

# PyTorch Keras PL Quantum Device Benchmarkings December 2023

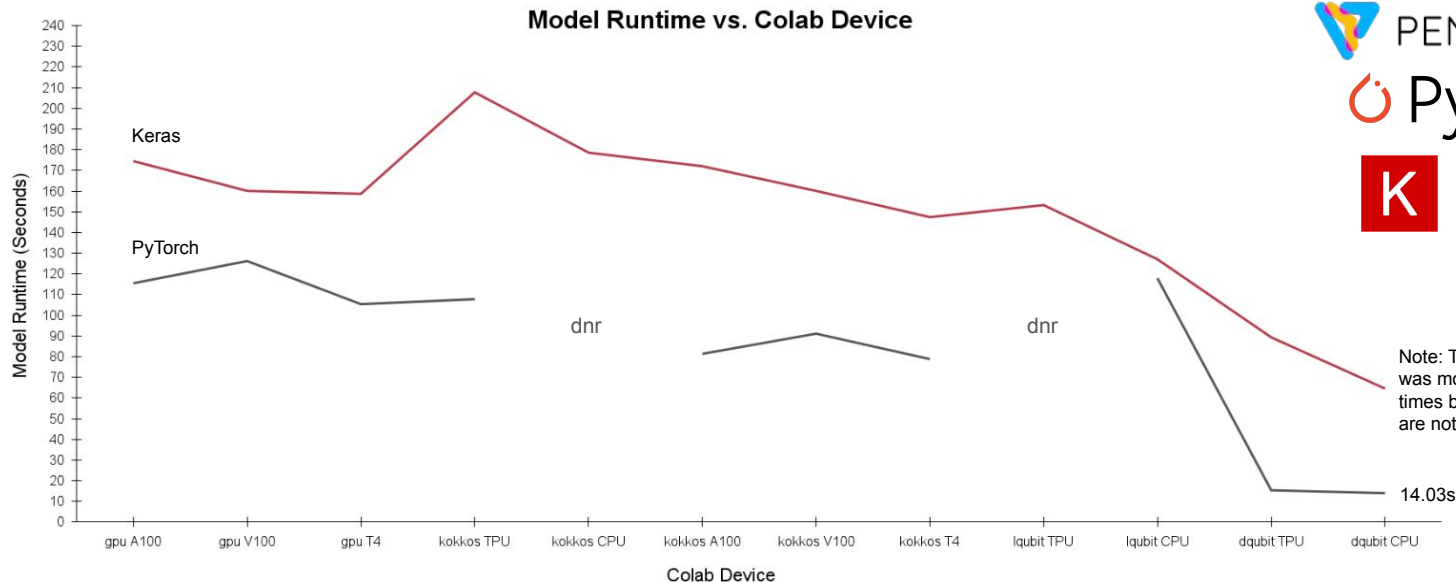


Figure 2/Table 2: PennyLane Keras Model Runtime vs. Colab Device

| Colab Device | gpu A100 | gpu V100 | gpu T4   | kokkos TPU | kokkos CPU | kokkos A100 | kokkos V100 | kokkos T4 | lqubit TPU | lqubit CPU | dqubit TPU | dqubit CPU |
|--------------|----------|----------|----------|------------|------------|-------------|-------------|-----------|------------|------------|------------|------------|
| Time         | 174.53   | 160.12   | 158.71   | 207.76     | 178.62     | 172.05      | 160.13      | 147.44    | 153.26     | 127.07     | 89.34      | 64.58      |
| Cost         | \$0.0634 | \$0.0238 | \$0.0090 | \$0.0113   | \$0.0004   | \$0.0625    | \$0.0238    | \$0.0084  | \$0.0083   | \$0.0003   | \$0.0049   | \$0.0001   |
| Eff          | 0.09     | 0.26     | 0.70     | 0.43       | 14.11      | 0.09        | 0.26        | 0.81      | 0.78       | 27.87      | 2.30       | 107.92     |
| Date         | 12/2/23  | 12/2/23  | 12/2/23  | 12/2/23    | 12/2/23    | 12/2/23     | 12/2/23     | 12/2/23   | 12/2/23    | 12/2/23    | 12/2/23    | 12/2/23    |

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| Colab Device | gpu A100 | gpu V100 | gpu T4   | kokkos TPU | kokkos CPU | kokkos A100 | kokkos V100 | kokkos T4 | lqubit TPU | lqubit CPU | dqubit TPU | dqubit CPU |
|--------------|----------|----------|----------|------------|------------|-------------|-------------|-----------|------------|------------|------------|------------|
| Time         | 115.48   | 126.21   | 105.38   | 107.79     | dnr        | 81.36       | 91.12       | 78.83     | dnr        | 117.91     | 15.43      | 14.03      |
| Cost         | \$0.0419 | \$0.0188 | \$0.0060 | \$0.0059   | n/a        | \$0.0296    | \$0.0136    | \$0.0045  | n/a        | \$0.0003   | \$0.0008   | \$0.0000   |
| Eff          | 0.21     | 0.42     | 1.58     | 1.58       | n/a        | 0.42        | 0.81        | 2.83      | n/a        | 32.37      | 77.16      | 2286.57    |
| Date         | 12/2/23  | 12/2/23  | 12/2/23  | 12/2/23    | 12/2/23    | 12/2/23     | 12/2/23     | 12/2/23   | 12/2/23    | 12/2/23    | 12/2/23    | 12/2/23    |

