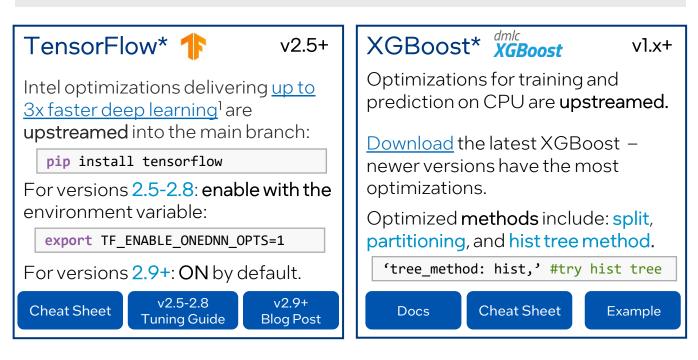
Intel® Optimized Al Libraries & Frameworks 2023 Q1

Using optimized AI software can significantly improve AI workload performance, developer productivity, and compute resource usage costs. <u>Intel® oneAPI</u> libraries enable the AI ecosystem with optimized software, libraries, and frameworks. Software optimizations include leveraging accelerators, parallelizing operations, and maximizing core usage.

We encourage you to check out Intel's full suite of <u>AI tools</u> and <u>framework</u> optimizations. For more optimization packages and tuning guides, visit the <u>Intel®</u> <u>Optimization Hub</u>.



PyTorch* 🍅

v1.5+

Intel **upstreams** optimizations to PyTorch. These features often debut in Intel® Extension for PyTorch*, which can speed performance **up to 2.7x**.²

Install open source PyTorch (<u>Guide</u>). Then install Intel Extension for PyTorch, choosing from:

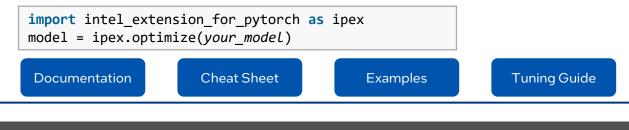
pip install intel-extension-for-pytorch
conda install -c intel intel-extension-for-pytorch

docker pull intel/intel-optimized-pytorch

For previous versions of PyTorch, be sure to install the corresponding version of the extension. Details in the <u>Installation Guide</u>.

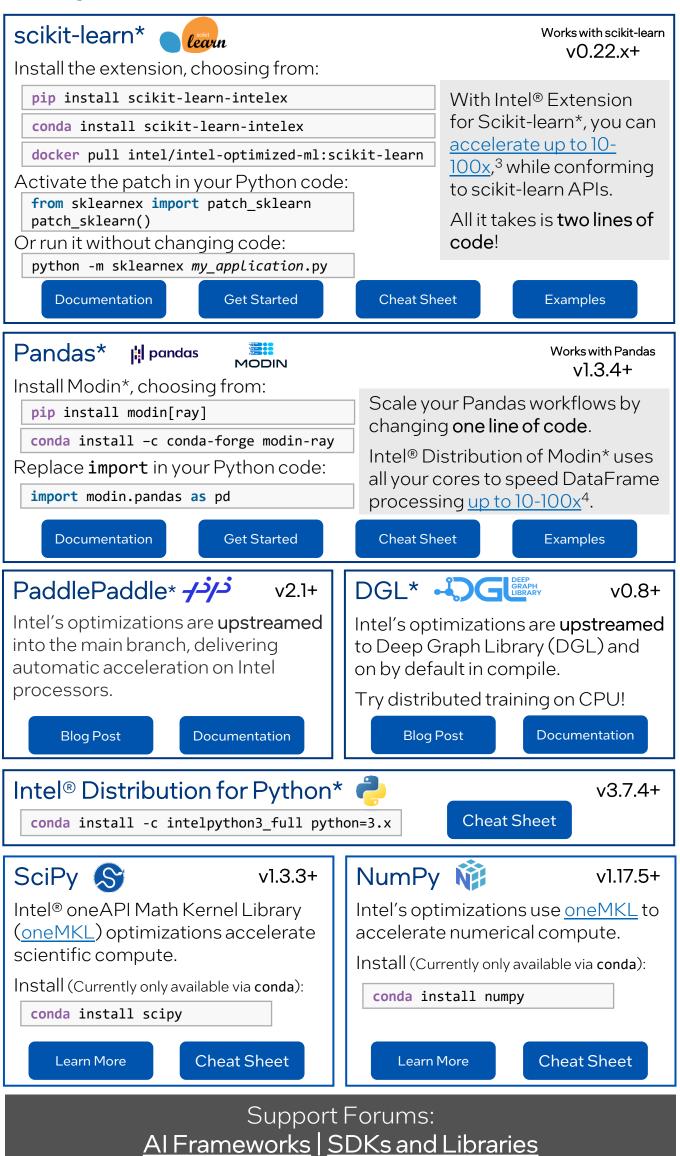
PyTorch Version	<u>v1.13.*</u>	<u>v1.12.*</u>	<u>v].]].*</u>	<u>v1.10.*</u>	<u>v1.9.0</u>	<u>v1.8.0</u>	<u>v1.7.0</u>	<u>v1.5.0-rc3</u>
Extension Version	<u>v1.13.*</u>	<u>v1.12.*</u>	<u>vl.ll.*</u>	<u>v1.10.*</u>	<u>v1.9.0</u>	<u>v1.8.0</u>	<u>v1.2.0</u>	<u>v1.1.0</u>

To enable these extensions, add these **two lines** to your Python* code:



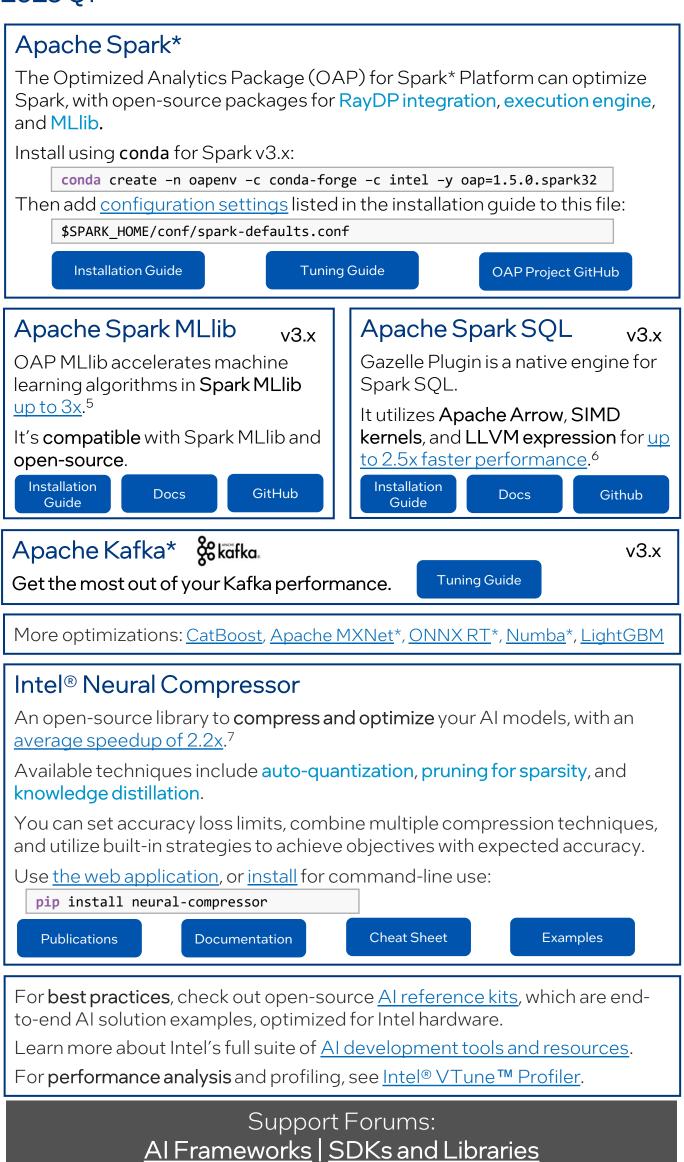


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Notices & Disclaimers

Performance varies by use, configuration, and other factors. Learn more at <u>www.Intel.com/PerformanceIndex</u>. Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure. Your costs and results may vary. Intel technologies may require enabled hardware, software, or service activation. © Intel Corporation. Intel, the Intel logo, and other Intel marks are trademarks of Intel Corporation or its subsidiaries. Other names and brands may be claimed as the property of others.

Performance Claims

¹<u>https://medium.com/intel-analytics-software/leverage-intel-deep-learning-optimizations-in-tensorflow-129faa80ee07</u>

²<u>https://intel.github.io/intel-extension-for-</u> pytorch/cpu/latest/tutorials/performance.html

³<u>https://www.intel.com/content/www/us/en/developer/articles/technical/b</u> <u>enchmarking-intel-extension-for-scikit-learn.html#gs.jnlmgq</u>

⁴<u>https://modin.readthedocs.io/en/latest/getting_started/why_modin/modin</u> _vs_dask_vs_koalas.html#performance-comparison

⁵ <u>https://oap-project.github.io/gazelle_plugin/latest/User-</u> <u>Guide/#performance-data</u>

⁶<u>https://oap-project.github.io/gazelle_plugin/latest/User-</u> <u>Guide/#performance-data</u>

⁷<u>https://www.intel.com/content/www/us/en/developer/articles/technical/pytorch-inference-with-intel-neural-compressor.html#gs.k9o31y</u>

Support Forums: <u>AI Frameworks</u> | <u>SDKs and Libraries</u> *Names and brands may be claimed as the property of others.