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Unlock the Future of Quantum Machine Learning with QTIndu's Free Online Course

Quantum Machine Learning (QML), is designed to equip professionals, researchers, and students across Europe with the skills to navigate the quantum revolution.

BARCELONA, SPAIN, October 22, 2024 /EINPresswire.com/ -- 𝗤𝘂𝗮𝗻 𝘁𝘂 𝗺 𝗠𝗮𝗰𝗵𝗶𝗻𝗲 𝗟𝗲𝗮𝗿𝗻𝗶𝗻𝗴, 𝗼𝗿 𝗤𝗠𝗟 𝗳𝗼𝗿 𝘀𝗵𝗼 𝗿𝘁 𝗶𝘀 𝗮 𝗰𝘂𝘁𝘁𝗶𝗻𝗴-𝗲𝗱𝗴𝗲 𝗳𝗶𝗲𝗹𝗱

The QTIndu project has introduced an advanced course in Quantum Machine Learning (QML), aimed at professionals, researchers, and students across Europe. This initiative is part of a broader effort to advance quantum technology education and training, with a focus on supporting businesses, small and medium enterprises (SMEs), and technical professionals. The QTIndu project, funded by the European Commission, aims to create a comprehensive quantum training ecosystem aligned with industry demands, helping companies prepare for the potential of quantum technologies.

Quantum feature map

Data in original space

Data in feature space

$$|\phi\rangle \sim \begin{pmatrix} \alpha_0 \\ \alpha_1 \\ \alpha_2 \\ \alpha_3 \end{pmatrix} \qquad M = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \\ 0 & 0 & \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \end{pmatrix}$$

The newly launched QML course is available online and free to participants across the EU. It provides a unique opportunity for learners to explore the intersection of quantum computing and machine learning. As industries increasingly adopt artificial intelligence (AI) for complex problem-solving, QML offers a significant advancement, acting as a bridge between AI and quantum-powered innovations. The course provides foundational knowledge applicable to a

range of industries, including finance, healthcare, and logistics.

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The course introduces participants to the fundamentals of quantum computing and its integration with machine learning. Core topics covered include:
- Optimisation problems using quantum annealing
- Parameterised quantum circuits (PQC) and the quantum approximate optimisation algorithm (QAOA)
- Advanced techniques in quantum classifiers, regression, and unsupervised learning
Each module includes practical applications and hands-on exercises, allowing learners to explore quantum algorithms in depth.

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- Technical skills: Participants will develop expertise in solving quantum unconstrained binary optimisation (QUBO) problems and using QAOA. They will also gain insights into quantum machine learning models, such as PQCs and quantum support vector machines, and learn optimisation techniques using D-Wave systems.

- Business skills: The course addresses how quantum machine learning can help solve business challenges. Participants will gain strategic insights into quantum-enhanced algorithms, enabling informed decisions on quantum technology investments and positioning them to gain a competitive advantage.

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The course is designed for:
- Software developers and data scientists
- Researchers
- Students
- Business professionals interested in quantum computing applications

QTIndu aims to provide essential resources that prepare the European workforce to play a leading role in the quantum revolution. This course equips participants with the skills needed to stay ahead of emerging technological trends and harness the potential of quantum computing.

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The course has been developed by QURECA (Quantum Resources and Careers), a leading organisation specialising in quantum workforce development, training, and educational resources. QURECA focuses on bridging the gap between quantum technology advancements and industry needs, supporting businesses in their adoption of quantum technologies.

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QTIndu is a Europe-wide initiative focused on advancing quantum technologies through strategic education, training, and workforce development. It offers free programmes to equip businesses

and professionals with the skills required for the quantum era.

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