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InterContinental Dubai Festival City

Use of AI in Cancer Care – A Case Study

Tawam Hospital experience



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Artificial Intelligence refers to multiple technologies that can be combined to:



Act



Comprehend



Sense

AI Technologies

Machine Learning

Expert Systems

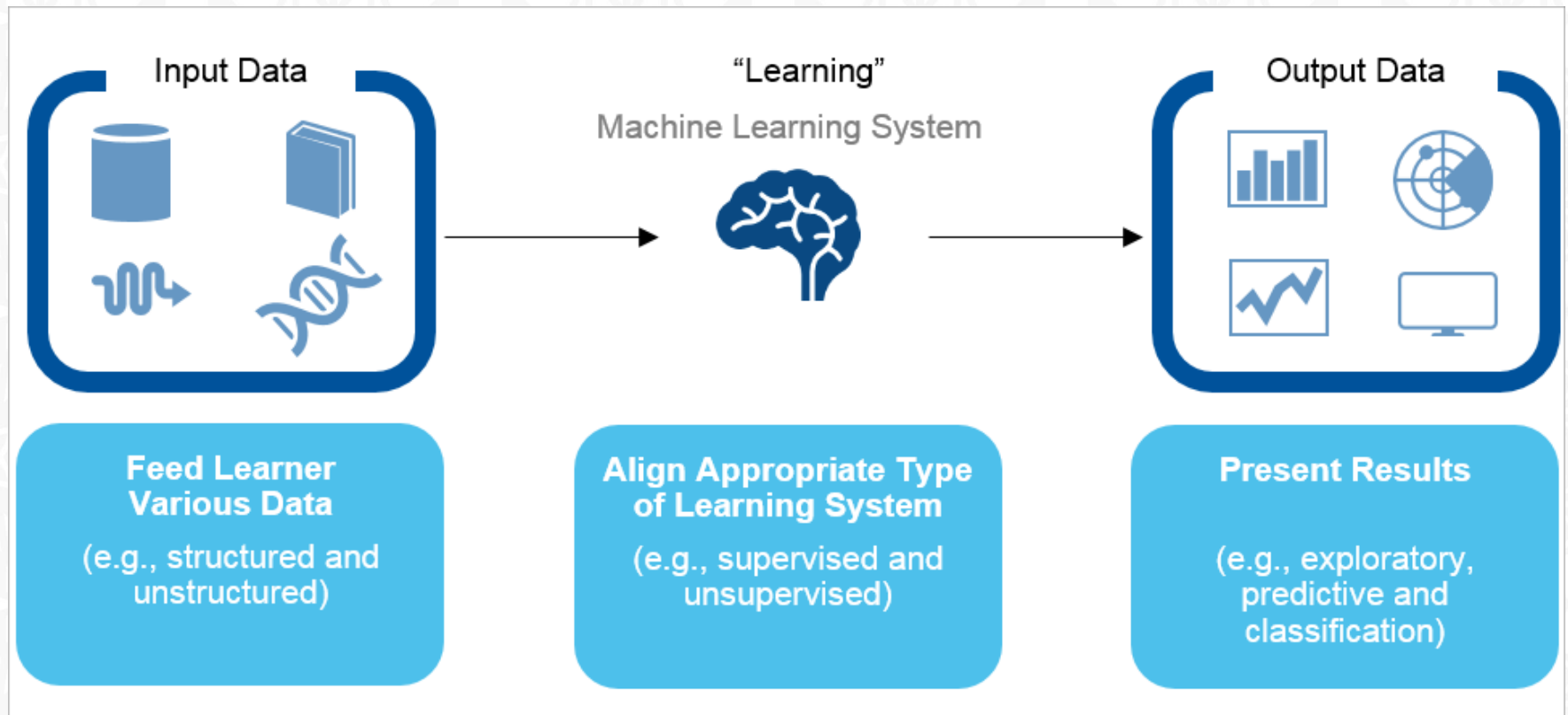
Language Processing

Knowledge Representation

Computer Vision

Audio Processing

What is Machine learning?



AI Facts

- AI is not a new concept
- Transformative commercial uses are still young.
- AI adoption in many cases, is at an experimental stage.

Watson for Oncology Case study

Concordance Assessment of AI

Study Goals:

- To better understand the use of cognitive ML technology.
- Test WFO in both provider and payer's setting and determine how WFO could benefit 3Ps.
- Understand the tech integration requirements between WFO, HIM, payer's & regulatory systems.
- Understand the alignment of WFO training to clinical best practice/financial in the UAE.

Setting & Methodology

- **Setting:** 13 weeks study was conducted as a POC between Daman and Cognit to understand the use and benefits of the IBM WFO. Daman partnered with Tawam Hospital to conduct this study.
- **Methodology:** Case review was conducted in 3 different formats:
 - Physician Review:
 - Tumour Board Review:
 - Retrospective Review:

Concordance Assessment

- Data from 5 sites (breast, colorectal, gastric, cervical and lung cancer patients treated at Tawam) were entered into WFO
- Cases were entered after a treatment plan had been determined, and prospective cases were entered during patients' treatment planning sessions
- WFO recommendations were provided in 3 categories: "Recommended", "For Consideration", and "Not Recommended."

Results of Retrospective Physician Review

Case Alignment based on Physician Review

Cancer Type	Number of Cases	Alignment Cases	Non-alignment Cases
Breast	4	4	0
Colon	2	2	0
Lung	3	3	0
Rectal	2	2	0
Gastric	2	2	0
Cervical	5	5	0
Total	18	18	0

Results of Tumour Board & Retrospective Case Review

Case Alignment based on Tumor Board Case Review

Cancer Type	Number of Cases	Alignment Cases	Non-alignment Cases
Lung	2	2	0
Total	2	2	0

Case Alignment based on Retrospective Case Review

Cancer Type	Number of Cases	Alignment Cases	Non-alignment Cases
Breast	26	18	8
Colon	11	10	1
Lung	2	2	0
Rectal	1	1	0
Gastric	5	5	0
Cervical	5	5	0
Total	50	41	9

Overall Results of Case Review

	Number of Cases	Alignment Cases	Non-alignment Cases
Physician Review	18	18	0
Tumor Board Review	2	2	0
Retrospective Review	50	41	9
Total	70	61	9

Sites	Physician Case Review	Tumour Board Review	Cancer Registry Case Review	Total Cases Reviewed	Concordance Rate
Breast	4		18	30	73%
Colorectal	4		11	16	94%
Gastric	2		5	7	100%
Cervical	5		5	10	100%
Lung	3	2	2	7	100%

WFO Limitations

- Covers only 7 sites (Breast, Lung, Colorectal, Gastric, Cervical & Ovarian)
- Under 18/pregnant
- Multiple primaries
- In-situ, local recurrence

Breast: certain histologies if not listed, male breast ca/2nd or 3rdline therapy

Colorectal: histologies other than adenocarcinoma

Lung: certain histologies/pats with metastasis/Stg IIIB NSCLC with prior surgery

Gastric: certain histologies/macrosopic +ve surg. Margins/2nd or 3rdline therapy

Cervical: certain histologies/small cell hist. seeking 2nd line therapy

Ovarian: certain histologies/small cell hist. seeking 2nd or 3rd line therapy

WFO Opportunities

- Ability to keep physicians up to date with new research at a rate that wouldn't be possible manually.
- A powerful resource that will help inform treatment decisions for those who may not have access to a specialty center.
- Success in ML is not always guaranteed. It will take some time to for AI to make a mark and change the way we work and make a difference.

Final Remarks

- Humans are teaching machines and making them smarter and super intelligent for us (mankind). Since organisations using technologies are surviving and growing, we should be positive about creativity and technology.
- Looking into future, machines will not completely replace humans but will work alongside to improve the efficiency of humans.

Let humans do what they are good at and let machines do what they do well.

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Thank you!



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