Project 3: Variational auto-encoders

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In this project you will work with a neural extension of IBM model 1. You will learn how to marginalise discrete latent variables and you will also employ a continuous latent variable.

For the continuous case you will work with a variational auto-encoder formulation.

1 Tasks

T1 We have prepared a notebook with theoretical background. You should read it carefully and answer a few questions.

We have prepared a notebook with a tensorflow implementation of neural IBM 1. Your job is to extend that model

- **T2** Neural IBM 1 with additional French context (4.2 and 4.3 in the notebook). You complete this task by showing us a plot of likelihood (training/dev) and AER (dev/test) per epoch.
- **T3** Neural IBM 1 with collocations (5.1 in the notebook). You complete this task by showing us a plot of likelihood (training/dev) and AER (dev/test) per epoch.
- **T4** Neural IBM 1 with latent gate (6.1-6.2 in the notebook). You complete this task by showing us a plot of likelihood (training/dev) and AER (dev/test) per epoch.

2 Report

Instead of a report, we expect a link to a github repository containing one notebook for each task.

3 Assessment

Task 1 is worth 4 points. Tasks 2, 3 and 4 are worth 2 points each.