you must identify the object gripped in your robotic			25	40	_			20	244	
arm. Disregard the arm and background clutter, focus on the object. Be concise, identify the object.	32				2:				241	
Act as a robotic assistant that identifies tools. What is in your grip?	31				2		2 2	3 20	225	
Based on what you see, you must identify the object. Be concise, identify the object.	26	27	18	33	1	9 1	7 2	1 14	175	19
Based on what you see, you must identify the object. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object.	28					5 2	1 2	5 25	213	15
Identify the item in the image	26						4 2	5 17	201	
Ignore the robotic arm. Focus only on the object being held. Identify it.	29	33	23	39	2	5 2	4 2: 6 2:	5 22	223	11
What is the object in the image? Answer with a single word.	18	11	13	23	1:	2 1			110	20
What is the object in the image? Ignore the robot arm, focus on the object, Answer with a single word.	22	2 22	23	32	1	7 2	2 2	23	181	18
You are a robot. Based on what you see, you must identify the object gripped in your robotic arm. Disregard the arm and background clutter, focus on the object. Be concise, identify the object.	36	36	28	40	2	7 2	7 2	28	248	1
You are a robot. Based on what you see, you must identify the object gripped in your robotic arm. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object.	35				2:	8 2	5 2		245	
You are a robot. Based on what you see, you must identify the object. Be concise, identify the object.	2	7 32	24	37	2.	4 1	3 2	5 22	204	16
You are a robot. Based on what you see, you must identify the object. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object.	29	31	. 27	36	2	7 2	2 <b>2</b> !	5 26	223	11
You are a robot. You are analyzing this image to detect the item held. Based on what you see, you must identify the object gripped in your robotic arm. Disregard the arm and background clutter, focus on the object. Be concise, identify the object.	34	1 33	27	41	2	7 2	4 2	6 26	238	7
You are a robot. You are analyzing this image to detect the item held. Disregard the arm and background clutter, focus on the object. Be concise, identify the object.	34	1 34	31	. 37	2	8 2	6 2	8 30	248	
You are a robot. You are analyzing this image to detect the item held. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object.	33				2		5 2	7 30		
You are a warehouse robot sorting objects. What are you holding?	34	1 35	28	38		7 2	6 2	3 21	222	12
You are analyzing this image to detect the item held. Based on what you see, you must identify the object gripped in your robotic arm. Disregard the arm and background clutter, focus on the object. Be concise, identify the object.	35				2	7 2		6 28		
You are analyzing this image to detect the item held. Disregard the arm or background clutter.	36	35	27	36	2.	4 2	4 2	6 25	233	8
You must identify the object. You will see a robotic arm in the image, but IGNORE IT, focus on the object. Be concise, identify the object.	30	) 29	25	37	2	6 2	3 2	6 24	220	13
Your task is to classify the item. Do not describe the robot or background.	31	1 33	24		2:					1
	606	619	500	730	482	2 45	6 492	2 472	TOTAL	
	3	3 2	4			6	3	5 7		RANK
	Max	Max-1	Max-2	Max-3-5		Min+3-5	Min+2	Min+1	Min	