

QUANTUM MACHINE LEARNING

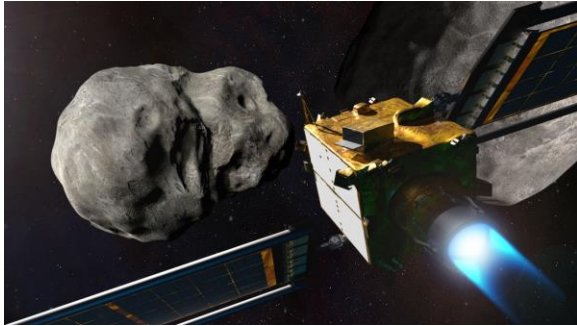
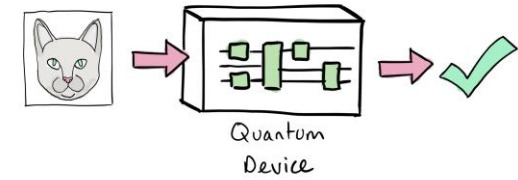
XX CIITI - 29 DE SETIEMBRE 2022 - JUAN PABLO BRAÑA

CAETI

Centro de Altos Estudios en
Tecnología Informática

FACULTAD DE TECNOLOGÍA INFORMÁTICA - UAI

QUANTUM COMPUTING + ARTIFICIAL INTELLIGENCE = QML

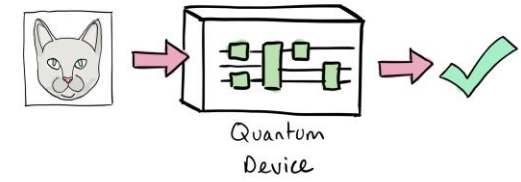


Tamaño del asteroide: 160 metros
Distancia de la Tierra: 11 millones de kilómetros
Velocidad: 22.000 km/h
Tipo de navegación: Autónoma sin supervisión humana en el último tramo



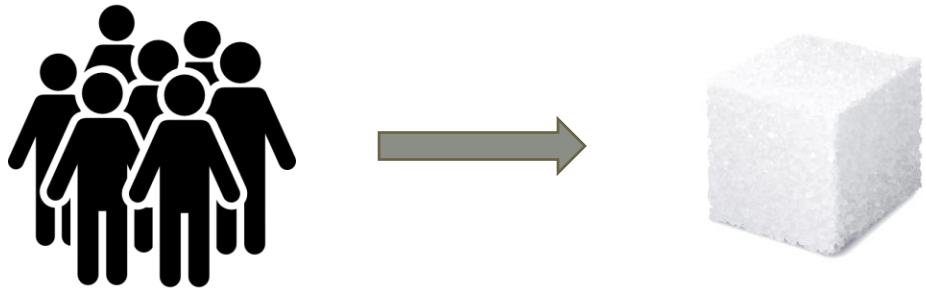
Voyager 1 Fecha de partida: 1977
Distancia recorrida dese la Tierra: 23.500 millones de kilómetros
Voyager 2, luego de 11 meses volvió a transmitir

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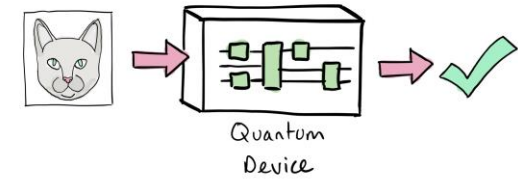


Los átomos son 99.99999999999999% espacio vacío

7.9 billones de personas podrían comprimirse en un cubo de azúcar



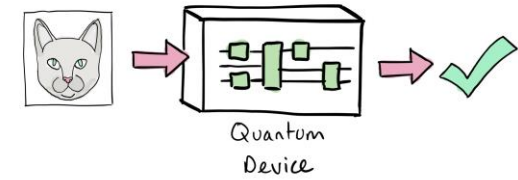
QUANTUM COMPUTING + ARTIFICIAL INTELLIGENCE = QML



Nature isn't classical, dammit, and if you want to make a simulation of nature, you'd better make it quantum mechanical, and by golly it's a wonderful problem, because it doesn't look so easy.

— *Richard P. Feynman* —

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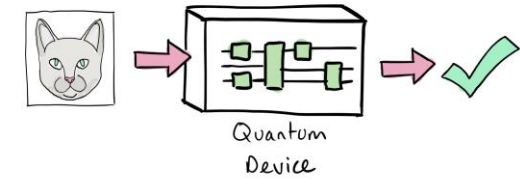
— *Richard P. Feynman* —



I think I can safely say that nobody understands quantum mechanics.

(Richard Feynman)

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COMPUTACIÓN CLÁSICA --> FÍSICA CLÁSICA

COMPUTACIÓN CUÁNTICA --> MECÁNICA CUÁNTICA

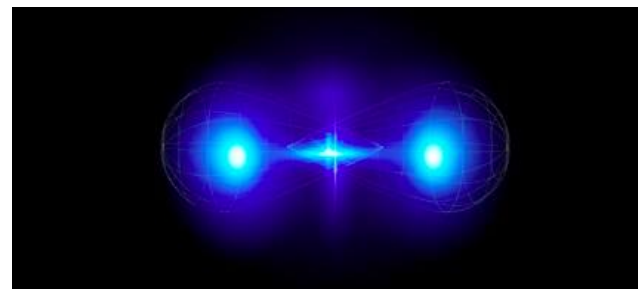
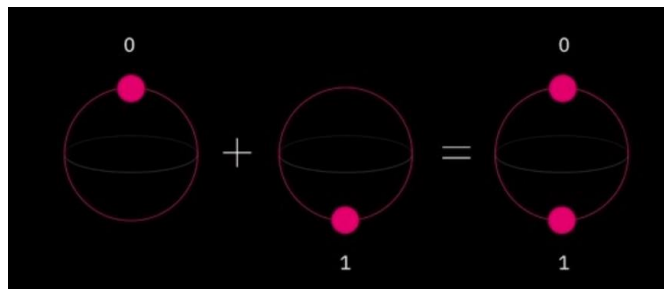
QUANTUM COMPUTING IS NOT UNIVERSALLY FASTER THAN CLASSICAL COMPUTING.

IT IS ONLY FASTER FOR SPECIAL TYPES OF CALCULATIONS WHERE YOU CAN USE ALL THE SUPERPOSITION AND PARALLELISM POWER TO OBTAIN A MEASURABLE RESULT.

SO, IT IS NOT A REPLACEMENT OF CLASSICAL COMPUTING.

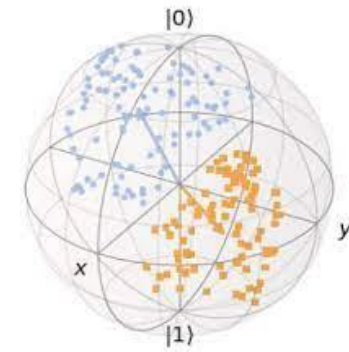
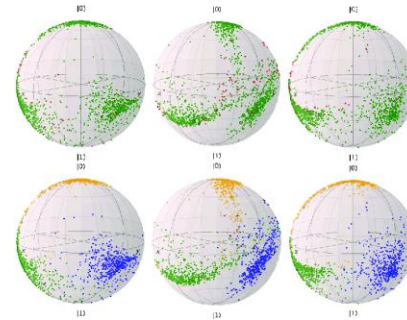
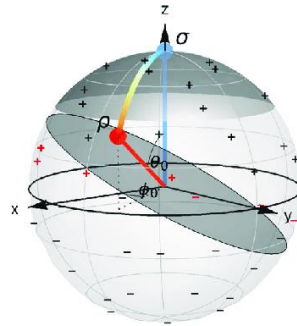
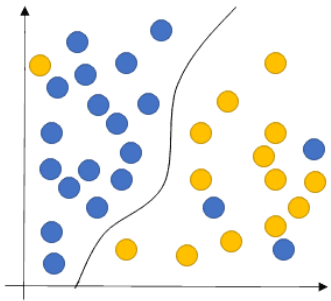
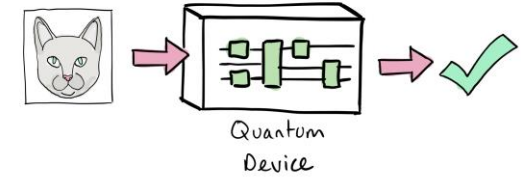
IMPLICACIONES

- TÉCNICAS:
Mayor velocidad de cálculo en determinadas operaciones
Nuevos paradigmas y algoritmos de cálculo y algoritmos
- SOCIALES - RELIGIOSAS - FILOSÓFICAS
Many-Worlds Interpretation
Quantum Mind or Quantum Consciousness

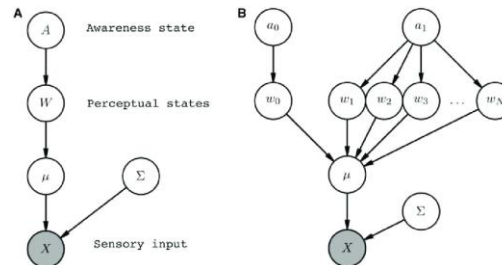
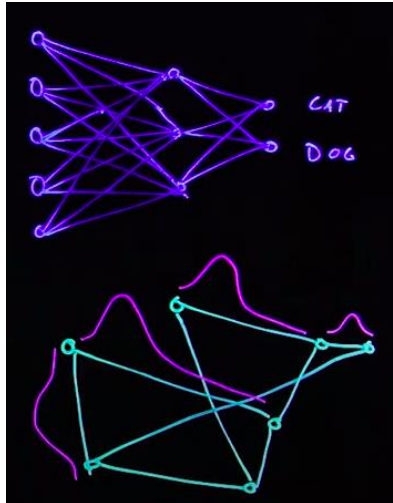


SUPERPOSICIÓN &
ENTRECRUZAMIENTO

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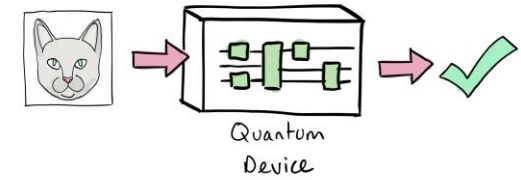
QML no tiene como finalidad solucionar o acelerar problemas ya resueltos por Deep Learning o Machine Learning Clásico, pretende solucionar problemas que se resisten a cálculos clásicos como "Structured Probabilistic Models" con relaciones gráficas.



HYBRID QML



QUANTUM COMPUTING + ARTIFICIAL INTELLIGENCE = QML



MUCHAS GRACIAS

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