WORKSHOP STRUCTURE

Quantum Machine Learning

qolour

Where quantum computing meets machine learning, and which parts of that claim survive contact with real hardware.

DURATION 2h 20m	WITH BREAK 2h 30m
FORMAT Worked examples	AUDIENCE Gr 11+ / undergrad
MATERIALS No Qubis required	PREREQ Fundamentals

0:00 PART 1 Introduction to quantum algorithms — 60 min

- 0:00 State of quantum computing
- 0:20 The problem with noise
- 0:40 Overview of quantum algorithms

Break · 10 minutes

1:10 PART 2 Introduction to QML — 45 min

- 1:10 Encoding data
- 1:19 Feature transforms
- 1:28 Linear algebra
- 1:37 Topological data analysis
- 1:46 Quantum neural networks

1:55 PART 3 Use case exploration — 35 min

- 1:55 Use case discussion
- 2:04 Techniques discussion
- 2:13 Implementation walkthrough
- 2:22 Discussion and implications

WHAT PARTICIPANTS LEAVE WITH

Where the hardware stands
What today's machines can do, and what noise costs.

Getting data in
Why encoding is the bottleneck, not the algorithm.

The linear-algebra core
What QML actually accelerates, and under what assumptions.

A worked use case
End to end, from problem statement through implications.

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