

Supplement Table 1. Structure of the model only with convolutional neural network

Layer (type)	Output Shape	Param #
ConvLayer 1	(None, 348, 348, 32)	896
Max pooling layer 1	(None, 174, 174, 32)	0
ConvLayer 2	(None, 172, 172, 64)	18496
Max pooling layer 2	(None, 86, 86, 64)	0
ConvLayer 3	(None, 84, 84, 128)	73856
Max pooling layer 3	(None, 42, 42, 128)	0
Flatten 1	(None, 225792)	0
Dense 1	(None, 512)	115606016
Dense 2	(None, 3)	1539
Total params: 115,700,803 Trainable params: 115,700,803 Non-trainable params: 0		

Supplement Table 2. Structure of the model with transfer learning

Layer (type)	Output Shape	Param #
vgg19 (Model)	(None, 10, 10, 512)	20024384
Dense 1	(None, 256)	13107456
Dense 2	(None, 3)	771
Total params: 33,132,611 Trainable params: 13,108,227 Non-trainable params: 20,024,384		

Supplement Table 3. Structure of the model combining convolutional and recurrent neural network

Layer (type)	Output Shape	Param #
ConvLayer 1	(None, None, 23, 88, 32)	896
Max pooling layer 1	(None, None, 11, 44, 32)	0
ConvLayer 2	(None, None, 9, 42, 64)	18496
Max pooling layer 2	(None, None, 4, 21, 64)	0
ConvLayer 3	(None, None, 2, 19, 128)	73856
Max pooling layer 3	(None, None, 1, 9, 128)	0
LSTM 1	(None, 128)	655872
Dense 1	(None, 3)	387
Total params: 749,507 Trainable params: 749,507 Non-trainable params: 0		