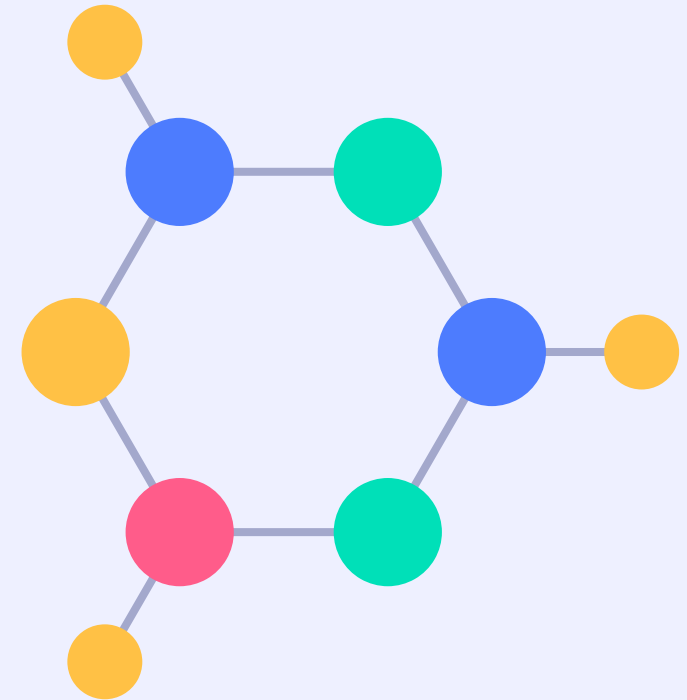


TECHNICAL SEMINAR

Machine Learning in Healthcare

How data is changing diagnosis and care

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02 | Agenda

01

Overview

02

Core concepts

03

Applications

04

Challenges

05

Future

03 | Introduction

- Machine learning finds patterns in medical data
- It supports doctors in diagnosis and planning
- Used with scans, records and wearable data
- Needs careful validation and privacy safeguards



Image

04 | Key concepts

01

Supervised learning

Learning from labelled examples.

02

Computer vision

Reading X-rays and scans.

03

Predictive models

Estimating risk from records.

05 | How it works



Collect

Anonymised clinical
data



Train

Models learn patterns



Validate

Test on new hospitals



Assist

Support doctors'
decisions

06 | Architecture



Architecture diagram

Data pipelines, models and clinician review.

Models are trained on de-identified data, validated on separate populations and deployed as decision support, with clinicians always making the final call.

07 | Applications



Image 1

Radiology

Flagging suspicious scans.



Image 2

Triage

Prioritising urgent cases.



Image 3

Chronic care

Predicting complications early.

08 | Advantages and limitations

Advantages

- Earlier detection
- Faster reporting
- Support where specialists are scarce
- Personalised care

vs

Limitations

- Bias in data
- Privacy risks
- Hard to explain decisions
- Regulatory hurdles

**AI will act as a second pair
of eyes for every clinician.**

Looking ahead

10 | Conclusion

- ML can extend specialist expertise
- Validation and fairness are essential
- Humans stay in charge of care

11 | References

- [1] Survey paper on the topic, IEEE Access, 2024.
- [2] Textbook chapter covering fundamentals, 2023.
- [3] Recent conference paper on applications, 2025.
- [4] Industry white paper (generic reference).

Questions?

Thank you for listening.