

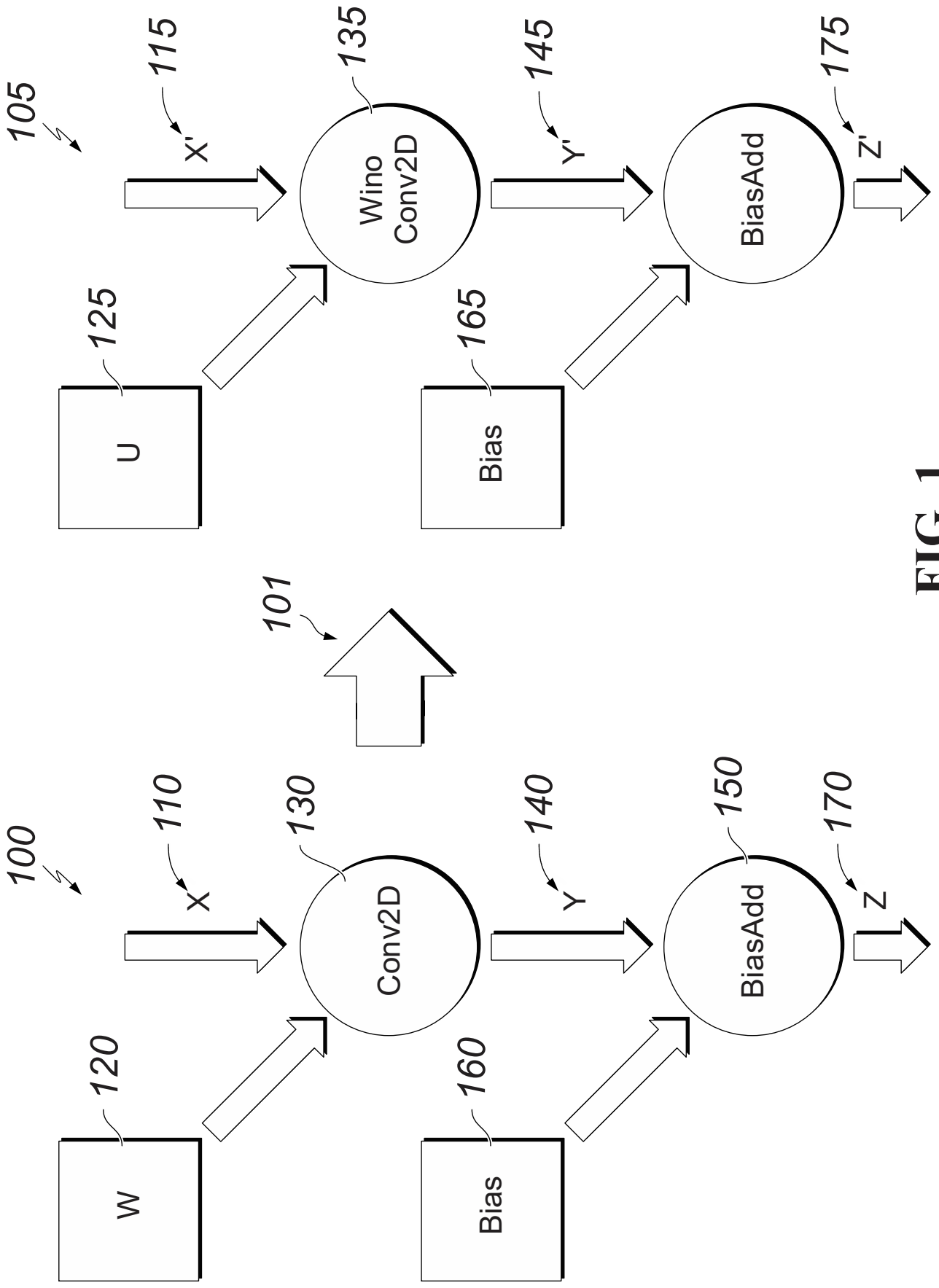


FIG. 1

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     $P = N [H/m] [W/m]$ 
     $\alpha = m + r - 1$ 
     $x_{c,p} \in \mathbb{R}^{\alpha \times \alpha}$ 
     $w_{o,c} \in \mathbb{R}^{r \times r}$ 
     $W, B^T, \text{ and } A^T$ 
     $Y_{o,p} \in \mathbb{R}^{m \times m}$ 
210 { 1: for  $o = 0$  to  $C_{out}$  do
      2:   for  $c = 0$  to  $C_{in}$  do
      3:      $u = W w_{o,c} W^T \in \mathbb{R}^{\alpha \times \alpha}$ 
      4:     Save  $u$  to tensor  $U: U_{o,c}^{(\xi,v)} = U_{\xi,v}$ 
      5:   end for
      6: end for
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220 { 7: for  $o = 0$  to  $P$  do
      8:   for  $c = 0$  to  $C$  do
      9:      $v = B^T x_{c,p} \quad B \in \mathbb{R}^{\alpha \times \alpha}$ 
     10:     Save  $v$  to tensor  $V: V_{c,p}^{(\xi,v)} = V_{\xi,v}$ 
     11:   end for
     12: end for
     13: for  $\xi = 0$  to  $\alpha$  do
     14:   for  $v = 0$  to  $\alpha$  do
     15:      $M^{(\xi,v)} = U^{(\xi,v)} V^{(\xi,v)}$ 
     16:   end for
     17: end for
     18: for  $o = 0$  to  $C_{out}$  do
     19:   for  $p = 0$  to  $P$  do
     20:     Retrieve  $m$  from tensor  $M$   $m: m_{\xi,v} = M_{o,p}^{(\xi,v)}$ 
     21:      $Y_{o,p} = A^T m A$ 
     22:   end for
     23: end for

```

FIG. 2

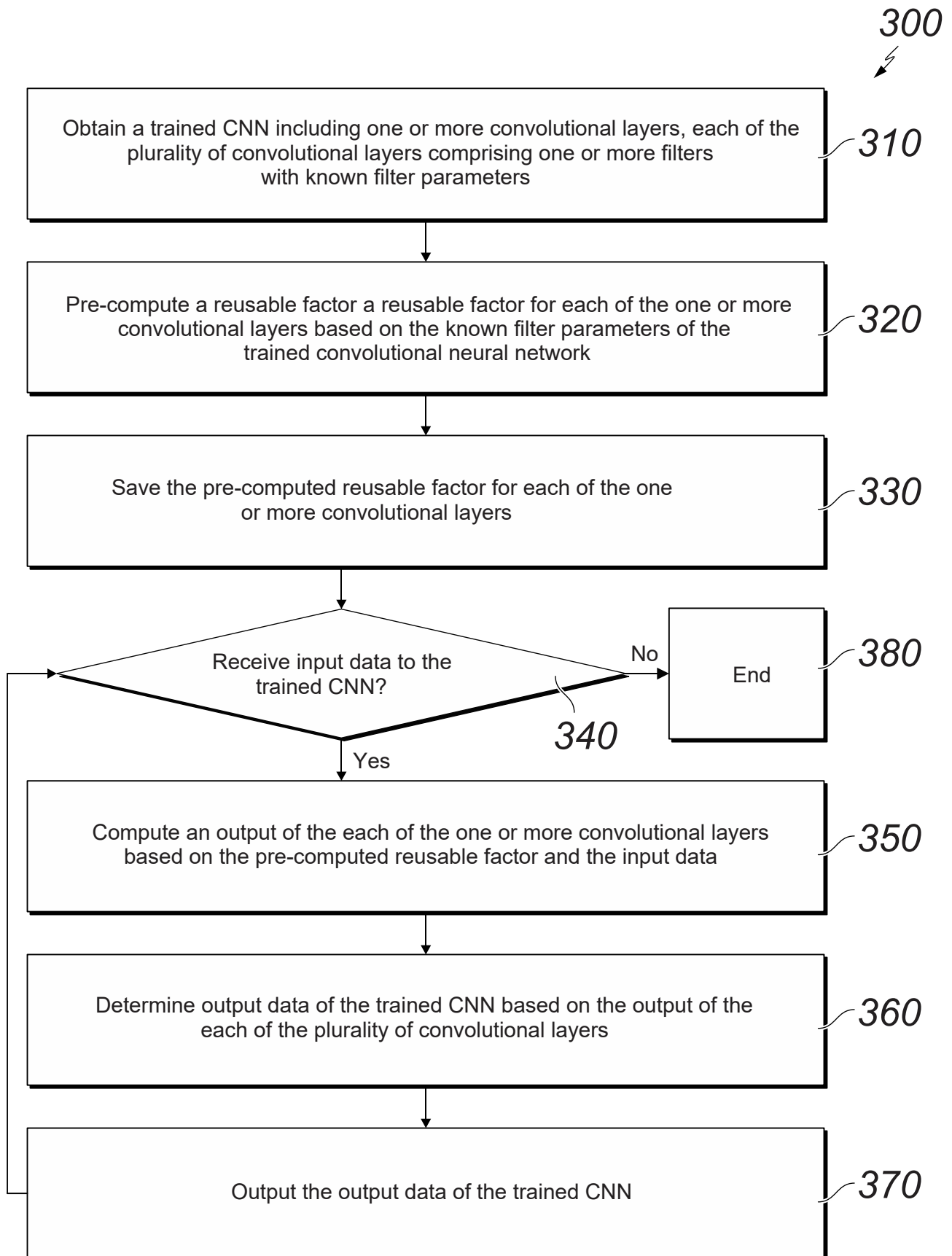


FIG. 3

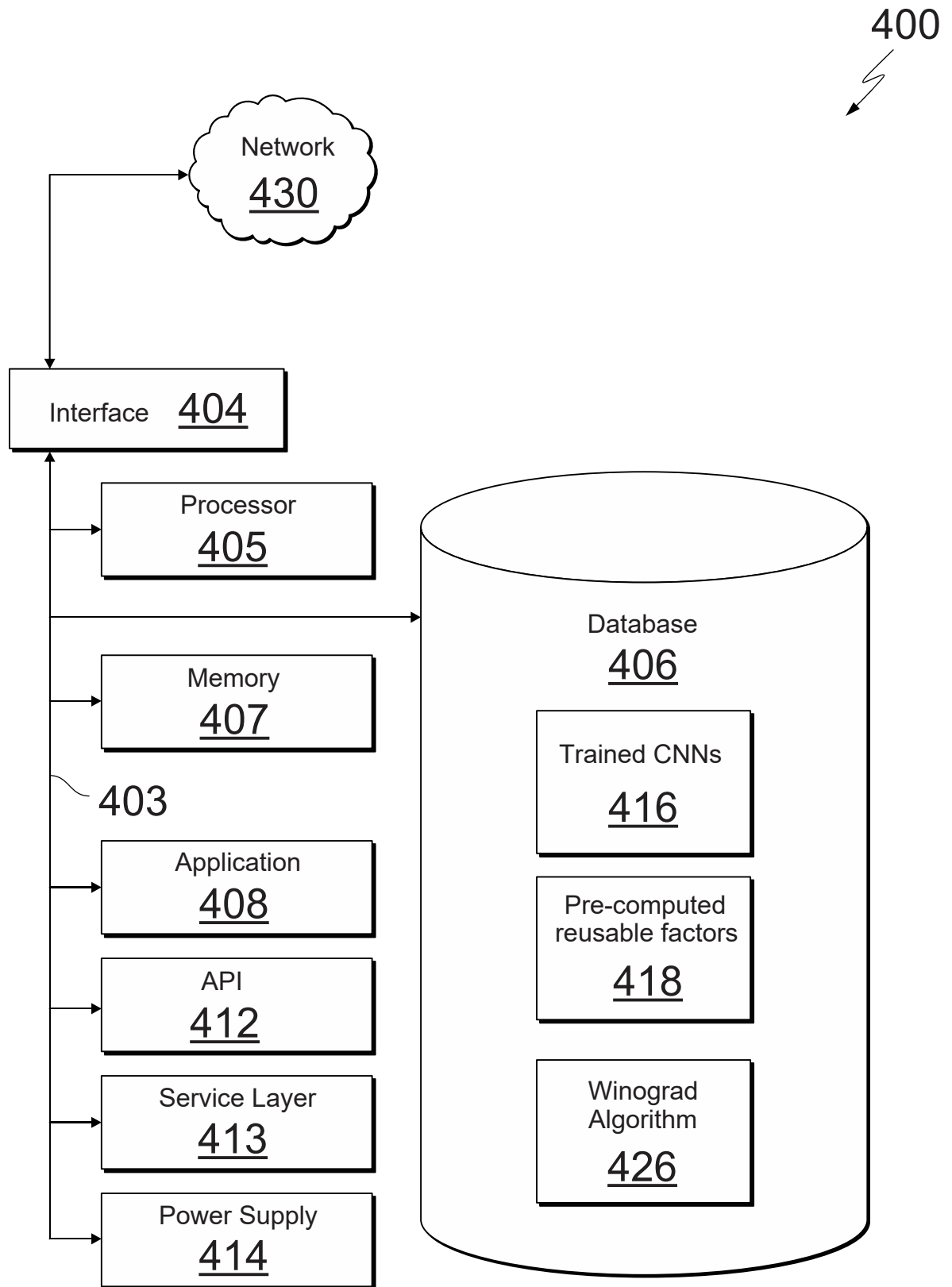


FIG. 4