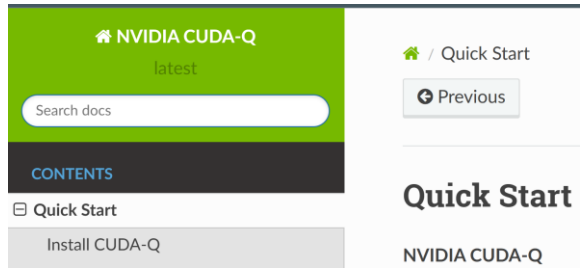
CUDA-Q Onboarding

Installation Guide & Quick Start

Start your CUDA-Q journey

- **Installation by Using PyPI:**
  - Required GPU architect: *Volta, Turing, Ampere, Ada, Hopper*
  - Ensure that the CUDA Toolkit is installed (version>=11.x)

    (Note: Support for CUDA 11 will be removed in future releases. Please update to CUDA 12)
  - Driver version is updated (version >= 470.57.02)
  - Install CUDA-Q directly via PyPI (pip version >= 24.0)



CUDA-Q documentation for detailed installation instructions

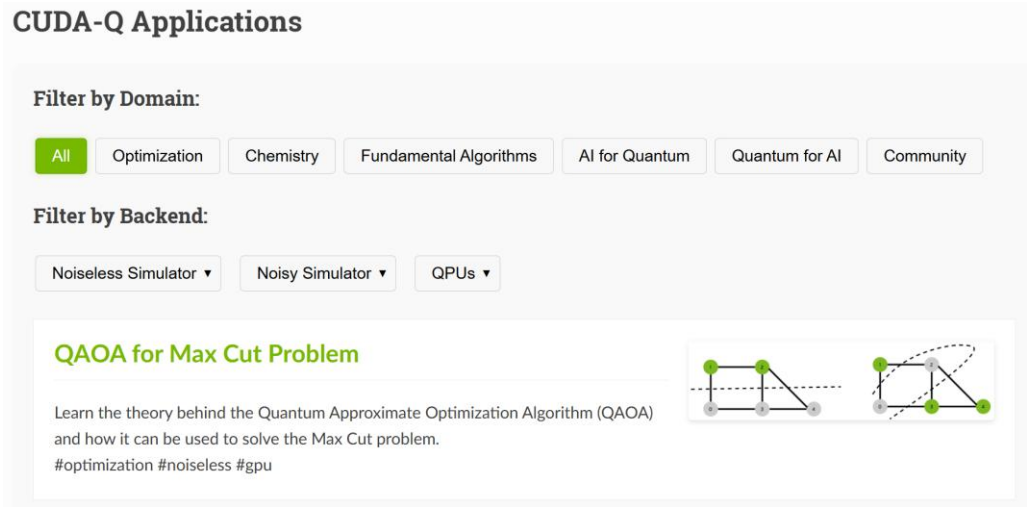
- **Installation by Using Container [Recommended]:**
  - If you are using Windows, WSL (Windows Subsystem for Linux) is needed, and it should be WSL2. Follow WSL Installation Guide
  - Install Docker by visiting Docker's website
  - Pull/Run the container image
  - Note that CUDA-Q currently has 2 branches based on the version of the CUDA Toolkit:
    1) For CUDA 11 – nvcr.io/nvidia/quantum/cuda-quantum:**cu11**-0.11.0
    2) For CUDA 12 – nvcr.io/nvidia/quantum/cuda-quantum:**cu12**-0.11.0

- **Get Started:**
  - Learn CUDA-Q basics for easy hands-on
  - Official GitHub repository for full understanding

Open-source Tutorials & CUDA-Q APIs

Let's build your future innovations with CUDA-Q

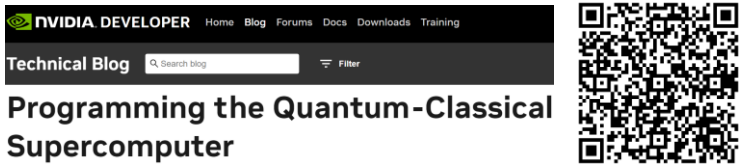
- **More Tutorials**
  - By Example: https://nvidia.github.io/cuda-quantum/latest/using/examples/examples.html
  - By Application: https://nvidia.github.io/cuda-quantum/latest/using/applications.html

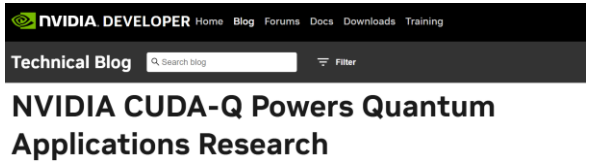


- **Advanced Tutorials:**
  - Multi-GPU Workflows
  - CUDA-Q Academic

- **All CUDA-Q APIs:**
  - https://nvidia.github.io/cuda-quantum/latest/api/languages/python_api

- **Blogs:**





Appendix

Install CUDA-Q in Conda environment with pip

- For Windows OS, use WSL terminal to run the following commands and install Miniconda:

```
# Download Miniconda
wget https://repo.anaconda.com/miniconda/Miniconda3-latest-Linux-x86_64.sh

# Make the installer executable
chmod +x Miniconda3-latest-Linux-x86_64.sh

# Run the installer
./Miniconda3-latest-Linux-x86_64.sh
```

- Create and activate Conda environment, then install CUDA-Q:

```
# Run this command to initialize Conda:
source ~/miniconda3/etc/profile.d/conda.sh

# Check Conda version to verify installation.
conda --version

# Install CUDA-Q with the necessary components for specified CUDA version (e.g., 12.4.0)
cuda_version=12.4.0
conda create -y -n cudaq-env python=3.11 pip
conda install -y -n cudaq-env -c "nvidia/label/cuda-${cuda_version}" cuda
conda env config vars set -n cudaq-env LD_LIBRARY_PATH="$CONDA_PREFIX/envs/cudaq-env/lib:$LD_LIBRARY_PATH"
conda activate cudaq-env
pip install cudaq
```