AI-Driven Predictive Analytics with Quantum Computing for Industry Applications

Valedictory Address

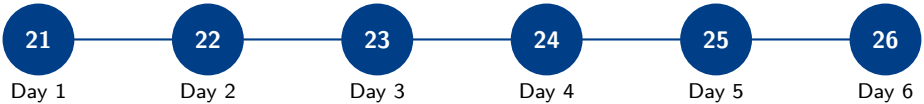
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AICTE-ATAL Six-Day Faculty Development Programme
Department of Computer Applications, JIET Jodhpur

26 October 2026

The FDP at a Glance

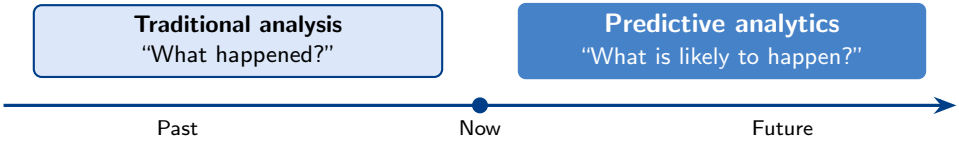
October 2026 — offline — AICTE, ATAL scheme — theory + labs + case studies

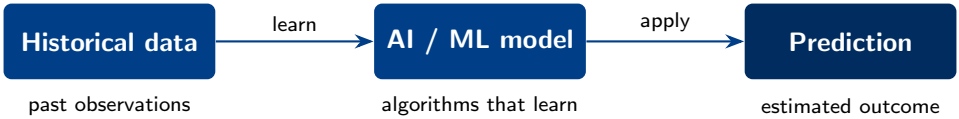


Topics covered

- Mathematical foundations
- Data preprocessing & features
- Machine-learning models
- Quantum computing basics
- Quantum optimization
- Defence applications
- Deploying & validating hybrid systems
- Innovative teaching strategies

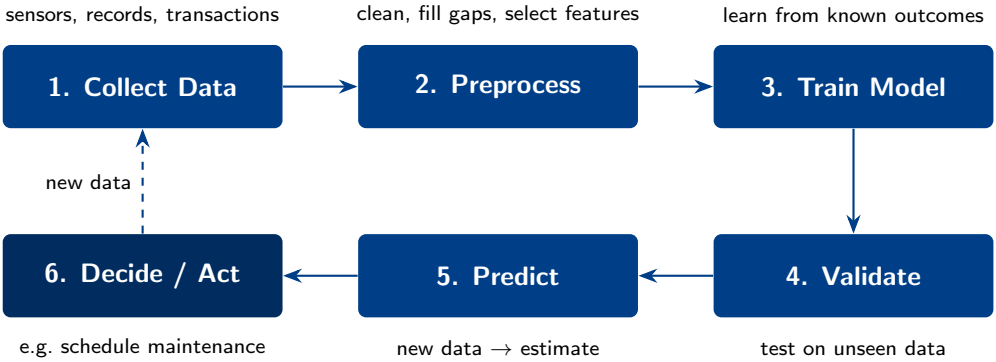
Predictive Analytics in Brief



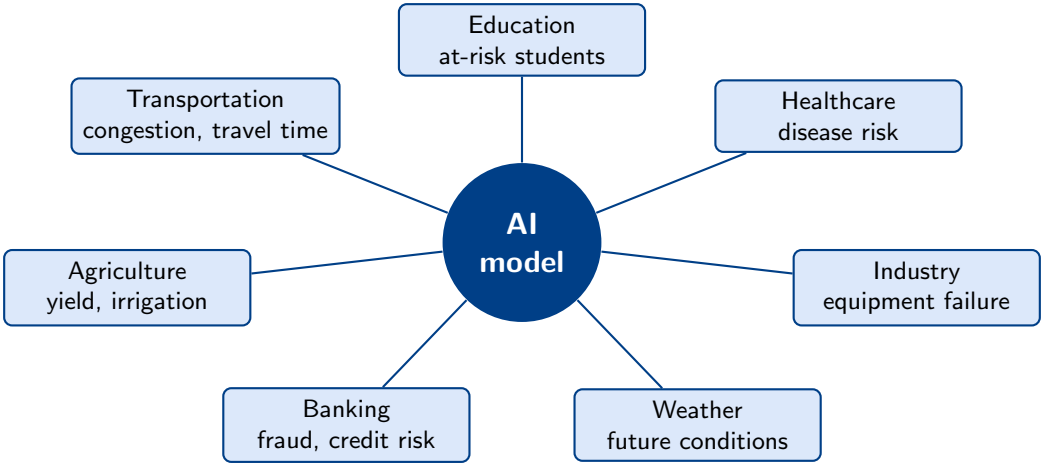


Example: machine sensor history → model → early warning of failure

Diagram: The Predictive Analytics Pipeline

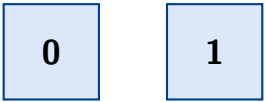


Applications Across Domains



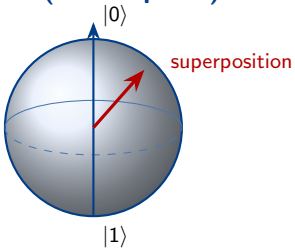
Quantum Computing in Brief: Bit vs. Qubit

Classical bit



exactly one state:
0 **or** 1

Qubit (Bloch sphere)



Superposition
a blend of 0 and 1

Entanglement
correlations beyond classical bits

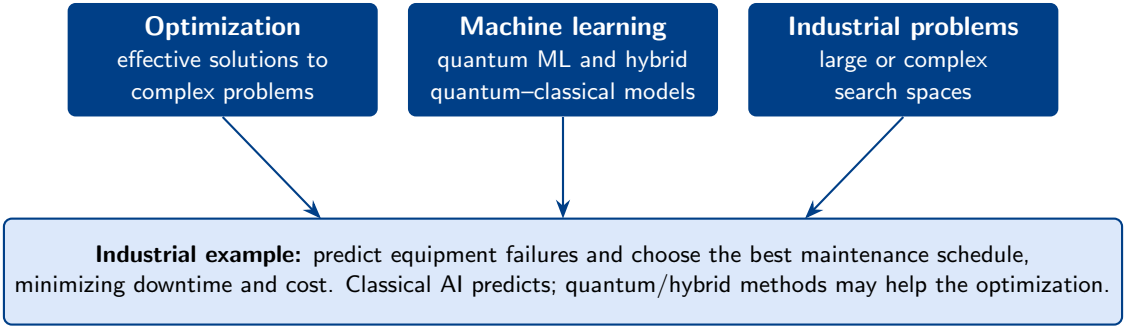
Interference
reinforces correct answers

Conventional vs. Quantum Computing

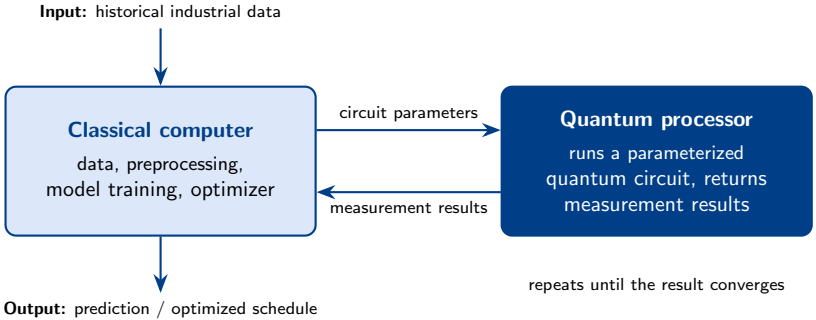
Aspect	Conventional	Quantum
Basic unit	Bit: 0 or 1	Qubit: superposition of 0 and 1
Principle	Classical logic and physics	Quantum mechanics
Strength	General-purpose, reliable, mature	Promising for selected problems, e.g. optimization
Maturity	Widely deployed	Experimental; noisy, limited scale
Role in AI	Trains and runs today's models	Researched for hybrid quantum–classical models

Quantum computers are expected to *complement*, not replace, conventional computers.

Where Quantum Computing May Help



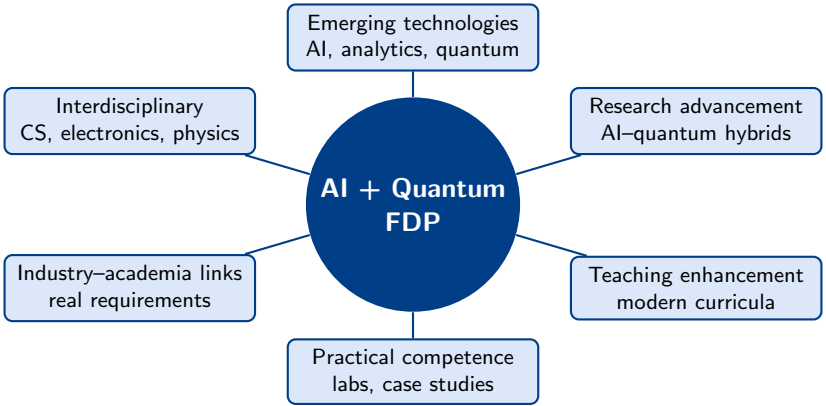
Hybrid Quantum–Classical Workflow



A Word of Caution

Quantum computing does **not** automatically make prediction faster or more accurate; a practical advantage over classical methods is still an open research challenge.

Why This FDP Matters



Critical Analysis: Choosing the Right Topic



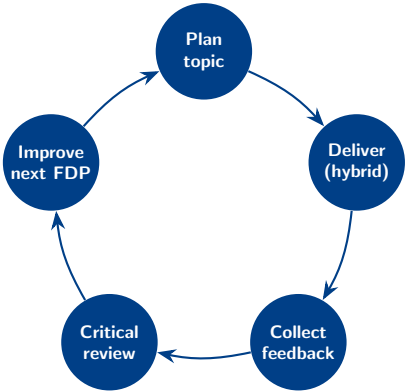
Questions to ask honestly

Is the balance between AI foundations and quantum content right?

Do participants have the mathematical background?

Have we separated established practice from hype?

Improving Future FDPs: Hybrid Mode and Feedback

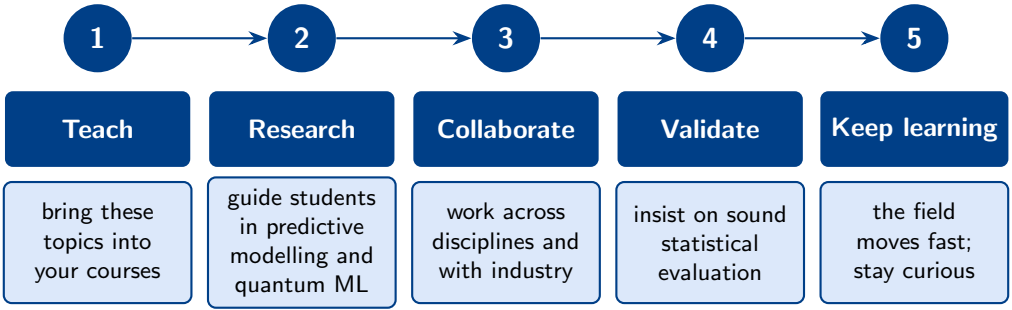


Hybrid mode

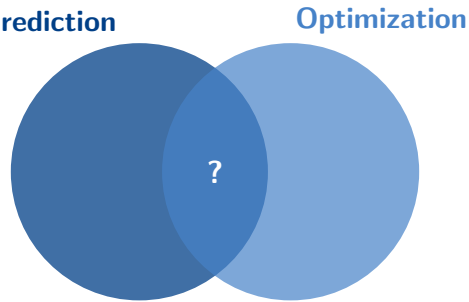
- On-campus: labs and discussions
- Online: for those who cannot travel
- Recorded sessions and shared material
- Follow-up after 3–6 months

Did it change teaching or research?

Advice to Participants



The Question to Carry Forward



Can **quantum or hybrid** computational methods improve how we solve particular prediction and optimization problems?

This question captures the academic motivation behind this FDP.

Thank You

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