| | SIAMESE NEURAL NETWORK | | | | | GOOGLE FACENET | | | | | VGG-FACE | | | | | FACEBOOK'S DEEP-FACE | | | | |
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| | **Layer** | **Size-in** | **size-out** | **Kernel** | | **Layer** | **Size-in** | **Size-out** | **Kernel** | | | **Layer** | **Size-in** | **size-out** | **Kernel** | | **Layer** | **Size-in** | **size-out** | **Kernel** | |
| | **conv1** | 227*227*3 | 55*55*96 | 11*11*3,96 | | **conv1** | 220*220*3 | 110*110*64 | 7*7*3,2 | | | **Image input** | 224*224*3 | 224*224*3 | | | Image input | 152*152*3 | 152*152*3 | | |
| | **poo1** | 55*55*96 | 27*27*96 | 3*3*96 | | **pool1** | 110*110*64 | 55*55*64 | 3*3*64,2 | | **GROUP-1** | **Conv-1** | 224*224*64 | 224*224*64 | 3*3 | | Conv-1 | 152*152*3 | 152*152*3 | 11*11*3 | |
| | **conv2** | 27*27*96 | 27*27*256 | 5*5*96 | | **rnorm1** | 55*55*64 | 55*55*64 | | | | **ReLU-1** | 224*224*64 | 224*224*64 | | | Pooling | 152*152*3 | 142*142*3 | | |
| | **pool2** | 27*27*256 | 13*13*256 | 3*3*256 | | **conv2a** | 55*55*64 | 55*55*64 | 1*1*64,1 | | | **Conv-2** | 224*224*64 | 224*224*64 | 3*3 | | Conv-2 | 142*142*3 | 71*71*3 | 3*3*3 | |
| | **conv3** | 13*13*256 | 13*13*384 | 3*3*256 | | **conv2** | 55*55*192 | 55*55*192 | 3*3*64,1 | | | **ReLU-2** | 224*224*64 | 224*224*64 | | | Conv-3 | 71*71*3 | 63*63*3 | 9*9*3 | |
| | **conv4** | 13*13*384 | 13*13*384 | 3*3*384 | | **rnorm2** | 55*55*192 | 55*55*192 | | | | **Pool-1** | 112*112*64 | 112*112*128 | 2*2 | | Conv-4 | 63*63*3 | 55*55*3 | 9*9*3 | |
| | **conv5** | 13*13*384 | 13*13*256 | 3*3*384 | | **pool2** | 55*55*192 | 28*28*192 | 3*3*192,2 | | **GROUP-2** | **Conv-3** | 112*112*128 | 112*112*128 | 3*3 | | Conv-5 | 55*55*3 | 25*25*3 | 7*7*3 | |
| | **conv6** | 6*6*256 | 6*6*256 | 3*3*256 | | **conv3a** | 28*28*19 | 28*28*19 | 1*1*192,1 | | | **ReLU-3** | 112*112* | 112*112* | | | Conv-6 | 25*25*3 | 21*21*3 | 5*5*3 | |

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| | | | | | | | 2 | 2 | | | | | 128 | 128 | | | | | | |
| | **Dence1** | Fully connected | 1024 | | | **conv3** | 28*28*192 | 28*28*384 | 3*3*192,1 | | | **Conv-4** | 112*112*128 | 112*112*128 | 3*3 | | FLC-1+ReLU+Dropout | 4096d | | | |
| | | | | | | **pool3** | 28*28*384 | 14*14*384 | 3*3*384,2 | | | **ReLU-4** | 112*112*128 | 112*112*128 | | | FLC-2 | 4030d | | | |
| | **Dence2** | Fully connected | 256 | | | **conv4a** | 14*14*384 | 14*14*384 | 1*1*384,1 | | | **Pool-2** | 56*56*128 | 56*56*256 | 2*2 | | | | | | |
| | | | | | | **conv4** | 14*14*384 | 14*14*256 | 3*3*384,1 | | **GROUP-3** | **Conv-5** | 56*56*256 | 56*56*256 | 3*3 | | | | | | |
| | **Dence3** | Fully connected | 2 | | | **conv5a** | 14*14*256 | 14*14*256 | 1*1*256,1 | | | **ReLU-5** | 56*56*256 | 56*56*256 | | | | | | | |
| | | | | | | **conv5** | 14*14*256 | 14*14*256 | 3*3*256,1 | | | **Conv-6** | 56*56*256 | 56*56*256 | 3*3 | | | | | | |
| | **O/P(1)** | Loss function | Contrastive loss function | | | **conv6a** | 14*14*256 | 14*14*256 | 1*1*256,1 | | | **ReLU-6** | 56*56*256 | 56*56*256 | | | | | | | |
| | **Final Output** | Fully connected | +Contrastive | | | **conv6** | 14*14*256 | 14*14*256 | 3*3*256,1 | | | **Conv-7** | 56*56*256 | 56*56*256 | 3*3 | | | | | | |

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| | | | loss function | | | | | | | | | | | | | | | | | |
| | | | | | | **pool 4** | 14*14*256 | 7*7*256 | 3*3*256,2 | | | **ReLU-7** | 56*56*256 | 28*28*256 | | | | | | |
| | | | | | | **concat** | 7*7*256 | 7*7*256 | | | | **Pool-3** | 28*28*256 | 28*28*512 | 2*2 | | | | | |
| | | | | | | **fc1** | 7*7*256 | 1*32*128 | Max out p=2 | | **GROUP-4** | **Conv-8** | 28*28*512 | 28*28*512 | 3*3 | | | | | |
| | | | | | | **fc2** | 1*32*128 | 1*32*128 | Max out p=2 | | | **ReLU-8** | 28*28*512 | 28*28*512 | | | | | | |
| | | | | | | **fc7128** | 1*32*128 | 1*1*128 | | | | **Conv-9** | 28*28*512 | 28*28*512 | 3*3 | | | | | |
| | | | | | | **L2** | 1*1*128 | 1*1*128 | | | | **ReLU-9** | 28*28*512 | 28*28*512 | | | | | | |
| | | | | | | | | | | | | **Conv-10** | 28*28*512 | 28*28*512 | 3*3 | | | | | |
| | | | | | | | | | | | | **ReLU-10** | 28*28*512 | 14*14*512 | | | | | | |
| | | | | | | | | | | | | **Pool-4** | 14*14*51 | 14*14*51 | 2*2 | | | | | |

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| | | | | | | | | | | | | | 2 | 2 | | | | | | |
| | | | | | | | | | | | **GROUP-5** | **Conv-11** | 14*14*512 | 14*14*512 | 3*3 | | | | | |
| | | | | | | | | | | | | **ReLU-11** | 14*14*512 | 14*14*512 | | | | | | |
| | | | | | | | | | | | | **Conv-12** | 14*14*512 | 14*14*512 | 3*3 | | | | | |
| | | | | | | | | | | | | **ReLU-12** | 14*14*512 | 14*14*512 | | | | | | |
| | | | | | | | | | | | | **Conv-13** | 14*14*512 | 14*14*512 | 3*3 | | | | | |
| | | | | | | | | | | | | **ReLU-13** | 14*14*512 | 14*14*512 | | | | | | |
| | | | | | | | | | | | | **Pool-5** | 14*14*512 | 7*7*512 | 2*2 | | | | | |
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| | | | | | | | | | | | **Fully Connected Layer-6** | **FLC-1** | 4096*1 | | | | | | | |

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| | | | | | | | | | | | **ReLU-6** | 4096*1 | | | | | | | |
| | | | | | | | | | | | **Dropout-6** | 4096*1 | | | | | | | |
| | | | | | | | | | | **Fully Connected Layer-7** | **FLC-2** | 4096*1 | | | | | | | |
| | | | | | | | | | | | **ReLU-7** | 4096*1 | | | | | | | |
| | | | | | | | | | | | **Dropout-7** | 4096*1 | | | | | | | |
| | | | | | | | | | | **Fully Connected Layer-8** | **FLC-3** | 2*1 | | | | | | | |
| | | | | | | | | | | | **Softmax Layer** | 2*1 | | | | | | | |
| | | | | | | | | | | | **Output Layer** | 2*1 | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |