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Language and image processing in social media and fashion e-commerce

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Statement of the Problem: It has been our longstanding dream to develop machines that understand languages and images just as humans do. This goal heightens by the explosion of data generation from social media and e-commerce. This talk addresses two tasks: Developing algorithms that process language from social media in a product retrieval setting and jointly processing images and language for fine-grained attribute recognition in the fashion e-commerce domain. These are challenging tasks because user-generated content is extremely noisy and unstructured.

Methodology & Theoretical Orientation: We develop novel textual representations based on the combination of deep learning and the family of latent Dirichlet allocation (LDA) models. Our core insight is that we can learn representations that allow us to connect images and language by leveraging pairs of aligned documents as found on the wild web. Our proposed multi-idiomatic latent Dirichlet allocation (MiLDA) model explicitly takes into account the shared topic distribution between sources, while modeling both the differences and similarities in the language. In addition, our neural network (NN) learns to embed images and text into a shared low-dimensional space where related concepts occupy close-by regions.

Conclusion & Significance: We created statistical models that learn to bridge the cross-idiomatic gap between social media and e-commerce, directly from widely available cheap data on the web. Additionally, our models allow us to semantically connect images and language. We illustrate by the task of cross-modal search, i.e., given a query image, we retrieve words that describe the visual content (image to text), and given a set of textual descriptors, we find images that display such attributes (text to image).

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Procedures for searching information on the internet; role of designs based on artificial intelligence

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The procedures for finding information on the internet are mediated by three main aspects. First, the mode of representation of knowledge, because the search is done by a conceptual content that guides the search designs; second, the specific procedures of heuristics, that is, the patterns or rules that agents or machines must follow so that they have adequate programming to achieve the results they are looking for and; third, there is the task of the agents, who are the ones who select the aims, choose the procedures and evaluate the results. All of this is done in the procedures for searching information on the internet. This is possible by designs based on artificial intelligence. The study of these designs requires research from the artificial sciences. In this sense, this paper starts from the base of the communication sciences conceived as applied sciences of design, therefore, of the sciences of the artificial. Thus, the epistemological point of departure is the representation of knowledge that set aims, which in this case are forms of information on the internet (YouTube, Snapchat, etc.). Then, the methodological component comes in specific ways of finding the information based on the objectives sought with the designs. We have the ontological factor, where agents intervene to achieve the results, based on the representation of knowledge and search methods. It is assumed here that, to design the machine learning procedure, the starting point of the designs is in artificial intelligence. To that end, it is necessary to be clear what the objectives of the search are, to reach the aims drawn with the design. Only then do the machines finish doing what they have been programmed for. The agents intervene at the beginning, for the design aims, and at the end, to evaluate the results obtained.

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