

# Multimodal CL and NLP: Combining Language and Vision for (Computational) Semantics

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## Links to Further Works I

- ▶ FoodieQA: A Multimodal Dataset for Fine-Grained Understanding of Chinese Food Culture [Li et al., 2024]
- ▶ Cola: Large Language Models are Visual Reasoning Coordinators [Chen et al., 2023b, Chen et al., 2023a]
- ▶ Improving language-supervised object detection with linguistic structure analysis [Rai and Kovashka, 2023]
- ▶ Linguistic Structures as Weak Supervision for Visual Scene Graph Generation [Ye and Kovashka, 2021]
- ▶ Clue: Cross-modal Coherence Modeling for Caption Generation [Alikhani et al., 2020] [Alikhani et al., 2022]
- ▶ Can Language Models Encode Perceptual Structure Without Grounding? A Case Study in Color [Abdou et al., 2021]
- ▶ Benchmarking Vision Language Models for Cultural Understanding [Nayak et al., 2024]
- ▶ Situated Instruction Following [Min et al., 2024]

# References I



Abdou, M., Kulmizev, A., Hershcovich, D., Frank, S., Pavlick, E., and Søgaard, A. (2021).  
Can language models encode perceptual structure without grounding? a case study in color.  
In *Proceedings of the 25th Conference on Computational Natural Language Learning*, pages 109–132.



Alikhani, M., Han, F., Ravi, H., Kapadia, M., Pavlovic, V., and Stone, M. (2022).  
Cross-modal coherence for text-to-image retrieval.  
In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 36, pages 10427–10435.



Alikhani, M., Sharma, P., Li, S., Soricut, R., and Stone, M. (2020).  
Cross-modal coherence modeling for caption generation.  
In Jurafsky, D., Chai, J., Schluter, N., and Tetreault, J., editors, *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*, pages 6525–6535.



Chen, L., Li, B., Shen, S., Yang, J., Li, C., Keutzer, K., Darrell, T., and Liu, Z. (2023a).  
Language models are visual reasoning coordinators.  
In *ICLR 2023 Workshop on Mathematical and Empirical Understanding of Foundation Models*.



Chen, L., Li, B., Shen, S., Yang, J., Li, C., Keutzer, K., Darrell, T., and Liu, Z. (2023b).  
Large language models are visual reasoning coordinators.  
*Advances in Neural Information Processing Systems*.



Li, W., Zhang, X., Li, J., Peng, Q., Tang, R., Zhou, L., Zhang, W., Hu, G., Yuan, Y., Søgaard, A., Hershcovich, D., and Elliott, D. (2024).  
Foodieqa: A multimodal dataset for fine-grained understanding of chinese food culture.  
*CoRR*, abs/2406.11030.



Min, S. Y., Puig, X., Chaplot, D. S., Yang, T.-Y., Rai, A., Parashar, P., Salakhutdinov, R., Bisk, Y., and Mottaghi, R. (2024).  
Situating instruction following.  
In *ECCV*.

# References II



Nayak, S., Jain, K., Awal, R., Reddy, S., van Steenkiste, S., Hendricks, L. A., Stańczak, K., and Agrawal, A. (2024).  
Benchmarking vision language models for cultural understanding.  
*arXiv preprint arXiv:2407.10920*.



Rai, A. and Kovashka, A. (2023).  
Improving language-supervised object detection with linguistic structure analysis.  
In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, pages 5559–5569.



Ye, K. and Kovashka, A. (2021).  
Linguistic structures as weak supervision for visual scene graph generation.  
In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, pages 8289–8299.