

Table S1: Detailed methodology of the convolution and full connected layer

The detailed methodology of the convolution and full connected layer are given in following pseudocodes.

Pseudo Code for Convolution Layer

```

1:   for  $i$  from 1 to  $m$  do % Looping through output feature maps
2:       for  $j$  from 1 to  $n$  do % Looping through Input feature maps
3:           for  $r$  from 1 to  $R_0$  do % Looping through rows of output feature maps
4:               for  $c$  from 1 to  $R_0$  do % Looping through columns of output feature maps
5:                    $V_{temp} = 0$ 
6:                   for  $ii$  from 1 to  $k$  do % Looping through rows of filter kernel
7:                       for  $jj$  from 1 to  $k$  do % Looping through columns of filter kernel
8:                            $V_{temp} = V_{temp} + k[ii][jj] * X[j][s*(r-1) + ii] [s * (c-1) + j]$ 
9:                       end for
10:                   end for
11:                    $Y[i][r][c] = Y[i][\underline{r}][c] + V_{temp}$ 
12:                   if  $j = n$ 
13:                        $y[i][r][c] = f(Y[i][r][\underline{c}] + bias)$ 
14:                   end if
15:               end for
16:           end for
17:       end for
18:   end for

```

Pseudo Code for a fully connected layer

```

1:   for  $i$  from 1 to  $m$  do
2:        $V_{temp} = 0$ 
3:       for  $i$  from 1 to  $n$  do
4:            $V_{temp} = V_{temp} + W[i][j] * X[j]$ 
5:       end for
6:        $Y[i] = V_{temp}$ 
7:   end for

```