Multimodal Entity Synonym Set Expansion and Visually-Synonyms-Aware Fine-Tuning

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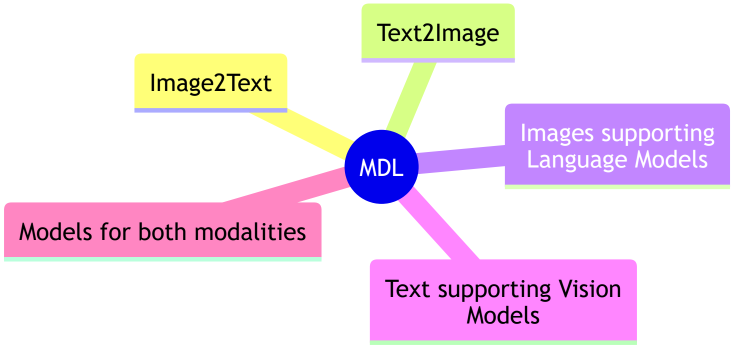
Intro: Multimodal Deep Learning

From: (LMU Munich, Germany)

Research Direction



MDL

Image2Text

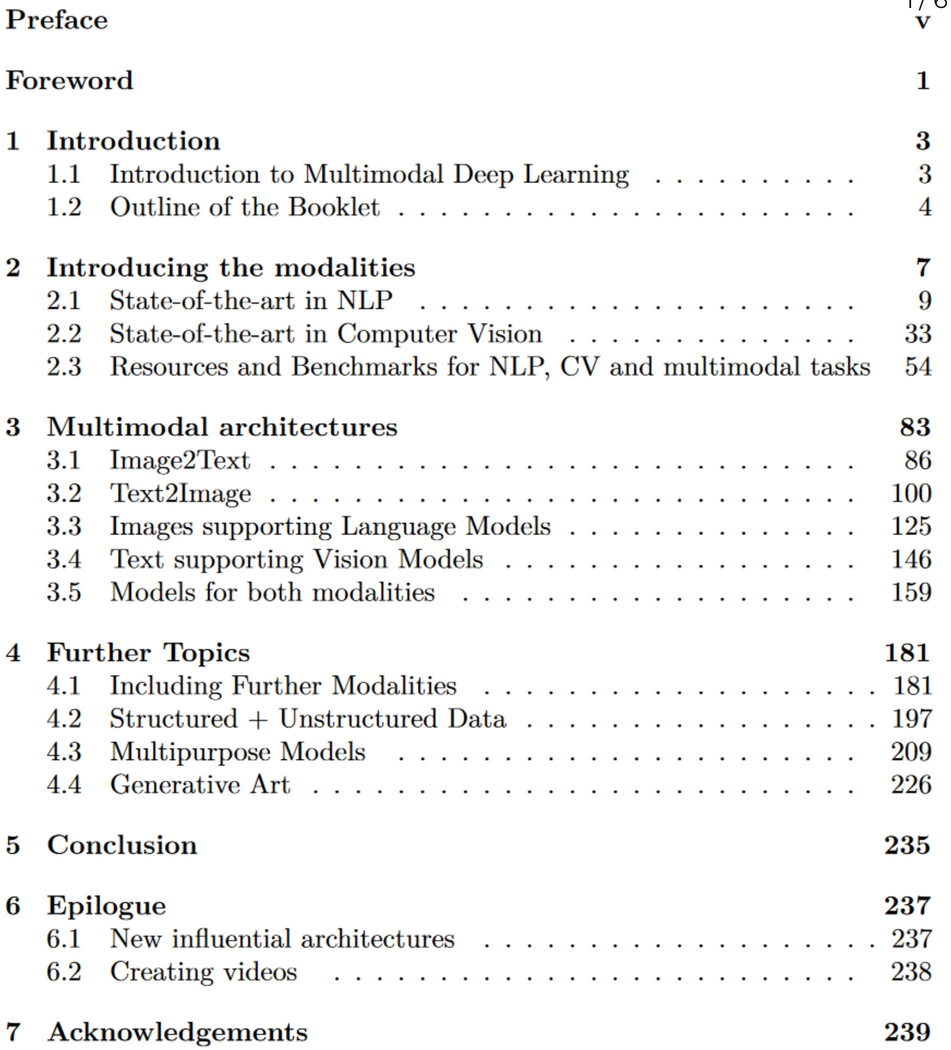
Text2Image

Images supporting Language Models

Models for both modalities

Text supporting Vision Models

Read more about Multimodal Deep Learning



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Words In (Non-Symbolic) Contexts

Symbol Grounding Problem [1]:

- It asserts that it is not possible to understand the meaning (semantics) of a word by just looking at other words because words are essentially meaningless symbols.
- It is possible to understand the meaning only if **the word is put in a context**, **a perceptual space**, other than that of written language: the word **must be grounded in non-symbolic representations, like images**, for example.
- ChatGPT大模型技术争议与符号奠基问题

[1] (Harnad, S. (1990). The symbol grounding problem. 42(1-3):335–346.) ↩

Vokenization[1]

Voken:

we assume a text corpus where each token is aligned with a related image. Hence, these images could be considered as visualizations of tokens and we name them as 'vokens'.

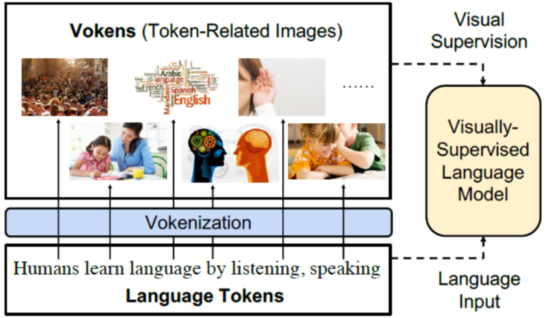
Vokens (Token-Related Images)
Arabic
language
French
Spanish
English
......
Visual Supervision
Visually-Supervised Language Model
Vokenization
Humans learn language by listening, speaking
Language Tokens
Language Input

FIGURE 3.41: From Tan and Bansal (2020). Visually supervised the language model with token-related images, called Vokens.

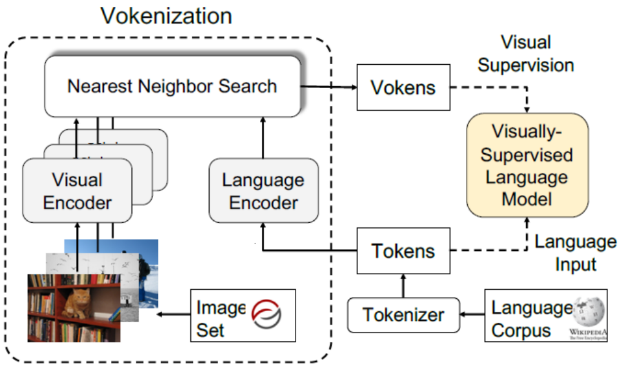

FIGURE 3.43: From Tan and Bansal (2020). The Vokenization process. A contextualized image (visual token, Voken) is retrieved for every token in a sentence and with this visual token, visual supervision is performed.

1. Tan, H. and Bansal, M. (2020). Vokenization: Improving language understanding with contextualized, visual-grounded supervision. ↩

Code Analysis...