Algorithm 1: Minibatch for WGAN

Input: x, The geometric brownian motion paths. z, noise data. D, discriminator. G, generator.

while *Max Iteration* **do**

  Sample $\{x^{(i)}\}_{j=1}^{M} \sim \mathbf{P}_r$ a batch from real data

  Sample $\{z^{(i)}\}_{j=1}^{M} \sim p(z)$ a batch from fake data

  Partition real examples into N mini batches

  for $i = 0, \ldots, N$ **do**

    for $j = 0, \ldots, n_{critic}$ **do**

      $D_w \leftarrow \bigtriangledown_w \frac{1}{M}[\sum_{k=1}^{M} D_w(x_k^{(i)}) - \sum_{k=1}^{M} G(z^{(i)})]$

      $w \leftarrow +\alpha * RMSProp(w, D_w)$ $w \leftarrow \text{clip}(w, -c, c)$

    end for

    $G_w \leftarrow \bigtriangledown_w \frac{1}{M}[\sum_{k=1}^{M} D_w(z_k^{(i)})]$

  end for

end while