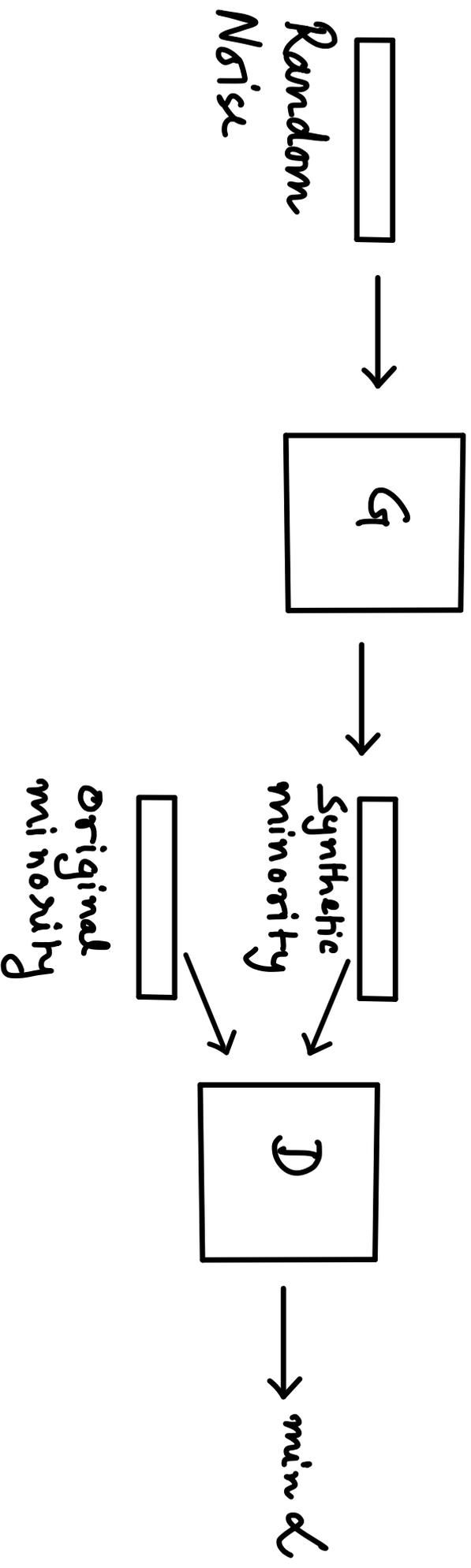# What we have

- baseline classification
- ProWRAS $\longrightarrow$ Convex space learning $\rightarrow$ Can there be a DL based framework for this?
- GAN

Random Noise $\rightarrow$ G $\rightarrow$ Synthetic minority

Original minority

Synthetic minority + Original minority $\rightarrow$ D $\rightarrow$ min d

We observed that ProWRAS outperforms GAN.

- does not decide which regions of the data space is important
- does not consider any aspect of the majority distribution
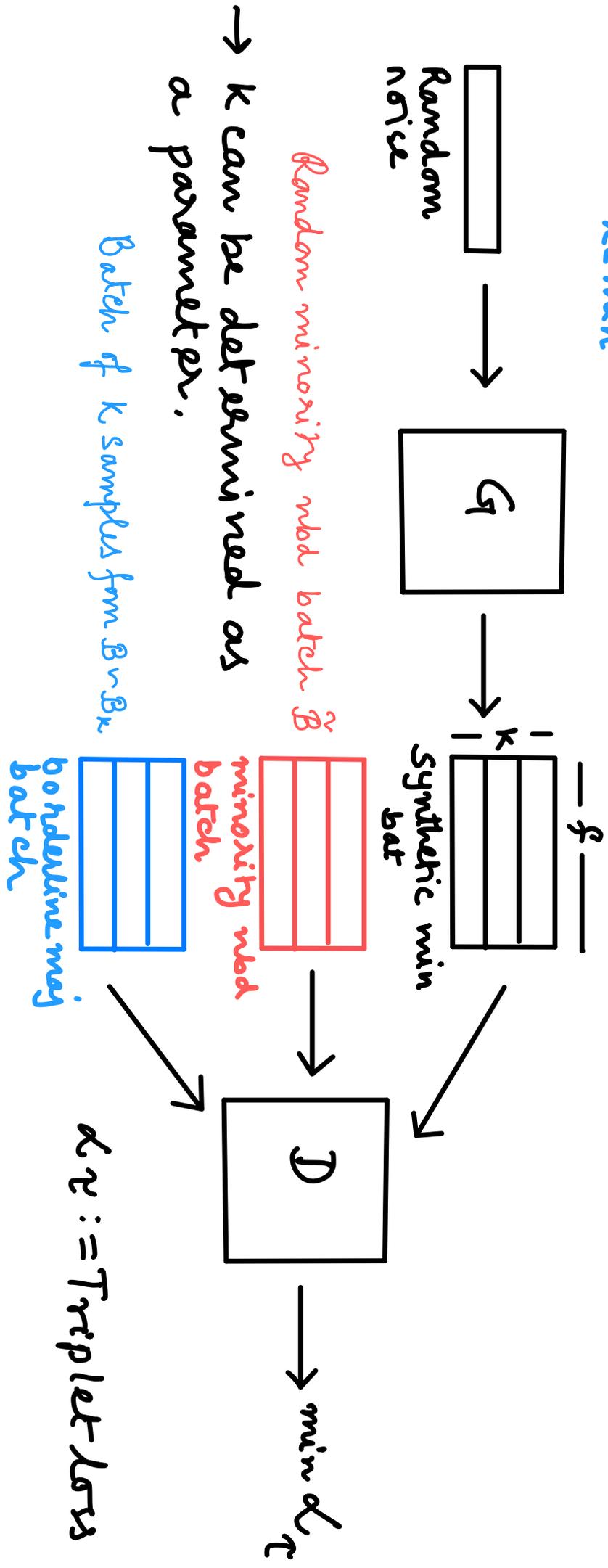- Synthetic samples are too similar to original samples

Borderline majority set B

$N_k^{maj}(x) :=$ For $x \in min$

$N_k^{maj}(x)$ denotes the set of k nearest neighbours of x in maj.

$B := \bigcup_{x \in min} N_k^{maj}(x)$

Random noise

G

Synthetic min bat

k

f

D

$\rightarrow min \, d_\tau$

$d_\tau := Triplet\ loss$

$\rightarrow$ k can be determined as a parameter.

Neighbourhood-batch $\tilde{B}$
based minority sampling

$\tilde{B} := N_k^{min}(x)$

For $x \in min$, this denotes the k nearest neighbours from minority class

Random minority nbd batch $\tilde{B}$

minority nbd batch

Batch of k samples from $B \cap B_k$

borderline maj. batch