

Embedded \mathbf{X}_{mix}

Algorithm 2

```
for i in range(N):  
  for j in range(N):  
     $\mathbf{X}_{mix} = \mathbf{X}_{mix:i} + \lambda \mathbf{X}_{mix:j}$ 
```

nn.Linear

nn.AdaptiveMaxPool

nn.Linear

nn.AdaptiveAvgPool

nn.Linear

nn.GELU

$\times 2$

nn.Sigmoid



CA

nn.Linear



Order Extension/Reduction

CA₁

CA₂

CA₃



Normalization

Third Order

Normalization

Second Order

Randomly Generate Learnable Matrices

DFT

Re(.)

Im(.)

$\bar{\mathbf{W}}_r$

$\bar{\mathbf{B}}_r^\ell$

$\bar{\mathbf{W}}_i$

$\bar{\mathbf{B}}_i^\ell$

torch.bmm



SGN

IFFT

Algorithm 3

Algorithm 1
Mamba(MS)