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Séminaire

Equipe « Multimédia »
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Transductive Few-Shot Learning

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Abstract: Despite their unprecedented performances when trained on large-scale labeled data, deep networks are seriously challenged when dealing with novel (unseen) tasks and/or limited labeled instances. This generalization challenge occurs in a breadth of real scenarios and applications. In contrast, humans can learn new tasks easily from a handful of examples, by leveraging prior experience and context. Few-shot learning attempts to bridge this gap, and has recently triggered substantial research efforts. This talk discusses some recent results within this subject. I will start by highlighting recent results, which seriously question the relevance of an abundant and popular meta-learning and episodic-training literature. Then, I will advocate transductive inference, which leverages the statistics of unlabeled data, as a promising venue for few-shot learning. I will detail the information maximization (InfoMax) principle as an example of transductive inference. I will further show simple extensions of this principle, which tackles competitively difficult problems such as few-shot semantic segmentation.

Short bio: Ismail Ben Ayed is currently full professor at the ETS Montreal, where he holds a research Chair on artificial intelligence in medical imaging. He is also affiliated with the University of Montreal Hospital Research Centre (CRCHUM). His interests are in computer vision, machine learning, optimization and medical image analysis algorithms. He has published over 130 articles, with an h-index of 47, along with 2 technical books and 7 approved US patents. Most of his articles are published in the topmost venues in vision, learning, and medical imaging. He gave over 50 invited talks and 7 tutorials at flagship conferences. His team collected several international distinctions, such as the MIDL 2021 best-paper award. Ismail has served as Program Chair for MIDL 2020 and regularly as Area Chair for the MICCAI and MIDL conferences. Also, he serves regularly as reviewer for the main journals of the field, and was selected several times among the top reviewers of prestigious conferences (such as CVPR 2021, NeurIPS 2020 and CVPR 2015).

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