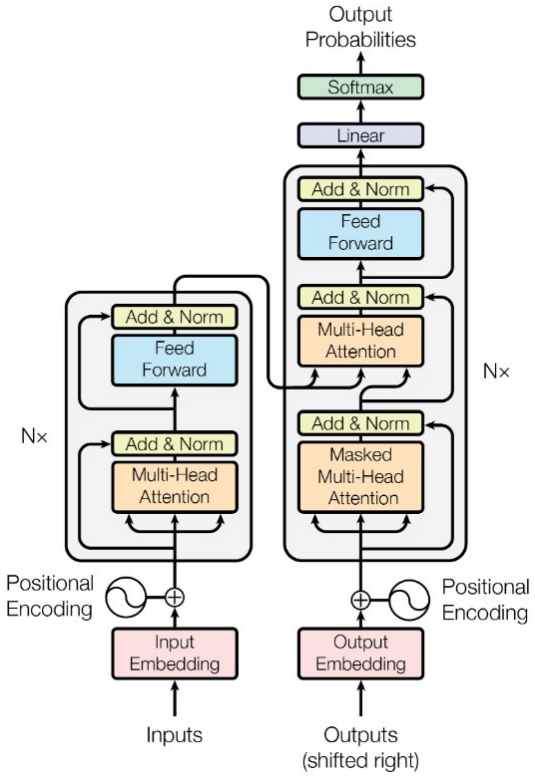
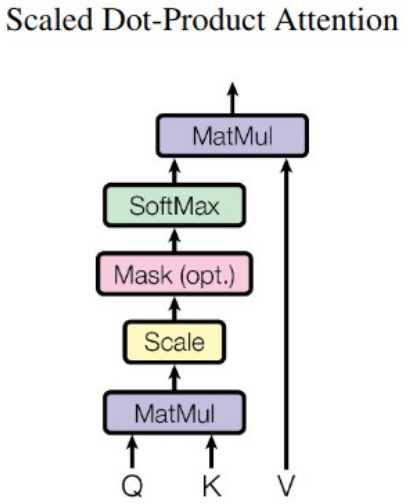
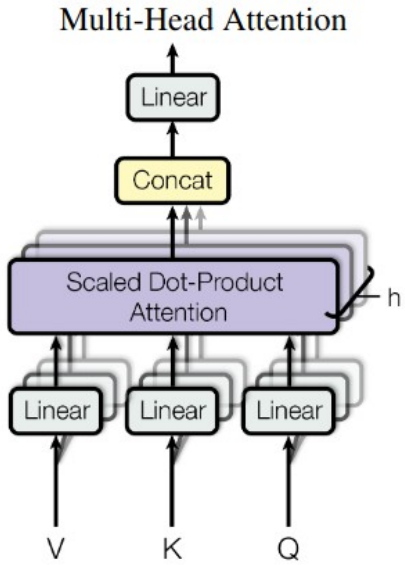
HEXAGON

Visual Transformer

Attention is all you need (Vaswani 2017)







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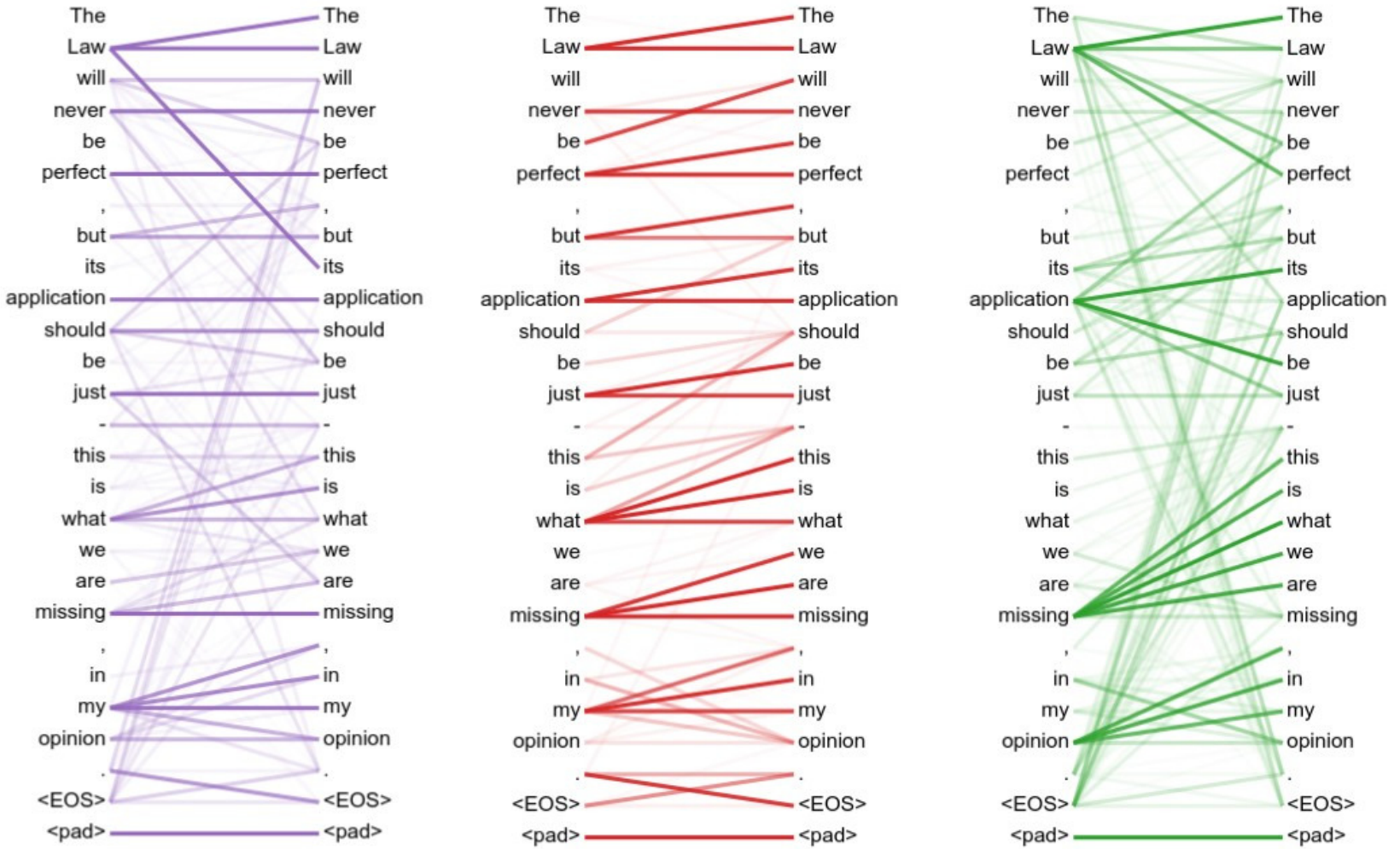
The
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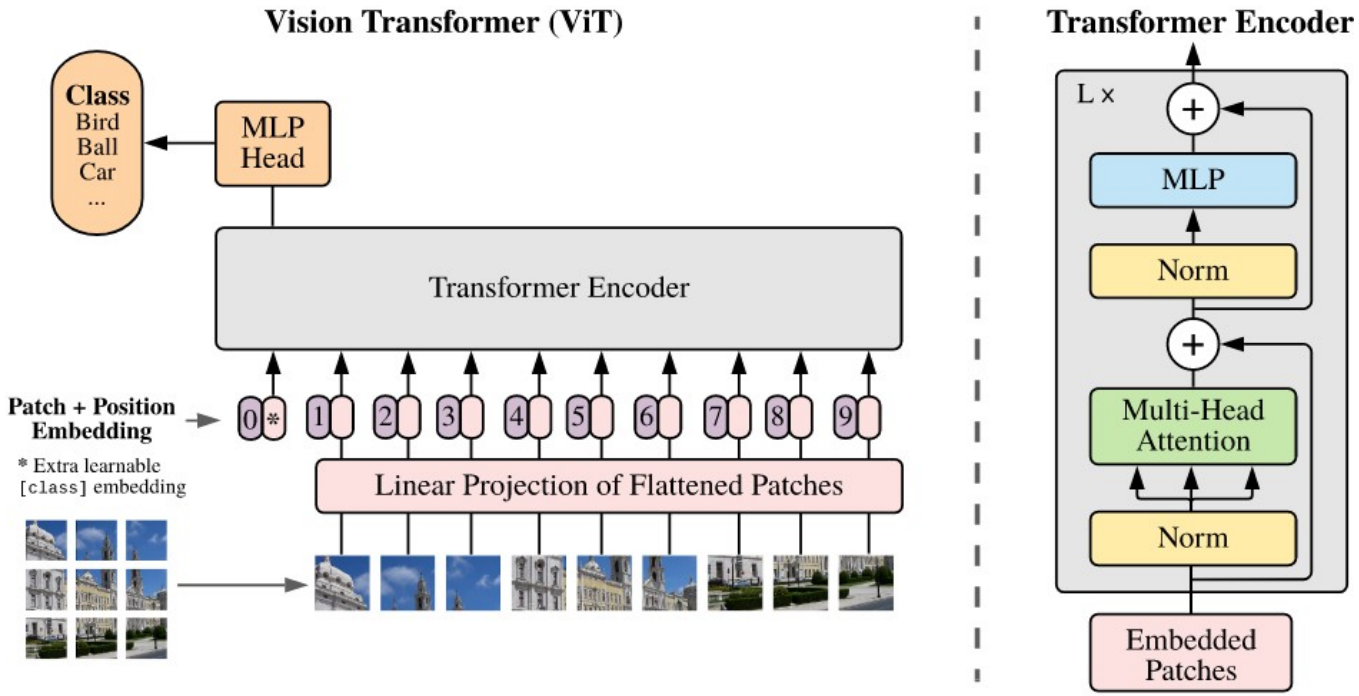
An Image is Worth 16x16 Words: Transformers for Image Recognition at Scale (Dosovitskiy 2020)



- Image comme ensemble de patch (16x16)
- Ajout "faux" token pour classif (BERT, Devlin2019)
- 1D conv sur patch
  + position : ordre rasterization

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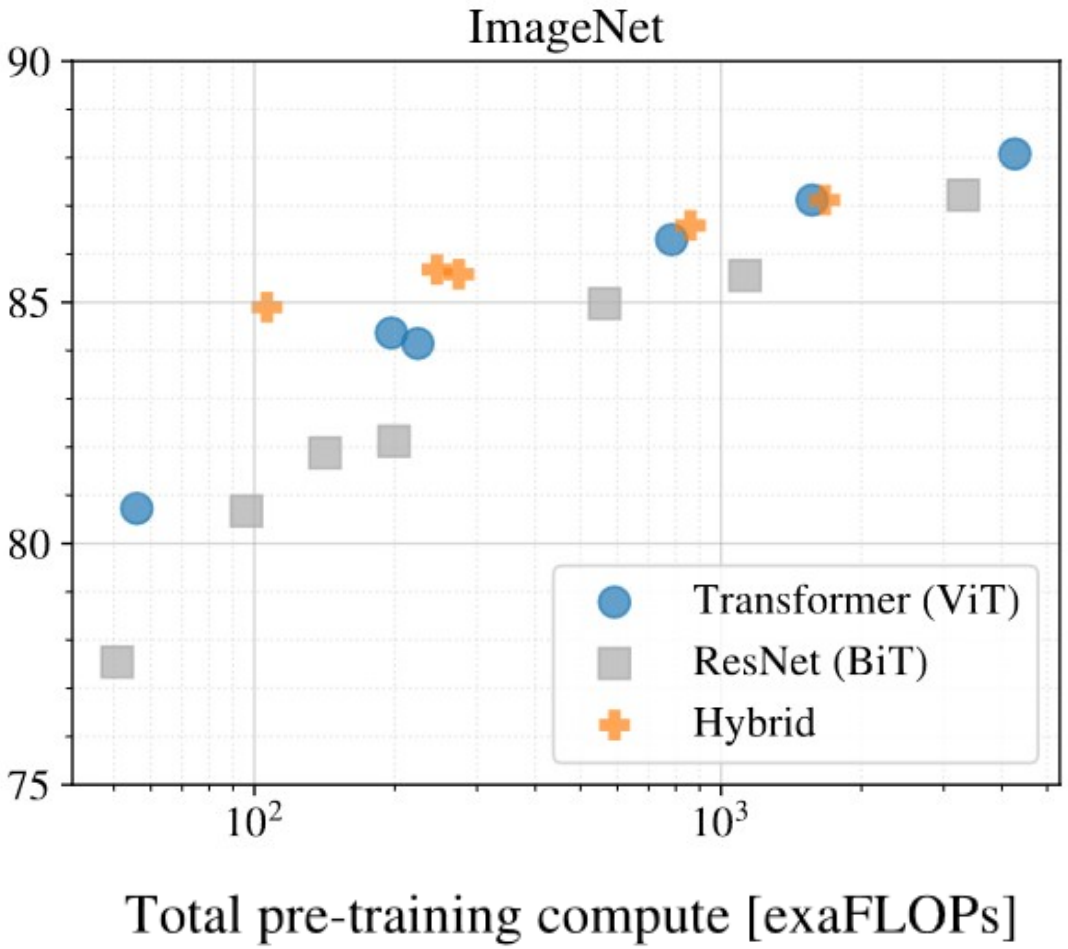
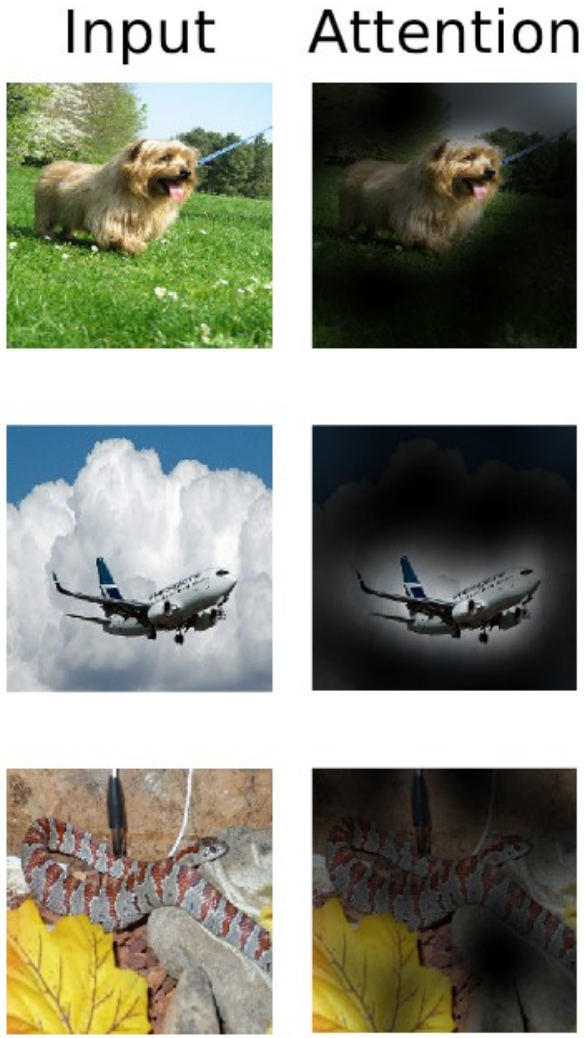

ImageNet
90
85
80
75
10^2
10^3
Transformer (ViT)
ResNet (BiT)
Hybrid
Total pre-training compute [exaFLOPs]


Input
Attention

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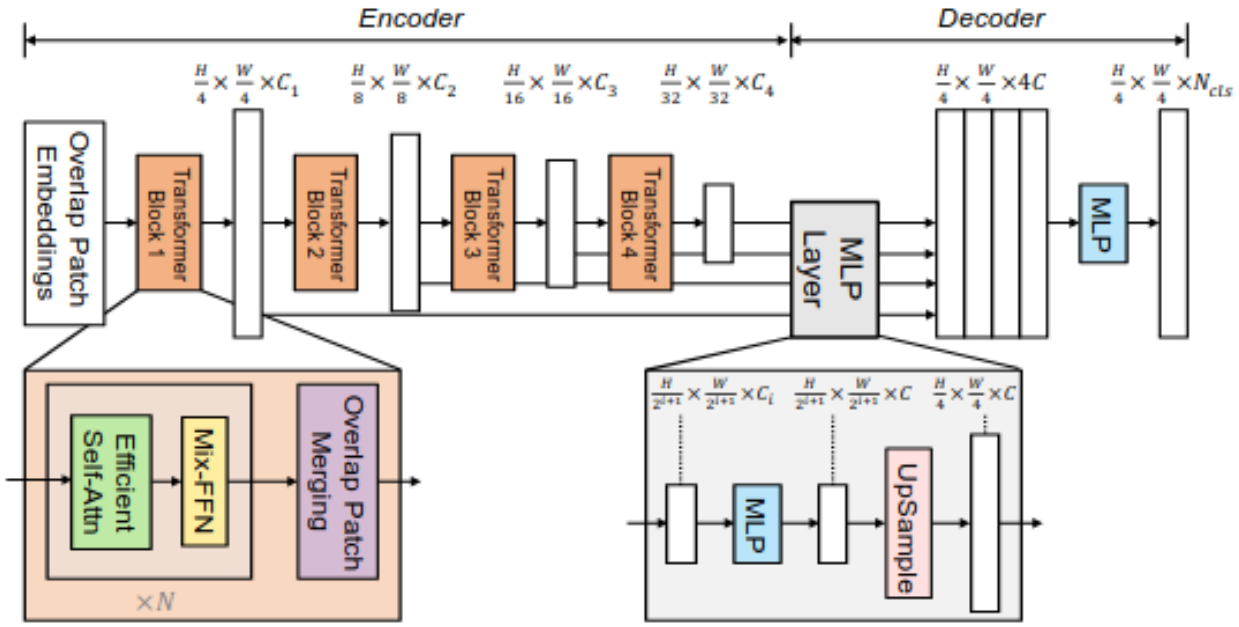
SegFormer: Simple and Efficient Design for Semantic Segmentation with Transformers (Xie 2021)



- Retire l'encodage de la position
- Utilise une fenêtre glissante pour extraire les patchs

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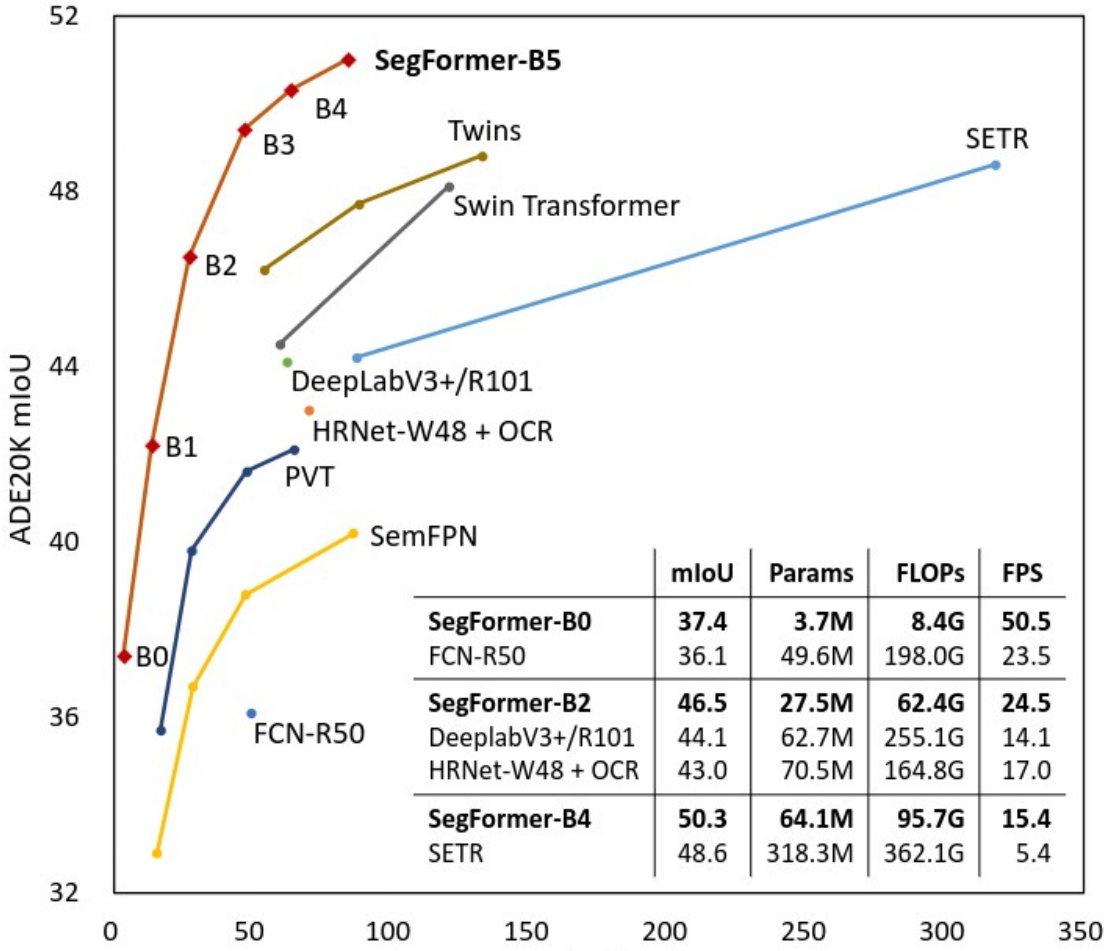

	mIoU	Params	FLOPs	FPS
SegFormer-B0	**37.4**	**3.7M**	**8.4G**	**50.5**
FCN-R50	36.1	49.6M	198.0G	23.5
SegFormer-B2	**46.5**	**27.5M**	**62.4G**	**24.5**
DeeplabV3+/R101	44.1	62.7M	255.1G	14.1
HRNet-W48 + OCR	43.0	70.5M	164.8G	17.0
SegFormer-B4	**50.3**	**64.1M**	**95.7G**	**15.4**
SETR	48.6	318.3M	362.1G	5.4

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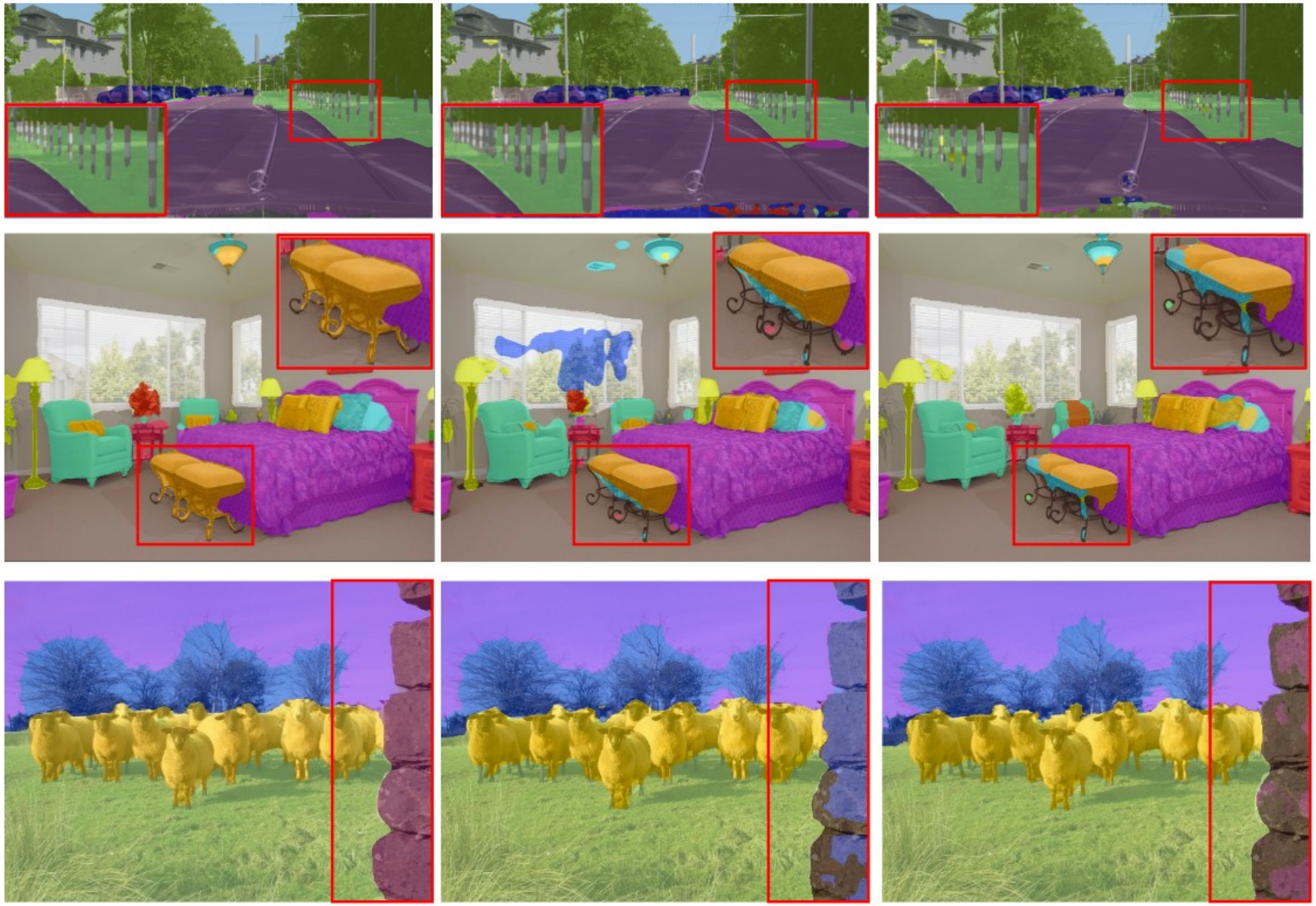

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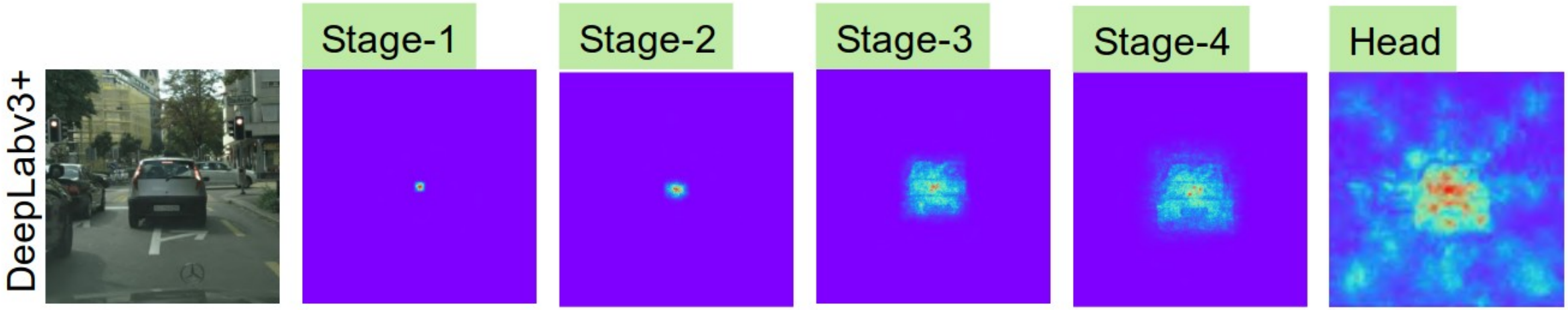
Pourquoi ?



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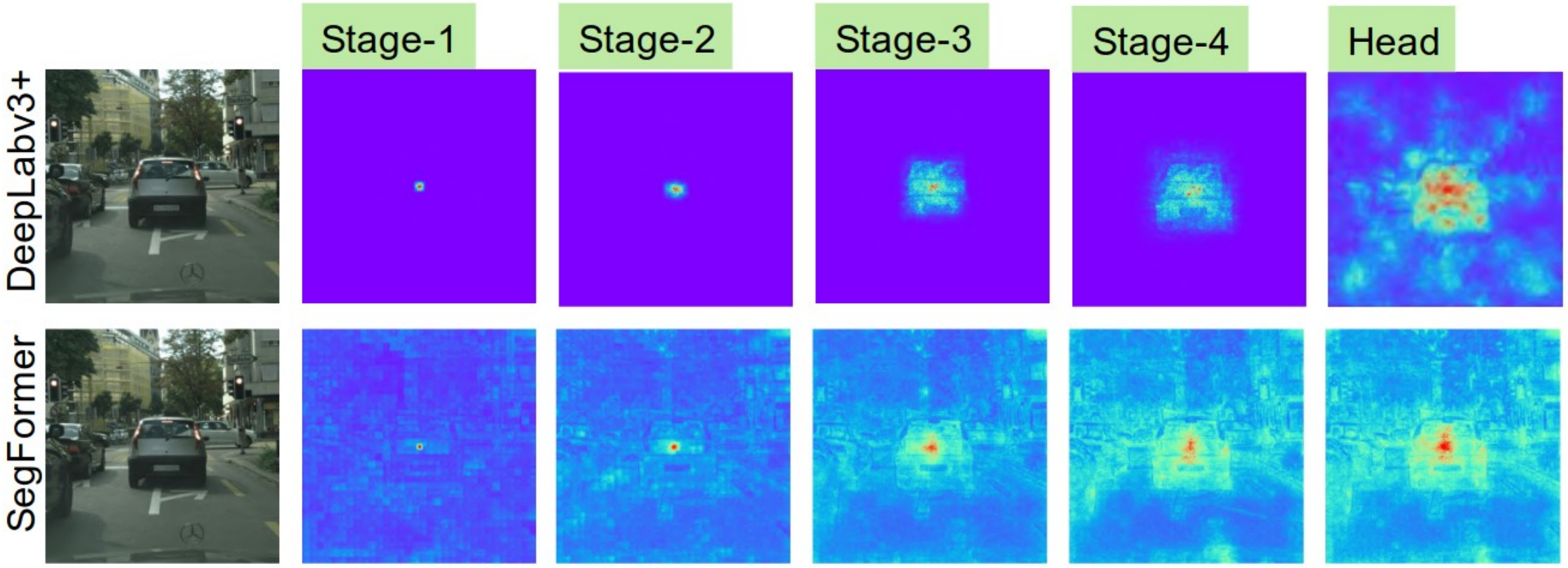
Pourquoi ?



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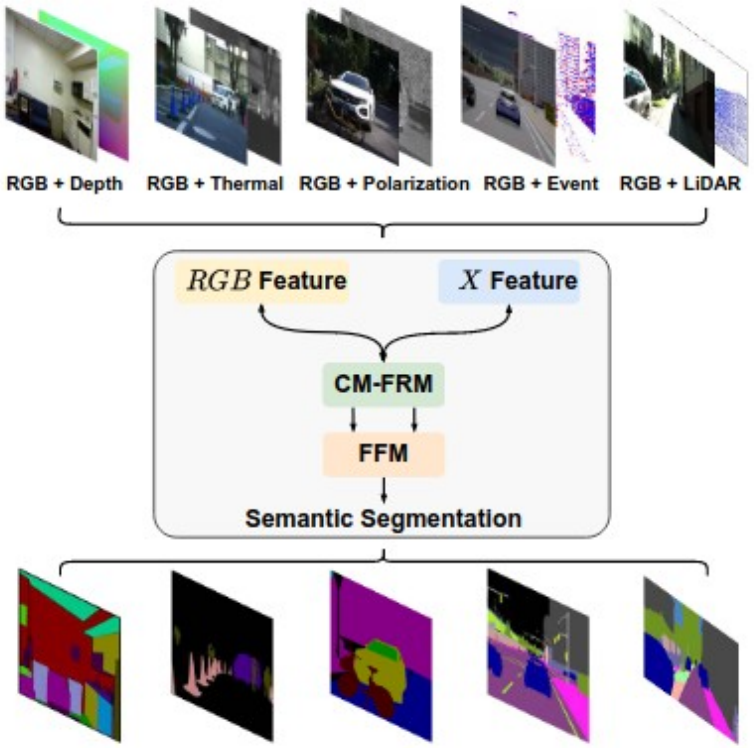
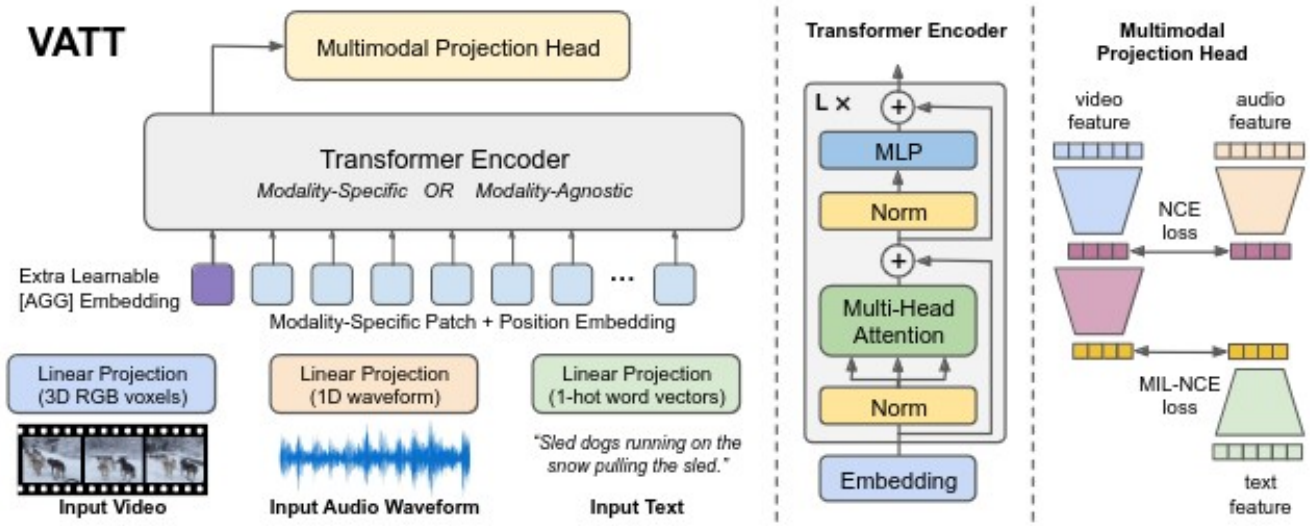
Approche multimodal



CMX (Zhang 22)



VATT (Akbari 21)

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Ref

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"An Image is Worth 16x16 Words: Transformers for Image Recognition at Scale", Alexey Dosovitskiy, Lucas Beyer, Alexander Kolesnikov, Dirk Weissenborn, Xiaohua Zhai, Thomas Unterthiner, Mostafa Dehghani, Matthias Minderer, Georg Heigold, Sylvain Gelly, Jakob Uszkoreit, Neil Houlsby - ICLR2021

"SegFormer: Simple and Efficient Design for Semantic Segmentation with Transformers", Enze Xie, Wenhai Wang, Zhiding Yu, Anima Anandkumar, Jose M. Alvarez, Ping Luo - NeurIPS 2021.

"CMX: Cross-Modal Fusion for RGB-X Semantic Segmentation with Transformers", Jiaming Zhang, Huayao Liu, Kailun Yang, Xinxin Hu, Ruiping Liu, Rainer Stiefelhagen

"VATT: Transformers for Multimodal Self-Supervised Learning from Raw Video, Audio and Text", Hassan Akbari, Liangzhe Yuan, Rui Qian, Wei-Hong Chuang, Shih-Fu Chang, Yin Cui, Boqing Gong – NeurIPS 2021