

Launching... World First Open-Source SDK for Photonic Computing , **PCIe卡**无缝衔接现有CPU/GPU环境,光子处理器增强HPC/Data Center, 加速邁向未来AI量子计算机Quantum Computer!



两座欧洲标杆HPC中心/IONOS云服务商证明Q.ANT NPU光子处理加速器重大效益50x/25x/6x,及Non-linear算法对AI 推论训练增强和结果正确性提高



THE Q.ANT NATIVE PROCESSING SERVER NPS

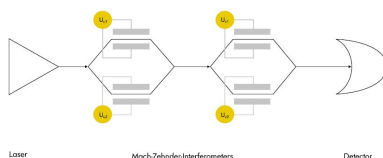
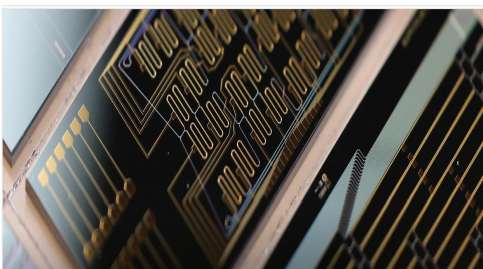


Figure 1: Schematic diagram of the components of a photonic computing system. A product $u \cdot v$ is computed through according voltages applied to PICs
Source: Q.ANT, 2026

Q.ANT relies on its own integrated waveguide technology platform for quantum chips and photonic integrated circuits, based on the material lithium niobate.

In addition, non-linear operations are possible through appropriately controlling the modulation on the PIC, leading to a weighted sinusoidal function of a vector of input data. Future versions will introduce more computationally complex optical operations, enabling new classes of algorithms.

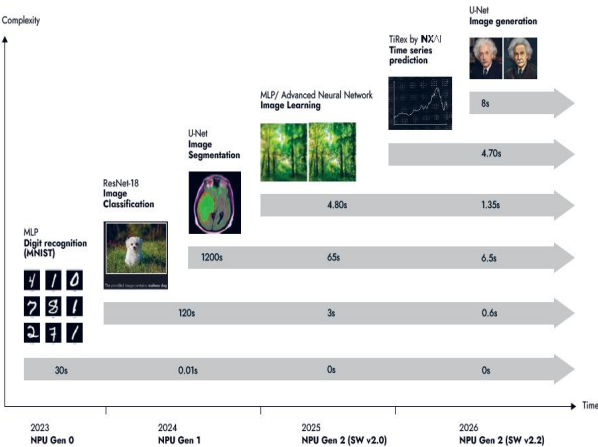
Q.PAL – The Q.ANT Photonic Algorithms Library

- The Q.ANT Photonic Algorithms Library Q.PAL is the software interface to the NPS which enables users to operate directly at the multiplication level or to leverage optimized neural network operations such as fully connected layers or convolutional layers.
- Q.PAL offers a comprehensive collection of example applications that illustrate how AI applications can be enhanced.
- These examples can be implemented directly or as a foundation for creating custom use cases.

Name	Description	Programming Language
Matrix Multiplication	Multiplication of a matrix and a vector	Python / C++
Image Classification	Classification of an image (e.g. based on ImageNet data set)	Python (Jupyter)
Semantic Segmentation	Segmentation of an image (based on a brain MRI data set)	Python (Jupyter)
Complex Line Fitting	Fitting of a high frequency line with a nonlinear network (e.g. based on simulated training data)	Python (Jupyter)

CLIMBING THE COMPLEXITY LADDER OF AI MODELS

Each generation of Q.ANT's photonic processor demonstrates a consistent increase in AI model complexity and processing performance - providing clear evidence that photonic computing can reliably execute basic AI workloads and scale toward future generations of AI.



A DAY IN THE LIFE OF AN AI MODEL

Based on a standard neural network



Applications

Application codes in PyTorch:

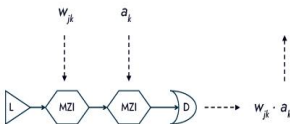


Standard libs and frameworks

PyTorch generates input to Compiler: $Z = AW + b$; $A = \sigma(Z)$

Driver and base interface

Toolkit submits through driver for optical implementation e.g. multiply elements of:



Note: MUR code is not functional and just for illustration purposes

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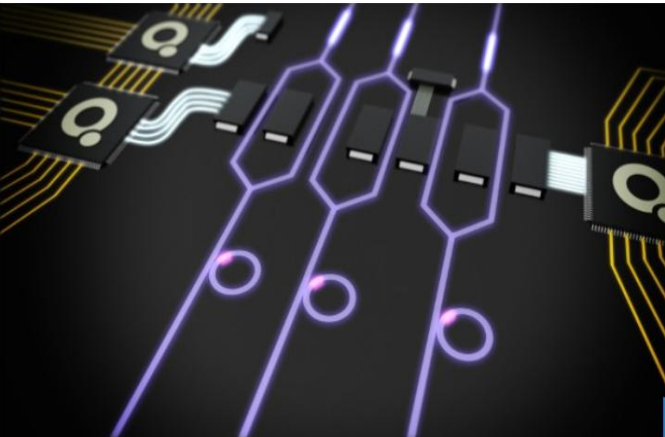
PHOTONIC COMPUTING WILL BENEFIT A BROAD APPLICATION SPACE

Artificial Intelligence	Function Approximation	Nonlinear Networks for high-frequency Signals	Nonlinear functions are native in optics, reducing the number of model parameters	Financial Modeling Sales Forecasting National Grid Forecast
	Natural Language Processing	Transformer based Language Models	More efficient model architecture with fewer parameters for accelerated training & inference	Agentic AI & Chatbots Text Generation Programming
	Image Processing	Convolutional Neural Networks	Faster computations by transforming convolutions to multiplications in Fourier domain, reducing energy and memory usage	Computer Vision Medical Image Analysis Quality Control in Manufacturing
Computational Modeling & Simulation	AI-enhanced PDE Simulation	Neural Operators and Deep Operator Networks	Faster and more energy-efficient simulations remaining robust to deviations from the ideal Fourier transform	Finite-Element Analysis Computational Fluid Dynamics Process Modeling
	Molecular Property Prediction	Graph Neural Networks	Faster and more efficient networks with fewer parameters while maintaining high accuracy	Drug Discovery Materials Design Bio and Chem Informatics

The Q.ANT SDK is available now on GitHub:

Toolkit: https://github.com/Q-ANT-GmbH/qant_native_computing_toolkit

Examples: https://github.com/Q-ANT-GmbH/qant_native_computing_toolkit_examples



Graphical representation of a photonic quantum computer with ring resonators as quantum lightsources (violet circles), waveguides (violet lines), electrically modulable Mach-Zehnder interferometers (diamonds) as well as electrical contacts (black boxes), chip control (black ICs with the Q logo) and wiring (gold and white lines).