

# GALR presentation

February 12, 2018

We first load the packages we are using, notably TensorFlow.

```
In [ ]: import tensorflow as tf
import numpy as np
import pandas as pd
from tqdm import tqdm
```

We then specify some of the hyperparameters of the model. The structure of the learning is as follows. We randomly generate a pair of parameters  $\phi$  and  $\gamma$  and then perform a number of learning steps using these parameters. For simplicity here we only display the code for a single pair of parameters, in our experiments we iterated this over 10,000 times using different values of  $\phi$  and  $\gamma$  each time. Now for a given pair  $(\phi, \gamma)$ :

For each step from 1 to  $\texttt{\textbackslashtextbf{number\_of\_epochs}}$  we generate  $\texttt{\textbackslashtextbf{batch\_size}}$  real samples and  $\texttt{\textbackslashtextbf{batch\_size}}$  fake samples and make gradient descent steps on each of the real/fake sample pairs. The parameters  $\texttt{\textbackslashtextbf{hidden\_layer\_size\_d}}$  and  $\texttt{\textbackslashtextbf{hidden\_layer\_size\_g}}$  are unsurprisingly the number of nodes in the hidden layers of  $D$  and  $G$  respectively.

```
In [ ]: number_of_epochs = 100000
batch_size = 1000
hidden_layer_size_d = 6
hidden_layer_size_g = 5
```