

Layer (type)	Output Shape	Param #
input_1 (InputLayer)	[(None, 78, 110, 86, 1)]	0
conv3d (Conv3D)	(None, 78, 110, 86, 64)	1792
conv3d_1 (Conv3D)	(None, 78, 110, 86, 64)	110656
max_pooling3d (MaxPooling3D)	(None, 39, 55, 43, 64)	0
conv3d_2 (Conv3D)	(None, 39, 55, 43, 128)	221312
conv3d_3 (Conv3D)	(None, 39, 55, 43, 128)	442496
max_pooling3d_1 (MaxPooling3D)	(None, 20, 28, 22, 128)	0
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conv3d_10 (Conv3D)	(None, 5, 7, 6, 512)	7078400
conv3d_11 (Conv3D)	(None, 5, 7, 6, 512)	7078400
conv3d_12 (Conv3D)	(None, 5, 7, 6, 512)	7078400
max_pooling3d_4 (MaxPooling3D)	(None, 3, 4, 3, 512)	0
flatten (Flatten)	(None, 18432)	0
dense (Dense)	(None, 4096)	75501568
dense_1 (Dense)	(None, 4096)	16781312
dense_2 (Dense)	(None, 3)	12291
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Total params: 136,427,331		
Trainable params: 136,427,331		
Non-trainable params: 0		

Figure S1. Visualisation of the 3D-VGG-16 network model

Here we provide a model summary showing only the first and the last two blocks of the network with total number of parameters. The three vertical black dots stand for skipping the intermediate layer representation.

Layer (type)	Output Shape	Param #	Connected to
input_8 (InputLayer)	[(None, 78, 110, 86, 1)]	0	[]
conv3d_252 (Conv3D)	(None, 39, 55, 43, 64)	22016	['input_8[0][0]']
batch_normalization_231 (Batch Normalization)	(None, 39, 55, 43, 64)	256	['conv3d_252[0][0]']
activation_231 (Activation)	(None, 39, 55, 43, 64)	0	['batch_normalization_231[0][0]']
max_pooling3d_7 (MaxPooling3D)	(None, 20, 28, 22, 64)	0	['activation_231[0][0]']
conv3d_253 (Conv3D)	(None, 20, 28, 22, 64)	110656	['max_pooling3d_7[0][0]']
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batch_normalization_263 (Batch Normalization)	(None, 3, 4, 3, 512)	2048	['add_128[0][0]']
activation_263 (Activation)	(None, 3, 4, 3, 512)	0	['batch_normalization_263[0][0]']
average_pooling3d_7 (AveragePooling3D)	(None, 1, 1, 1, 512)	0	['activation_263[0][0]']
flatten_7 (Flatten)	(None, 512)	0	['average_pooling3d_7[0][0]']
dense_24 (Dense)	(None, 1024)	525312	['flatten_7[0][0]']
dropout_11 (Dropout)	(None, 1024)	0	['dense_24[0][0]']
dense_25 (Dense)	(None, 3)	3075	['dropout_11[0][0]']
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Total params: 64,019,971			
Trainable params: 64,004,739			
Non-trainable params: 15,232			

Figure S2. Visualisation of the ResNet3D network model

Here we provide a model summary showing only the first block of the network and the last with total number of parameters. The three vertical black dots stand for skipping the intermediate layer representation.