## ART

| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 8bit | QAT BERT 8bit |
|---|---|---|---|---|---|
| | CoLA | Matthew's corr. | 58.48 | 56.74 | 58.48 |
| | MRPC | F1 | 90 | 87.88 | 89.56 |
| | QNLI | Accuracy | 90.3 | 89.34 | 90.62 |
| | QQP | F1 | 87.84 | 84.98 | 87.96 |
| | RTE | Accuracy | 69.7 | 63.32 | 68.78 |
| | SST-2 | Accuracy | 92.36 | 91.04 | 92.24 |
| | STS-B | Pearson corr. | 89.62 | 87.66 | 89.04 |
| | SQuADv1.1 | F1 | 88.46 | 80.02 | 87.74 |

## MY RUN 1-2

| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 8bit | SQ BERT 8bit | QAT BERT 8bit | QSin Bert 8 bit |
|---|---|---|---|---|---|---|---|
| | CoLA | Matthew's corr. | 59.61 | 55.28 | 55.21 | 57.78 | 58.29 |
| | MRPC | F1 | 89.08 | 81.22 | 81.22 | 89.12 | 89.59 |
| | QNLI | Accuracy | 91.72 | 89.84 | 88.43 | 89.88 | 90.07 |
| | QQP | F1 | 87.91 | 86.75 | 86.95 | 87.49 | 87.70 |
| | RTE | Accuracy | 66.06 | 61.37 | 60.64 | 67.78 | 67.87 |
| | SST-2 | Accuracy | 93.00 | 91.85 | 92.20 | 91.97 | 92.77 |
| | STS-B | Pearson corr. | 89.36 | 84.96 | 85.59 | 89.89 | 89.58 |
| | SQuADv1.1 | F1 | 88.22 | 83.85 | 83.67 | 86.84 | 86.15 |

## MY RUN

| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CoLA | Matthew's corr. | 57.29 | 50.08 | 49.32 | 55.51 | 57.11 | | 1 | 0.478069 | 0.531249 |
| | | | | | | | | | 2 | 0.552074 | 0.569930 |
| | | | | | | | | | 3 | 0.555144 | 0.544265 |
| | | | | | | | | | 4 | 0.534564 | 0.534564 |
| | | | | | | | | | 5 | 0.534266 | 0.554397 |
| | | | | | | | | | 6 | 0.534067 | 0.571118 |
| 2 | CoLA | Matthew's corr. | 59.12 | 50.51 | 48.20 | 55.41 | 58.48 | | 1 | 0.499220 | 0.578550 |
| | | | | | | | | | 2 | 0.502488 | 0.569408 |
| | | | | | | | | | 3 | 0.535847 | 0.551091 |
| | | | | | | | | | 4 | 0.514783 | 0.542267 |
| | | | | | | | | | 5 | 0.554130 | 0.584819 |
| | | | | | | | | | 6 | 0.530497 | 0.555285 |
| 3 | CoLA | Matthew's corr. | 56.49 | 46.93 | 43.94 | 57.60 | 56.75 | | 1 | 0.467371 | 0.530097 |
| | | | | | | | | | 2 | 0.534719 | 0.533220 |
| | | | | | | | | | 3 | 0.541772 | 0.531171 |
| | | | | | | | | | 4 | 0.542004 | 0.567573 |
| | | | | | | | | | 5 | 0.551796 | 0.563783 |
| | | | | | | | | | 6 | 0.576078 | 0.541004 |
| 4 | CoLA | Matthew's corr. | 61.37 | 50.24 | 48.53 | 56.60 | 57.07 | | 1 | 0.545036 | 0.551277 |
| | | | | | | | | | 2 | 0.462617 | 0.539982 |
| | | | | | | | | | 3 | 0.536040 | 0.566366 |
| | | | | | | | | | 4 | 0.566035 | 0.570780 |
| | | | | | | | | | 5 | 0.548436 | 0.535594 |
| | | | | | | | | | 6 | 0.545606 | 0.555020 |
| 5 | CoLA | Matthew's corr. | 57.92 | 47.20 | 44.96 | 56.30 | 57.01 | | 1 | 0.485719 | 0.512872 |
| | | | | | | | | | 2 | 0.456500 | 0.545036 |
| | | | | | | | | | 3 | 0.502897 | 0.570138 |
| | | | | | | | | | 4 | 0.536115 | 0.559896 |
| | | | | | | | | | 5 | 0.521857 | 0.559824 |
| | | | | | | | | | 6 | 0.563049 | 0.552690 |

## MY RUN

| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SQuADv1.1 | F1 | 88.01 | 71.50 | 72.55 | 86.88 | 86.66 | | 1 | 86.27 | 85.79 |
| | | | | | | | | | 2 | 86.26 | 86.66 |
| | | | | | | | | | 3 | 86.88 | 86.61 |

## MY RUN

| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MRPC | F1 | 89.51 | 80.07 | 79.60 | 90.01 | 90.87 | | 1 | 0.854545 | 0.908778 |
| | | | | | | | | | 2 | 0.900169 | 0.890845 |
| | | | | | | | | | 3 | 0.891938 | 0.895833 |
| | | | | | | | | | 4 | 0.884956 | 0.897747 |
| | | | | | | | | | 5 | 0.896194 | 0.890388 |
| | | | | | | | | | 6 | 0.881533 | 0.886986 |

## MY RUN

| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | MRPC | F1 | 90.65 | 80.92 | 78.96 | 89.84 | 90.41 | | 1 | 0.868613 | 0.901893 |
| | | | | | | | | | 2 | 0.882883 | 0.897133 |
| | | | | | | | | | 3 | 0.888147 | 0.904110 |
| | | | | | | | | | 4 | 0.891608 | 0.894472 |
| | | | | | | | | | 5 | 0.897260 | 0.885017 |
| | | | | | | | | | 6 | 0.898451 | 0.901695 |

## MY RUN

| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | MRPC | F1 | 90.34 | 50.13 | 50.26 | 89.94 | 90.00 | | 1 | 0.889667 | 0.897611 |
| | | | | | | | | | 2 | 0.896552 | 0.894366 |
| | | | | | | | | | 3 | 0.896435 | 0.900000 |
| | | | | | | | | | 4 | 0.899489 | 0.899830 |
| | | | | | | | | | 5 | 0.897611 | 0.893039 |
| | | | | | | | | | 6 | 0.896552 | 0.894646 |

## MY RUN

| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RTE | Accuracy | 69.31 | 50.54 | 51.98 | 69.67 | 70.03 | | 1 | 0.635379 | 0.678700 |
| | | | | | | | | | 2 | 0.671480 | 0.685921 |
| | | | | | | | | | 3 | 0.660650 | 0.667870 |
| | | | | | | | | | 4 | 0.693141 | 0.700361 |
| | | | | | | | | | 5 | 0.678700 | 0.675090 |
| | | | | | | | | | 6 | 0.696751 | 0.689531 |

| | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MY RUN | | | | | | | | | | | |
| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
| 2 | RTE | Accuracy | 65.34 | 47.29 | 47.29 | 66.42 | 66.06 | | 1 | 0.599278 | 0.638989 |
| | | | | | | | | | 2 | 0.613718 | 0.649819 |
| | | | | | | | | | 3 | 0.617329 | 0.657040 |
| | | | | | | | | | 4 | 0.664260 | 0.649819 |
| | | | | | | | | | 5 | 0.638989 | 0.660650 |
| | | | | | | | | | 6 | 0.638989 | 0.635379 |
| MY RUN | | | | | | | | | | | |
| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
| 3 | RTE | Accuracy | 64.62 | 47.29 | 47.29 | 67.07 | 67.14 | | 1 | 0.631769 | 0.631769 |
| | | | | | | | | | 2 | 0.646209 | 0.649819 |
| | | | | | | | | | 3 | 0.653430 | 0.653430 |
| | | | | | | | | | 4 | 0.620939 | 0.664260 |
| | | | | | | | | | 5 | 0.670700 | 0.671480 |
| | | | | | | | | | 6 | 0.660650 | 0.660650 |
| MY RUN | | | | | | | | | | | |
| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
| 1 | STS-B | Pearson corr. | 88.88 | 72.06 | 75.64 | 89.64 | 89.22 | | 1 | 0.878468 | 0.876068 |
| | | | | | | | | | 2 | 0.881092 | 0.886109 |
| | | | | | | | | | 3 | 0.889583 | 0.888630 |
| | | | | | | | | | 4 | 0.891734 | 0.889244 |
| | | | | | | | | | 5 | 0.894423 | 0.890904 |
| | | | | | | | | | 6 | 0.896493 | 0.892214 |
| | | | | | | | | | | | |
| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
| 2 | STS-B | Pearson corr. | 88.61 | 72.45 | 78.73 | 89.48 | 88.93 | | 1 | 0.876287 | 0.879651 |
| | | | | | | | | | 2 | 0.880674 | 0.883062 |
| | | | | | | | | | 3 | 0.887597 | 0.885128 |
| | | | | | | | | | 4 | 0.891125 | 0.886460 |
| | | | | | | | | | 5 | 0.894325 | 0.886829 |
| | | | | | | | | | 6 | 0.894885 | 0.889336 |
| | | | | | | | | | | | |
| BERT-BASE-UNCASED | Dataset | Metric | BERT baseline accuracy | DQ BERT 4-8 bit | SQ BERT 4-8 bit | QAT BERT 4-8 bit | QSin Bert 4-8 bit | | epoch | QAT BERT 4-8 bit | QSin Bert 4-8 bit |
| 3 | STS-B | Pearson corr. | 88.55 | 79.24 | 79.68 | 89.09 | 89.04 | | 1 | 0.879557 | 0.874005 |
| | | | | | | | | | 2 | 0.879536 | 0.881382 |
| | | | | | | | | | 3 | 0.887080 | 0.884721 |
| | | | | | | | | | 4 | 0.886697 | 0.886590 |
| | | | | | | | | | 5 | 0.890952 | 0.886627 |
| | | | | | | | | | 6 | 0.890047 | 0.890415 |