Restauration des images anciennes par Deep Learning

Projet Image et deep learning

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STEFANOVA Albena

“Old Photo Restoration via Deep Latent Space Translation”

Ziyu Wan, Bo Zhang, Dongdong Chen, Pan Zhang, Dong Chen, Jing Liao, Fang Wen

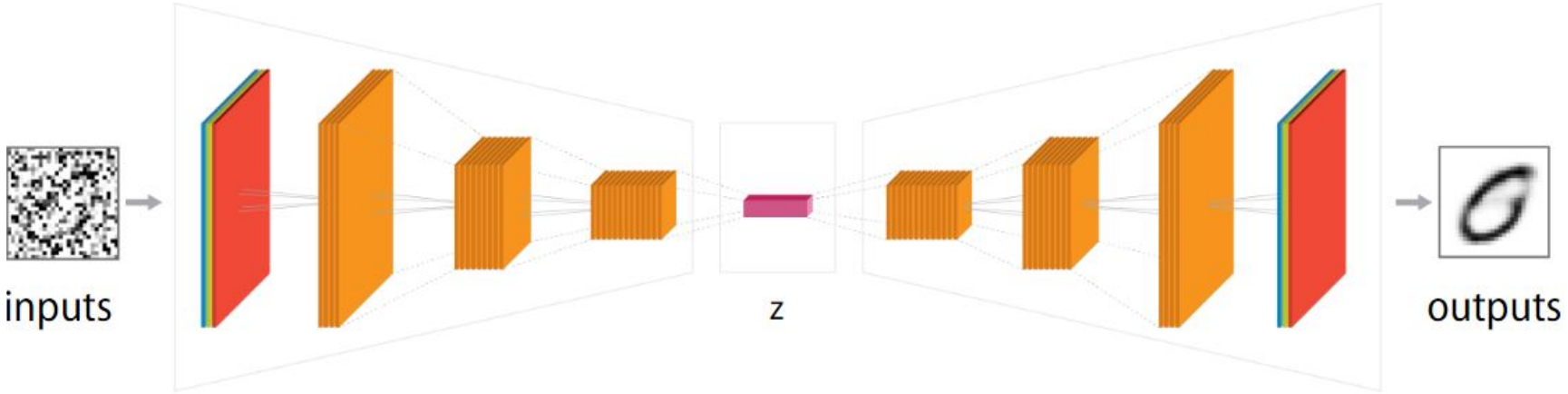
Types de dégradations

- Dégradation Structurée: rayures et taches

- Dégradation non-Structurée: bruit, flou et décoloration

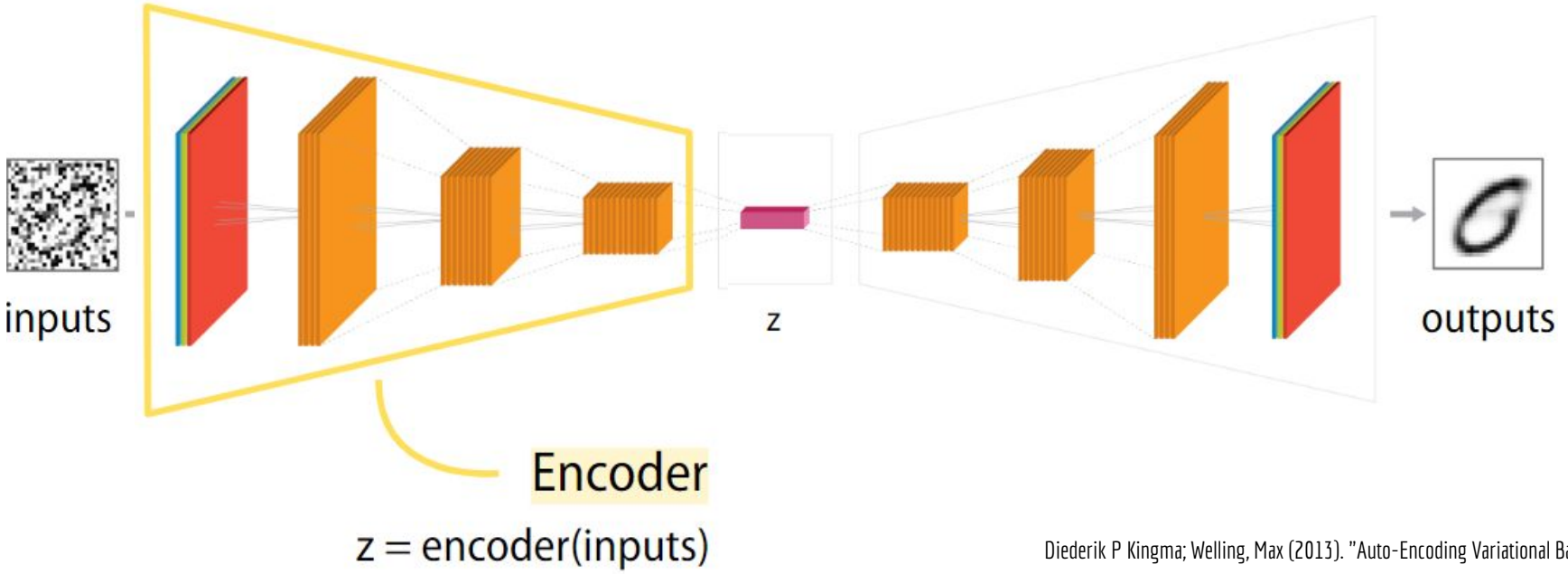
Notre implémentation sans apprentissage profond

Auto-encodeur



Diederik P Kingma; Welling, Max (2013). "Auto-Encoding Variational Bayes".

Auto-encodeur



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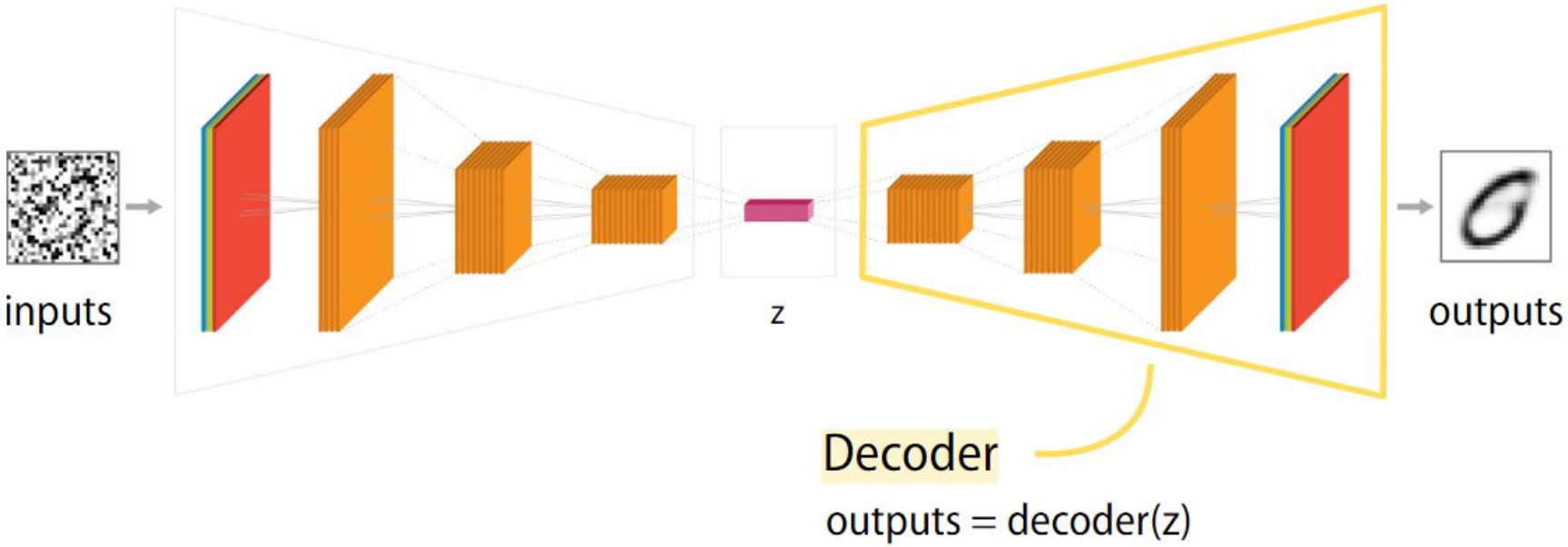
Auto-encodeur



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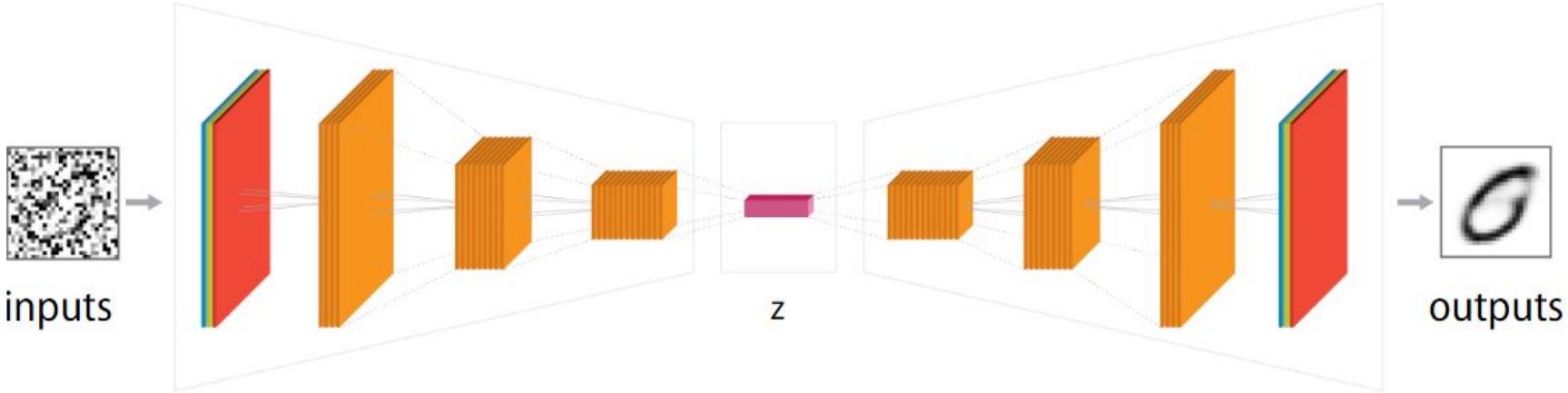
Auto-encodeur



z = encoder(inputs)

outputs = decoder(z)

ae = keras.Model(inputs, outputs)

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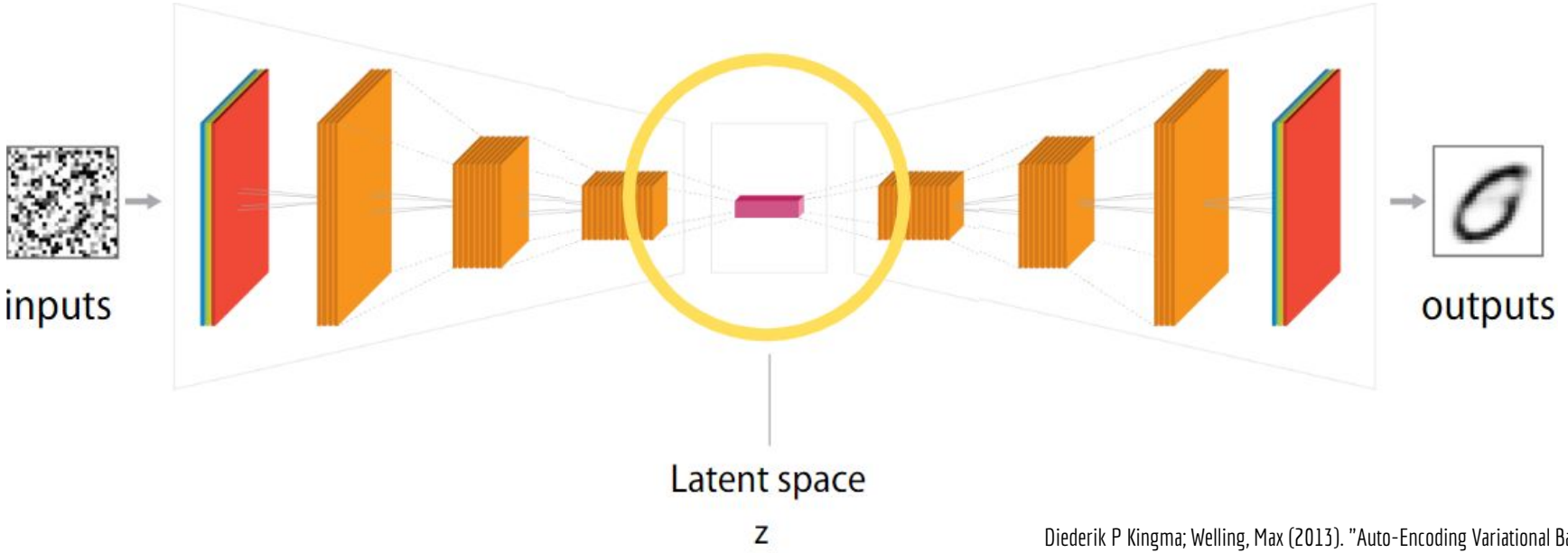
Auto-encodeur



Diederik P Kingma; Welling, Max (2013). "Auto-Encoding Variational Bayes".

Auto-encodeur vs Auto-encodeur Variationnel

(AE)

Binary cross entropy
Mesure la différence entre l'entrée et la sortie

(VAE)

Kullback-Leibler divergence
Mesure à quel point les distributions de probabilité divergent l'une de l'autre

+

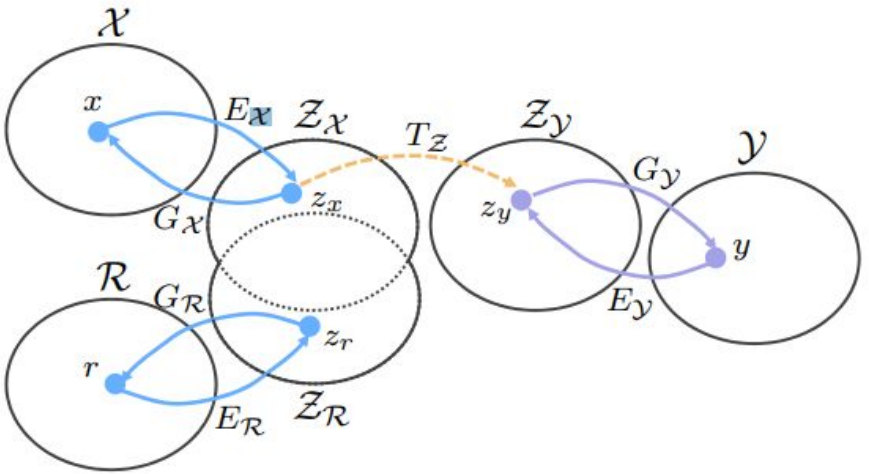
Binary cross entropy

Restauration par Deep Learning

- 3 domaines comme base de notre deep learning

- l'apprentissage au niveau de l’espace latente

- rR→Y = GY ◦ TZ ◦ ER(r)



Merci de votre attention!