



Artificial Intelligence is Here to Stay:

How Will it Change Practice?

Meir Marmor, M.D.

*"Since the destruction of the temple in
Jerusalem, prophecy has been taken from the
prophets and given to fools and children"*
Jewish Talmud



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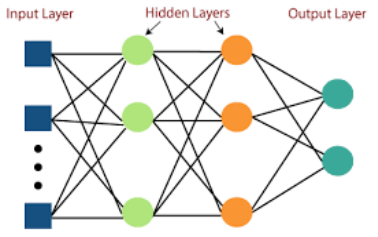
Disclosures

- Grant support, honoraria and professional responsibilities to nonprofit organizations



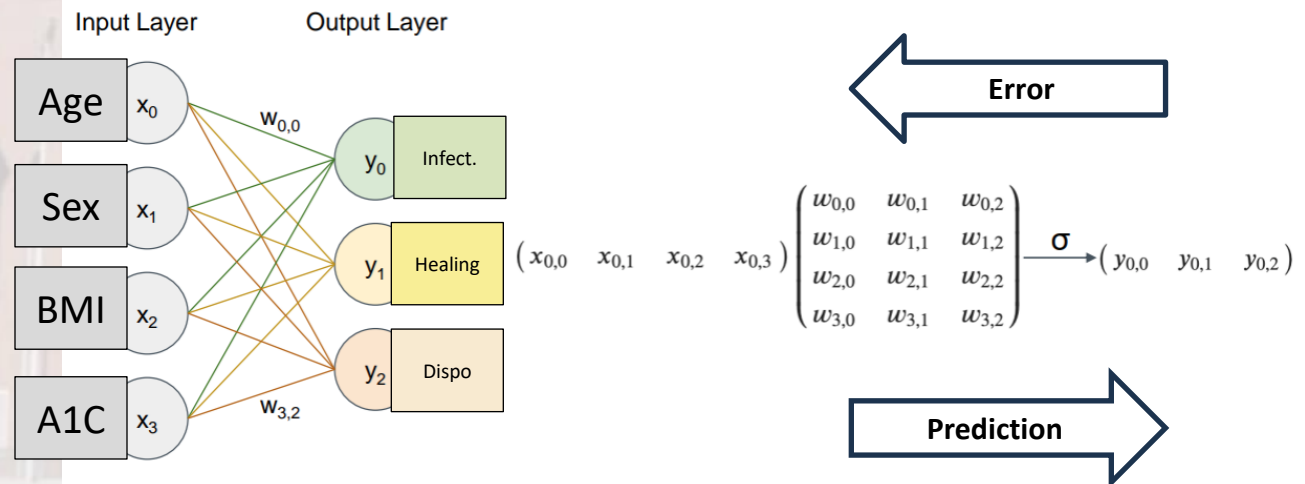
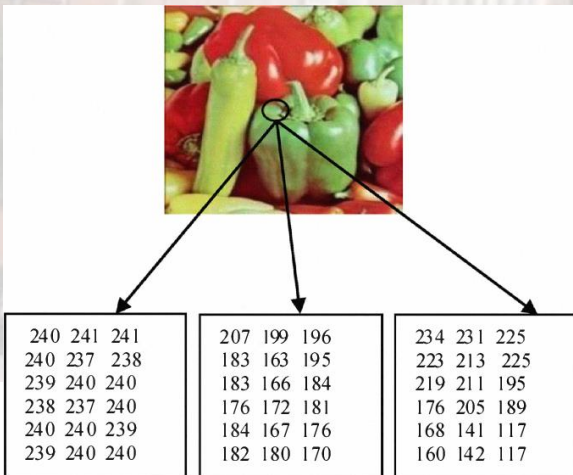
AO Foundation



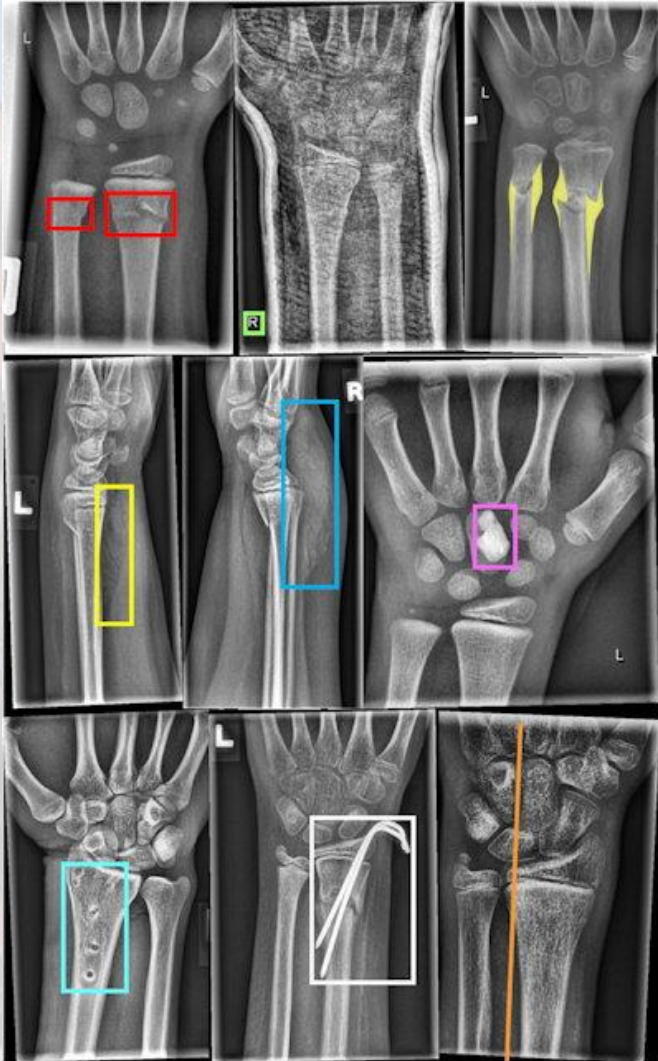


What is AI?

- Who cares? It works!
- Its vector multiplication gone crazy...
- Only question is can you represent it as a vector?



Which parts of practice?



- Diagnosis
- Decision Making
- Risk Stratification
- Staffing
- Patient encounter
- Surgery
- Scheduling
- Discharge
- EMR

Three AI use cases in Orthopaedic Trauma



- The operating room
- The patient encounter
- The standard of care



AI in the Operating Room

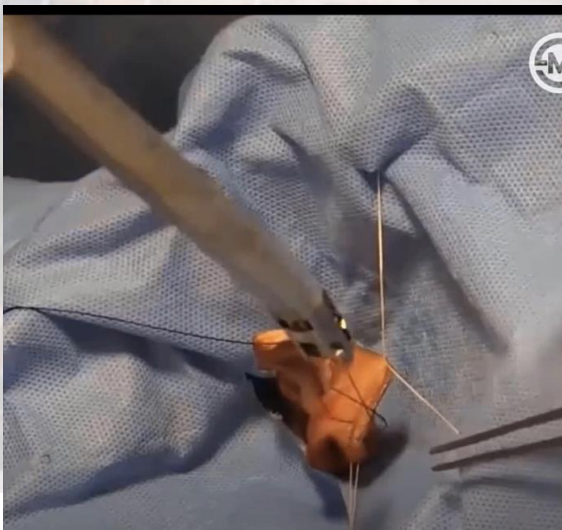


Surgical Data Science

- Preoperative Decision Support
- Intraoperative assistance functions
- Robot-assisted actions



- Democratize Surgical Skills
- Enhance Surgeon Collaboration
- Improve Patient Therapy & Outcome





Preoperative Decision Support

ORIGINAL ARTICLE

A Machine Learning Algorithm to Predict the Probability of (Occult) Posterior Malleolar Fractures Associated With Tibial Shaft Fractures to Guide “Malleolus First” Fixation

Laurent A. M. Hendri
Anne Eva J. Bulstra, MD
David Ring, MD, PhD
and Job N.

Med Biol Eng Comput (2017) 55:45–55
DOI 10.1007/s11517-016-1504-y



Posterior Mal. Fractures

ORIGINAL ARTICLE

A comparison of accuracy of fall detection algorithms (threshold-based vs. machine learning) using waist-mounted tri-axial accelerometer and non-fall trials

532

Omar Aziz^{1,3,5} • Magnus Musngi⁵ •
Stephen N. Robinovitch^{1,2,3}

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Fall Detection

Infection Risk

A Machine Learning Algorithm to Identify Patients with Tibial Shaft Fractures at Risk for Infection After Operative

Machine Learning Consortium, on behalf of

Investigation performed at Flinders Medical C

Injury 51 (2020) 334–339

Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury



Bladder Rupture in Pelvis Fxs

Identifying bladder rupture following traumatic pelvic fracture: A machine learning approach

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^a Madigan Army Medical Center, 9040 Jackson Ave, Tacoma, WA 98431, USA

^b Vanderbilt University Medical Center, USA

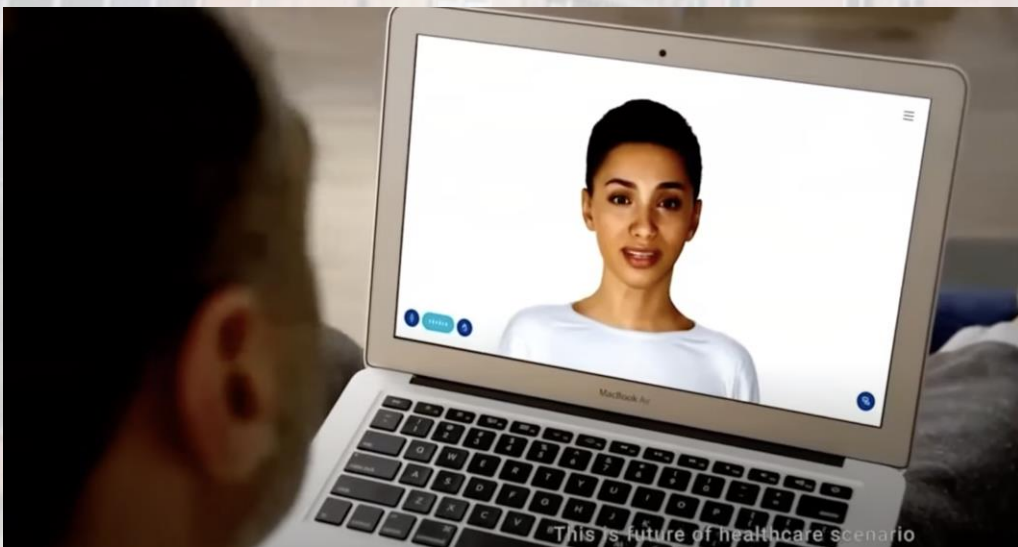




AI in the Patient Encounter

- **Technology Exists but is Disjointed**

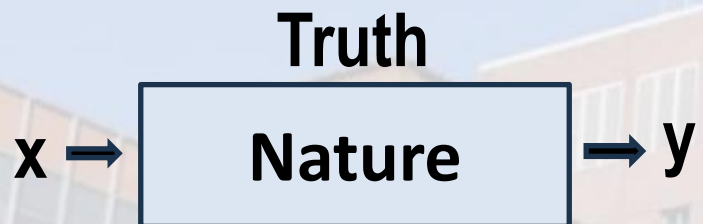
- Deepfake
- Conversational AI / Chatbots
- Virtual reality
- Decision Support Systems (DSS)
- Drone Delivery
- Autonomous Navigation Systems
- Computer Vision
- Infrared thermography
- Automatic Speech Recognition
- Natural Language Processing
- Motion Capture Analysis
- Smart (Force Sensing) Insoles
- Accelerometry
- Video Motion Sensors
- Smart Home Systems



NO STUDIES SPECIFIC TO ORTHO TRAUMA



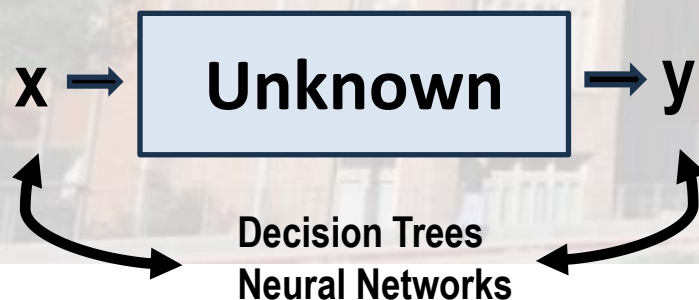
AI vs EBM – Who Determines the SOC?



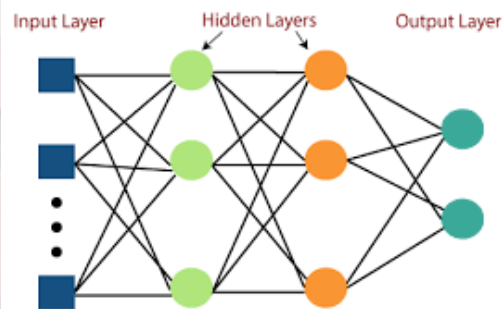
Data Modeling Culture



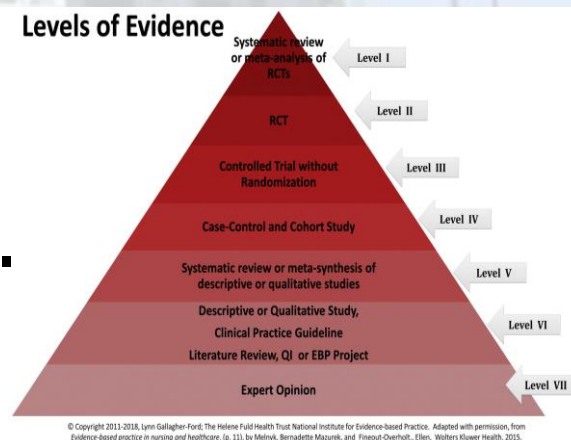
Algorithmic Culture



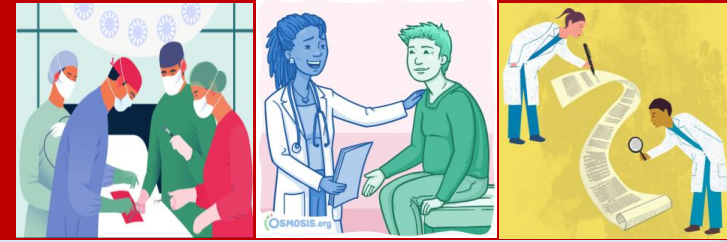
- A fundamental alternative to traditional statistics
- RCT for a constantly improving intervention?
- Specific Patient Recs => Patient Specific Recs



VS.



How will AI change practice?



1. Nobody knows
2. Looks like it will
3. Embrace it and (try to) Control it



Thank You

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