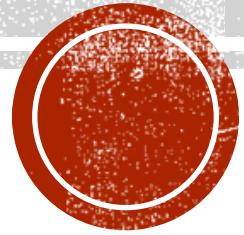
ARIEL UNIVERSITY

USING MACHINE LEARNING TO SUPPORT CLINICAL DECISIONS



Clinical Machine Learning Lab

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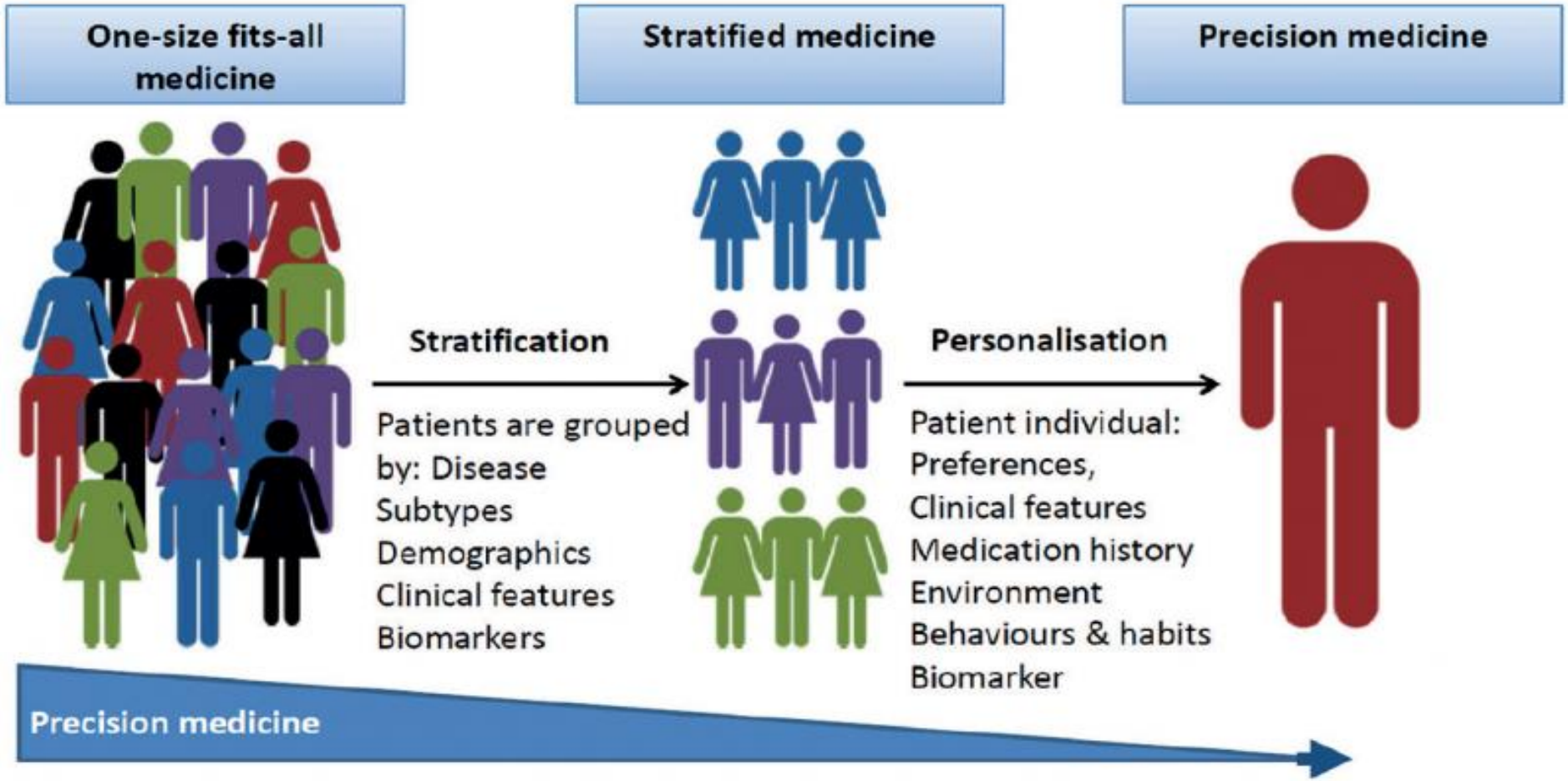
Orit Raphaeli, Ph.D.

- **Faculty member, IEM,** Ariel University
  Machine learning in healthcare
- **Mimshak Fellow,** Scientific advisor to the Director General, Ministry of Energy
  Energy modeling
- **Postdoc Fellow,** Ben Gurion University
- Business value of IT in supply chain management, Online user behavior (EU project)
- Adoption of cloud computing in agriculture
- **Industry**: Senior consultant (KPA), Analytical product Manager (Demantra), Data mining analyst (Matrix)

- **Ph.D.** Management faculty, Tel Aviv University
  "A multi-dimensional analysis of risks in Enterprise Systems implementation projects"
- **MSc. & BSc.** - Industrial Engineering and Management, Ben Gurion University
  "Optimizing the prenatal detection of Down's Syndrome"

THE VISION OF PERSONALIZED (PRECISION) MEDICINE



https://trends-magazine.com

ARTIFICIAL INTELLIGENCE & MACHINE LEARNING IN HEALTHCARE

The global AI in healthcare market size is estimated at USD 26.6 billion in 2024 and is projected to reach USD 187.7 billion by 2030

Increasing demand in the healthcare sector for enhanced efficiency, accuracy, and better patient outcomes

https://www.grandviewresearch.com/industry-analysis/artificial-intelligence-ai-healthcare-market

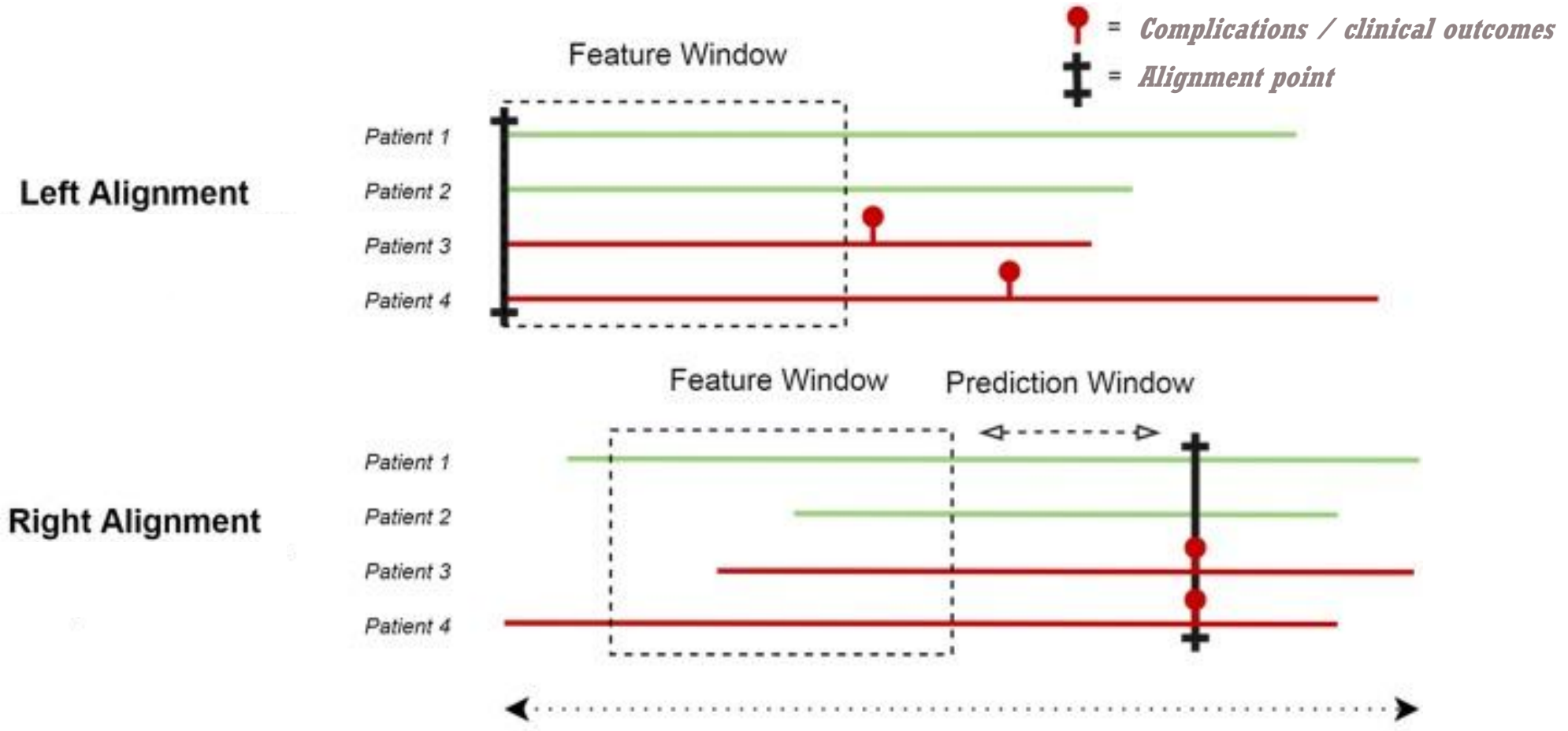
DECISION MAKING IN THE INTENSIVE CARE UNIT

- Patients in need of radical & life-saving treatments
- Heterogeneous population
- Changing conditions with time
- Many decisions are taken in parallel
- => **a personalized approach is required**

- Rich data in the Electronic Health Record(EHR)
  - Demographics, clinical measurements, real-time monitoring, medications, laboratory tests, physiologic data, interventions, ..

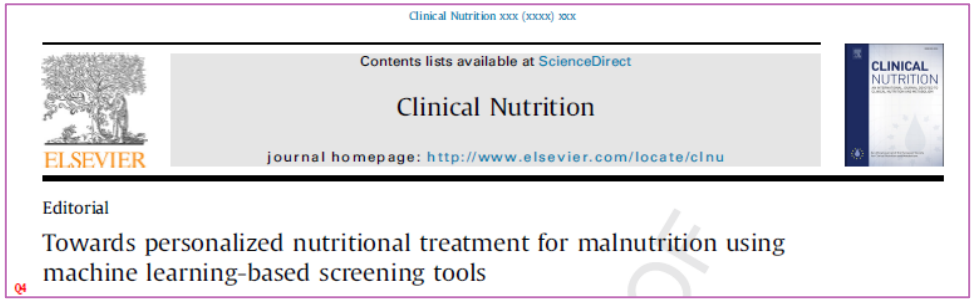
CAN WE USE ML TO SUPPORT CLINICAL DECISION-MAKING IN THE ICU?

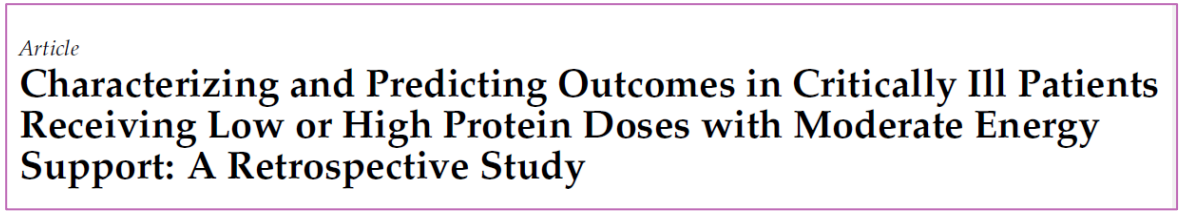
PREDICTING COMPLICATIONS/CLINICAL OUTCOMES

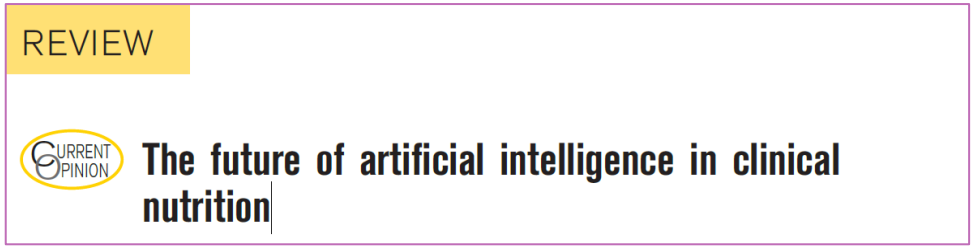


PUBLICATIONS: CLINICAL NUTRITION

- All critically ill patients in the ICU are defined as "at risk of malnutrition"
- Clinical nutrition is an essential intervention







RESEARCH TOPICS EXAMPLES

- Develop a prediction model for complications
- Identify patterns through unsupervised methods
- Develop a prediction model from multivariate time series
- Compare ML prediction model with traditional statistical approaches
- ……

Does this sound interesting?

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