# Inference Module Architecture for AD-CNN and FD-CNN

The following tables summarize the layer-by-layer architecture for different target sizes used in the inference module. Each table lists the layers in order along with their key parameters.

## Target Size: 8

|  |  |
| --- | --- |
| Layer Type | Parameters / Details |
| Conv1d | In: 1 channel, Out: 32 filters, Kernel Size = 4, Stride = 1, Padding = 0 |
| BatchNorm1d | 32 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 2, Stride = 2, Padding = 0 |
| Flatten | Starting from dimension 1 |
| Linear | In Features = 64, Out Features = 1 |

## Target Size: 16

|  |  |
| --- | --- |
| Layer Type | Parameters / Details |
| Conv1d | In: 1 channel, Out: 32 filters, Kernel Size = 4, Stride = 1, Padding = 0 |
| BatchNorm1d | 32 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 2, Stride = 2, Padding = 0 |
| Conv1d | In: 32 channels, Out: 64 filters, Kernel Size = 2, Stride = 1, Padding = 0 |
| BatchNorm1d | 64 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 2, Stride = 2, Padding = 0 |
| Flatten | Starting from dimension 1 |
| Linear | In Features = 128, Out Features = 1 |

## Target Size: 32

|  |  |
| --- | --- |
| Layer Type | Parameters / Details |
| Conv1d | In: 1 channel, Out: 32 filters, Kernel Size = 8, Stride = 1, Padding = 0 |
| BatchNorm1d | 32 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 4, Stride = 4, Padding = 0 |
| Conv1d | In: 32 channels, Out: 64 filters, Kernel Size = 2, Stride = 1, Padding = 0 |
| BatchNorm1d | 64 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 2, Stride = 2, Padding = 0 |
| Flatten | Starting from dimension 1 |
| Linear | In Features = 128, Out Features = 1 |

## Target Size: 64

|  |  |
| --- | --- |
| Layer Type | Parameters / Details |
| Conv1d | In: 1 channel, Out: 32 filters, Kernel Size = 8, Stride = 1, Padding = 0 |
| BatchNorm1d | 32 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 4, Stride = 4, Padding = 0 |
| Conv1d | In: 32 channels, Out: 64 filters, Kernel Size = 4, Stride = 1, Padding = 0 |
| BatchNorm1d | 64 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 4, Stride = 4, Padding = 0 |
| Flatten | Starting from dimension 1 |
| Linear | In Features = 128, Out Features = 1 |

## Target Size: 128

|  |  |
| --- | --- |
| Layer Type | Parameters / Details |
| Conv1d | In: 1 channel, Out: 32 filters, Kernel Size = 16, Stride = 1, Padding = 0 |
| BatchNorm1d | 32 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 8, Stride = 4, Padding = 0 |
| Conv1d | In: 32 channels, Out: 64 filters, Kernel Size = 8, Stride = 1, Padding = 0 |
| BatchNorm1d | 64 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 4, Stride = 4, Padding = 0 |
| Flatten | Starting from dimension 1 |
| Linear | In Features = 320, Out Features = 64 |
| BatchNorm1d | 64 channels |
| Activation | LeakyReLU |
| Linear | In Features = 64, Out Features = 1 |

## Target Size: 256

|  |  |
| --- | --- |
| Layer Type | Parameters / Details |
| Conv1d | In: 1 channel, Out: 32 filters, Kernel Size = 16, Stride = 1, Padding = 0 |
| BatchNorm1d | 32 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 8, Stride = 6, Padding = 0 |
| Conv1d | In: 32 channels, Out: 64 filters, Kernel Size = 8, Stride = 1, Padding = 0 |
| BatchNorm1d | 64 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 4, Stride = 4, Padding = 0 |
| Conv1d | In: 64 channels, Out: 128 filters, Kernel Size = 4, Stride = 1, Padding = 0 |
| BatchNorm1d | 128 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 2, Stride = 2, Padding = 0 |
| Flatten | Starting from dimension 1 |
| Linear | In Features = 256, Out Features = 1 |

## Target Size: 512

|  |  |
| --- | --- |
| Layer Type | Parameters / Details |
| Conv1d | In: 1 channel, Out: 32 filters, Kernel Size = 16, Stride = 1, Padding = 0 |
| BatchNorm1d | 32 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 8, Stride = 8, Padding = 0 |
| Conv1d | In: 32 channels, Out: 64 filters, Kernel Size = 8, Stride = 1, Padding = 0 |
| BatchNorm1d | 64 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 8, Stride = 8, Padding = 0 |
| Conv1d | In: 64 channels, Out: 128 filters, Kernel Size = 4, Stride = 1, Padding = 0 |
| BatchNorm1d | 128 channels |
| Activation | LeakyReLU |
| MaxPool1d | Kernel Size = 2, Stride = 2, Padding = 0 |
| Flatten | Starting from dimension 1 |
| Linear | In Features = 128, Out Features = 1 |