Appendix A.

Table 3. Precision of the eight emotions

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Model | stifling | speechless | bloody violence | funny | refreshing | sweet | equanimity | sympathy |
| DPCNN | 0.28 | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 | 0.00 | 0.31 |
| FastText | 0.44 | 0.39 | 0.00 | 0.66 | **1.00** | **1.00** | 0.42 | 0.40 |
| CNN | 0.48 | 0.50 | 0.00 | 0.63 | 0.44 | 0.58 | 0.45 | 0.47 |
| RCNN | 0.43 | 0.50 | 0.00 | 0.47 | 0.00 | **1.00** | 0.50 | 0.47 |
| BiLSTM\_Att | 0.35 | 0.33 | 0.00 | 0.00 | 0.00 | 0.62 | 0.14 | 0.44 |
| BiLSTM | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Transformer | 0.35 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.00 | 0.26 |
| Bert | 0.78 | 0.33 | 0.50 | 0.54 | 0.33 | 0.78 | 0.56 | 0.63 |
| Bert\_CNN | 0.66 | **0.80** | 0.00 | 0.66 | 0.00 | 0.67 | 0.39 | 0.52 |
| Bert\_DPCNN | 0.77 | 0.45 | 0.00 | **0.73** | 0.38 | 0.52 | 0.46 | 0.53 |
| Bert\_RCNN | 0.69 | 0.69 | 0.00 | 0.60 | 0.00 | 0.71 | 0.47 | 0.58 |
| Bert\_RNN | 0.74 | 0.60 | 0.00 | 0.63 | 0.38 | 0.50 | 0.68 | 0.58 |
| Bert\_MoE | 0.71 | 0.33 | 0.00 | 0.51 | 0.40 | 0.50 | 0.55 | 0.52 |
| ERNIE | 0.65 | 0.26 | 0.00 | 0.45 | 0.00 | 0.00 | 0.39 | 0.54 |
| ChatGPT | 0.33 | 0.16 | 0.25 | 0.50 | **1.00** | 0.25 | 0.20 | **0.75** |
| ChatGLM | 0.50 | 0.25 | 0.00 | 0.56 | **1.00** | 0.50 | 0.33 | 0.33 |
| **AeerBERT** | **0.82** | 0.60 | **1.00** | 0.65 | 0.56 | 0.49 | **0.73** | 0.63 |

Table 4. Recall of the eight emotions

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Model | stifling | speechless | bloody violence | funny | refreshing | sweet | equanimity | sympathy |
| DPCNN | 0.66 | 0.00 | 0.00 | 0.08 | 0.00 | 0.00 | 0.00 | 0.57 |
| FastText | 0.58 | 0.32 | 0.00 | 0.29 | 0.12 | 0.04 | 0.18 | **0.87** |
| CNN | 0.67 | 0.33 | 0.00 | 0.34 | 0.15 | 0.61 | 0.42 | 0.68 |
| RCNN | 0.77 | 0.07 | 0.00 | 0.65 | 0.00 | 0.09 | 0.31 | 0.67 |
| BiLSTM\_Att | 0.76 | 0.08 | 0.00 | 0.00 | 0.00 | 0.35 | 0.10 | 0.67 |
| BiLSTM | **1.00** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Transformer | 0.06 | 0.00 | 0.00 | 0.49 | 0.00 | 0.00 | 0.00 | 0.80 |
| Bert | 0.65 | 0.53 | 0.07 | 0.70 | **0.35** | 0.30 | 0.48 | 0.59 |
| Bert\_CNN | 0.77 | 0.20 | 0.00 | 0.66 | 0.00 | 0.35 | **0.56** | 0.79 |
| Bert\_DPCNN | 0.67 | 0.45 | 0.00 | 0.62 | 0.19 | 0.61 | 0.66 | 0.66 |
| Bert\_RCNN | 0.81 | 0.33 | 0.00 | 0.73 | 0.00 | 0.43 | 0.55 | 0.76 |
| Bert\_RNN | 0.79 | 0.35 | 0.00 | **0.81** | 0.12 | **0.87** | 0.34 | 0.83 |
| Bert\_MoE | 0.75 | 0.45 | 0.00 | 0.51 | 0.31 | 0.13 | 0.42 | 0.65 |
| ERNIE | 0.78 | 0.28 | 0.00 | 0.59 | 0.00 | 0.00 | 0.26 | 0.71 |
| ChatGPT | 0.09 | 0.67 | 0.33 | 0.25 | 0.25 | 0.25 | 0.17 | 0.33 |
| ChatGLM | 0.09 | **0.83** | 0.00 | 0.63 | 0.25 | 0.50 | 0.17 | 0.33 |
| **AeerBERT** | 0.77 | 0.53 | **0.43** | 0.78 | **0.35** | 0.74 | 0.47 | 0.79 |

Appendix B.

Table 7. Precision after disabling a fully connected layer or CNN in AeerBERT

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Disable | choking | speechless | bloody violence | funny | refreshing | sweet | equanimity | sympathy |
| 1th | 0.78 | 0.43 | 0.00 | 0.59 | 0.41 | 0.60 | 0.49 | 0.65 |
| 2th | **0.86** | 0.36 | 0.00 | 0.52 | 0.50 | 0.50 | 0.47 | 0.58 |
| 3th | 0.84 | 0.40 | 0.00 | 0.50 | 0.56 | 0.50 | 0.49 | 0.61 |
| 4th | 0.79 | 0.44 | 0.00 | 0.63 | **1.00** | 0.70 | 0.50 | 0.60 |
| 5th | 0.80 | 0.39 | 0.00 | 0.63 | 0.50 | 0.69 | 0.45 | 0.67 |
| 6th | 0.82 | 0.39 | **1.00** | 0.57 | 0.41 | 0.70 | 0.48 | 0.60 |
| 7th | 0.70 | 0.49 | 0.00 | 0.64 | 0.40 | 0.50 | 0.52 | 0.61 |
| 8th | 0.73 | 0.44 | 0.63 | 0.60 | **1.00** | 0.53 | 0.57 | **0.74** |
| 9th | 0.79 | 0.39 | 0.00 | 0.64 | 0.28 | **0.88** | 0.50 | 0.61 |
| 10th | 0.79 | 0.45 | 0.00 | 0.66 | 0.47 | 0.71 | 0.43 | 0.57 |
| 11th | 0.82 | 0.40 | 0.00 | 0.59 | 0.39 | 0.71 | 0.51 | 0.65 |
| CNN | 0.75 | 0.51 | 0.00 | **0.76** | 0.29 | 0.53 | 0.47 | 0.63 |
| NONE | 0.82 | **0.60** | **1.00** | 0.65 | 0.56 | 0.49 | **0.73** | 0.63 |

Table 8. Recall after disabling a fully connected layer or CNN in AeerBERT

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Delete | choking | speechless | bloody violence | funny | refreshing | sweet | equanimity | sympathy |
| 1th | 0.69 | 0.52 | 0.00 | 0.63 | 0.35 | 0.52 | 0.58 | 0.71 |
| 2th | 0.57 | 0.50 | 0.00 | 0.65 | 0.19 | 0.26 | 0.55 | 0.78 |
| 3th | 0.58 | 0.53 | 0.00 | 0.70 | 0.19 | 0.30 | 0.55 | 0.74 |
| 4th | 0.72 | 0.45 | 0.00 | 0.71 | 0.15 | 0.30 | 0.73 | 0.75 |
| 5th | 0.70 | 0.55 | 0.00 | 0.70 | 0.27 | 0.39 | 0.66 | 0.61 |
| 6th | 0.64 | 0.43 | 0.06 | 0.63 | 0.27 | 0.30 | 0.63 | 0.78 |
| 7th | **0.86** | 0.45 | 0.00 | 0.62 | 0.31 | 0.30 | 0.55 | 0.66 |
| 8th | 0.82 | **0.57** | 0.29 | 0.77 | 0.04 | 0.43 | 0.56 | 0.62 |
| 9th | 0.75 | 0.47 | 0.00 | 0.67 | 0.38 | 0.30 | 0.50 | 0.69 |
| 10th | 0.70 | 0.48 | 0.00 | 0.58 | 0.35 | 0.22 | 0.60 | 0.77 |
| 11th | 0.58 | 0.43 | 0.00 | 0.72 | **0.46** | 0.43 | 0.68 | 0.74 |
| CNN | 0.69 | 0.43 | 0.00 | 0.63 | 0.23 | 0.74 | **0.76** | 0.68 |
| NONE | 0.77 | 0.53 | **0.43** | **0.78** | 0.35 | **0.74** | 0.47 | **0.79** |

Table 11. Precision after disabling a hidden encoder layer in AeerBERT

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Disable | choking | speechless | bloody violence | funny | refreshing | sweet | equanimity | sympathy |
| 1th | 0.82 | 0.34 | 0.00 | **0.75** | 0.22 | 0.59 | 0.46 | 0.55 |
| 2th | 0.79 | 0.37 | 0.00 | 0.62 | 0.07 | 0.53 | 0.46 | 0.64 |
| 3th | 0.68 | **0.64** | **1.00** | 0.59 | 0.50 | 0.62 | 0.67 | 0.65 |
| 4th | 0.84 | 0.34 | 0.00 | 0.66 | 0.29 | **0.70** | 0.51 | 0.55 |
| 5th | **0.87** | 0.36 | 0.00 | 0.69 | 0.48 | 0.63 | 0.47 | 0.64 |
| 6th | 0.75 | 0.41 | 0.00 | 0.69 | 0.63 | 0.63 | 0.47 | 0.62 |
| 7th | 0.81 | 0.38 | 0.00 | 0.67 | 0.29 | 0.50 | 0.49 | 0.63 |
| 8th | 0.78 | 0.55 | 0.75 | 0.63 | **0.64** | 0.41 | 0.58 | 0.64 |
| 9th | 0.81 | 0.33 | 0.00 | 0.67 | 0.29 | 0.56 | 0.43 | 0.61 |
| 10th | 0.82 | 0.41 | 0.00 | 0.68 | 0.25 | 0.49 | 0.50 | **0.69** |
| 11th | 0.78 | 0.34 | 0.00 | 0.74 | 0.35 | 0.55 | 0.47 | 0.60 |
| last | 0.78 | 0.33 | 0.00 | 0.52 | 0.00 | 0.00 | 0.45 | 0.59 |
| NONE | 0.82 | 0.60 | **1.00** | 0.65 | 0.56 | 0.49 | **0.73** | 0.63 |

Table 12. Recall after disabling a hidden encoder layer in AeerBERT

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Disable | choking | speechless | bloody violence | funny | refreshing | sweet | equanimity | sympathy |
| 1th | 0.60 | 0.52 | 0.00 | 0.61 | 0.15 | 0.57 | 0.48 | 0.77 |
| 2th | 0.68 | 0.50 | 0.00 | 0.65 | 0.04 | 0.35 | 0.63 | 0.69 |
| 3th | **0.84** | 0.48 | 0.24 | **0.80** | 0.35 | 0.57 | 0.42 | 0.69 |
| 4th | 0.52 | 0.53 | 0.00 | 0.65 | 0.19 | 0.30 | 0.61 | 0.78 |
| 5th | 0.53 | 0.55 | 0.00 | 0.66 | **0.38** | 0.65 | 0.66 | 0.74 |
| 6th | 0.82 | 0.48 | 0.00 | 0.63 | 0.27 | 0.22 | 0.63 | 0.69 |
| 7th | 0.61 | 0.53 | 0.00 | 0.68 | 0.27 | 0.39 | 0.60 | 0.71 |
| 8th | 0.75 | 0.50 | 0.18 | 0.59 | 0.27 | 0.70 | **0.68** | 0.74 |
| 9th | 0.71 | 0.52 | 0.00 | 0.63 | 0.08 | 0.39 | 0.44 | 0.78 |
| 10th | 0.64 | **0.58** | 0.00 | 0.66 | 0.15 | **0.83** | 0.65 | 0.64 |
| 11th | 0.61 | 0.57 | 0.00 | 0.62 | 0.23 | 0.48 | 0.56 | 0.69 |
| last | 0.69 | 0.48 | 0.00 | **0.80** | 0.00 | 0.00 | 0.40 | 0.69 |
| NONE | 0.77 | 0.53 | **0.43** | 0.78 | 0.35 | 0.74 | 0.47 | **0.79** |