**1D-CNN + BiLSTM**

Found parquet files: ['/kaggle/input/cicids2017/Benign-Monday-no-metadata.parquet', '/kaggle/input/cicids2017/Bruteforce-Tuesday-no-metadata.parquet', '/kaggle/input/cicids2017/Portscan-Friday-no-metadata.parquet', '/kaggle/input/cicids2017/WebAttacks-Thursday-no-metadata.parquet', '/kaggle/input/cicids2017/DoS-Wednesday-no-metadata.parquet', '/kaggle/input/cicids2017/DDoS-Friday-no-metadata.parquet', '/kaggle/input/cicids2017/Infiltration-Thursday-no-metadata.parquet', '/kaggle/input/cicids2017/Botnet-Friday-no-metadata.parquet']

Loading parquet files... (this may take a minute)

Raw shape: (2313810, 78)

After dropping NaN/Inf shape: (2313810, 78)

Dropping constant columns: ['Bwd PSH Flags', 'Bwd URG Flags', 'Fwd Avg Bytes/Bulk', 'Fwd Avg Packets/Bulk', 'Fwd Avg Bulk Rate', 'Bwd Avg Bytes/Bulk', 'Bwd Avg Packets/Bulk', 'Bwd Avg Bulk Rate']

Feature count: 69

Classes: ['Benign' 'Bot' 'DDoS' 'DoS GoldenEye' 'DoS Hulk' 'DoS Slowhttptest'

'DoS slowloris' 'FTP-Patator' 'Heartbleed' 'Infiltration' 'PortScan'

'SSH-Patator' 'Web Attack � Brute Force' 'Web Attack � Sql Injection'

'Web Attack � XSS']

Number of classes: 15

Train/Val/Test shapes: (1619667, 69) (347071, 69) (347072, 69)

Input shape (features): 69

Class weights: {0: 0.07801170849700496, 1: 107.33379721669981, 2: 1.2049748911951792, 3: 14.996916666666667, 4: 0.8924375165300185, 5: 29.502131147540982, 6: 28.648925444414964, 7: 26.00621387283237, 8: 13497.225, 9: 4319.112, 10: 78.87348429510591, 11: 47.92623169107856, 12: 104.93469387755103, 13: 7198.52, 14: 236.79342105263157}

**Model: "functional"**

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┃ **Layer (type)** ┃ **Output Shape** ┃ **Param #** ┃

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│ input\_layer (InputLayer) │ (None, 69, 1) │ 0 │

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│ conv1d (Conv1D) │ (None, 69, 64) │ 384 │

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│ batch\_normalization │ (None, 69, 64) │ 256 │

│ (BatchNormalization) │ │ │

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│ max\_pooling1d (MaxPooling1D) │ (None, 34, 64) │ 0 │

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│ conv1d\_1 (Conv1D) │ (None, 34, 128) │ 24,704 │

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│ batch\_normalization\_1 │ (None, 34, 128) │ 512 │

│ (BatchNormalization) │ │ │

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│ max\_pooling1d\_1 (MaxPooling1D) │ (None, 17, 128) │ 0 │

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│ bidirectional (Bidirectional) │ (None, 128) │ 98,816 │

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│ dropout (Dropout) │ (None, 128) │ 0 │

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│ dense (Dense) │ (None, 128) │ 16,512 │

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│ dropout\_1 (Dropout) │ (None, 128) │ 0 │

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│ dense\_1 (Dense) │ (None, 15) │ 1,935 │

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**Total params:** 143,119 (559.06 KB)

**Trainable params:** 142,735 (557.56 KB)

**Non-trainable params:** 384 (1.50 KB)