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**Algorithm 1:** SI optimizer

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1 Initialise Input Variables
2 Data preprocessing
3 Initialise ML Parameters
4 Declare ML Algorithm
5 Define GlobalBestBIC
6  $N_p \leftarrow \text{number of particles}$ 
7 Def  $O_f$ :
8    $\text{array\_score} \leftarrow \text{zeroes}$ 
9   for  $\text{particles}$  do
10      $\text{Initialize StratifiedKF}$ 
11      $\text{Calculate the Score}$ 
12      $\text{array\_score}[i] \leftarrow \text{score}$ 
13   return  $\text{mean}(\text{array\_score})$ 
14  $\text{best\_params} \leftarrow \text{GlobalBestBIC}(O_f)$ 
15  $\text{Train model with best params}$ 
16
```

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