



TECHNOLOGY & AI CONSIDERATIONS IN AGING

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DIGITAL HEALTH INNOVATION HUB

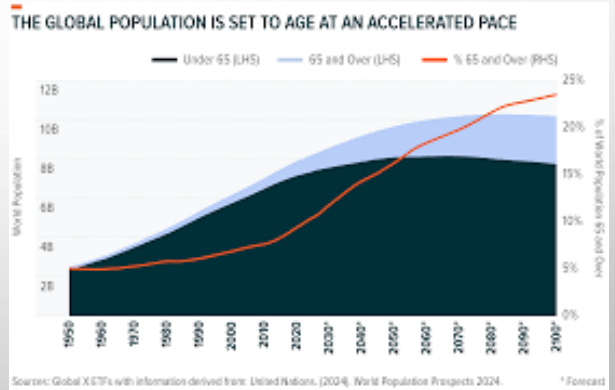
LEARNING OBJECTIVES

- RECOGNIZE AI TECHNOLOGIES IN AGING CARE
- UNDERSTAND BENEFITS AND RISKS
- APPLY THE 4MS FRAMEWORK TO AI TOOLS
- IDENTIFY SAFE CLINICAL USE CASES

LAY OF THE LAND

GLOBAL AGING TRENDS

- LONGER LIFE EXPECTANCY
- MORE CHRONIC CONDITIONS
- WORKFORCE SHORTAGES
- RISING HEALTHCARE DEMAND



AGE-FRIENDLY HEALTH SYSTEMS

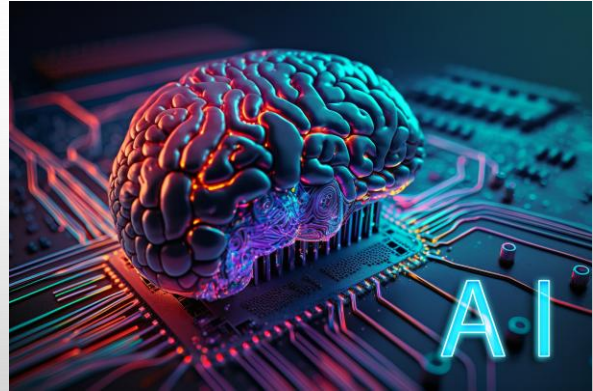
THE 4MS FRAMEWORK

- WHAT MATTERS
- MEDICATION
- MENTATION
- MOBILITY



WHAT IS ARTIFICIAL INTELLIGENCE?

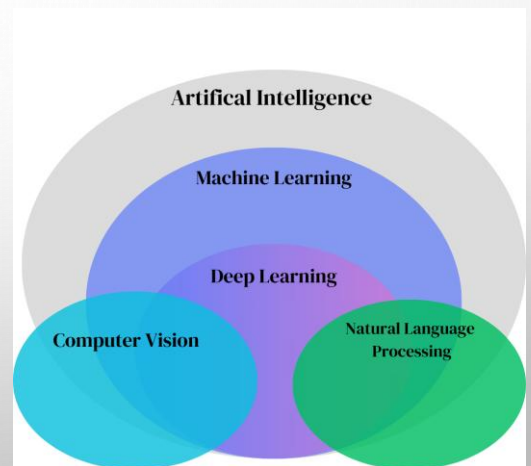
- AI = SYSTEMS THAT CAN
- LEARN FROM DATA
- RECOGNIZE PATTERNS
- MAKE PREDICTIONS
- SUPPORT DECISIONS



TYPES OF AI USED IN HEALTHCARE

KEY APPROACHES

- MACHINE LEARNING
- DEEP LEARNING
- NATURAL LANGUAGE PROCESSING
- COMPUTER VISION



MACHINE LEARNING BASICS

MACHINE LEARNING EXAMPLES

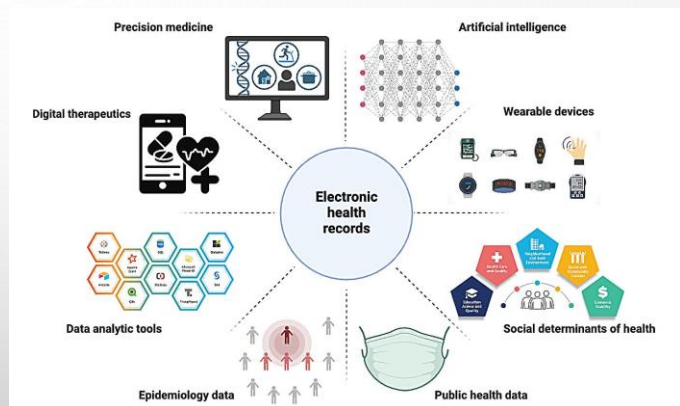
- RISK PREDICTION
- DISEASE DETECTION
- FALL PREDICTION
- TREATMENT OPTIMIZATION



DATA SOURCES FOR AI

AI USES DATA FROM

- ELECTRONIC HEALTH RECORDS
- WEARABLE SENSORS
- MEDICAL IMAGING
- PATIENT-REPORTED OUTCOMES



DIGITAL HEALTH ECOSYSTEM

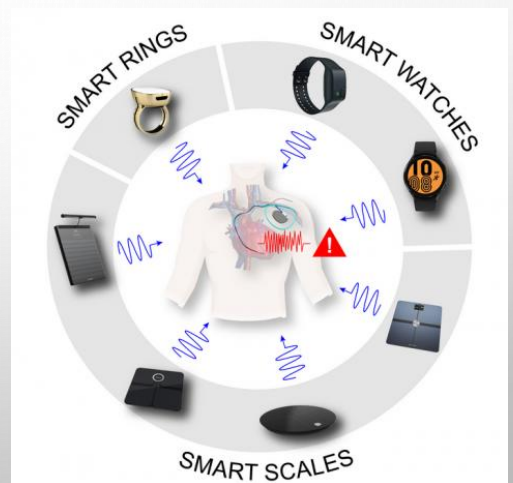
TECHNOLOGY IN AGING CARE

- TELEHEALTH
- WEARABLES
- SMART HOME SENSORS
- REMOTE MONITORING

CASE EXAMPLE: REMOTE MONITORING

CASE: HEART FAILURE PATIENT

- WEARABLE MONITOR
- SMART SCALE
- AI RISK PREDICTION



EMERGING CONCEPT: DIGITAL TWINS

DIGITAL TWIN

- VIRTUAL MODEL OF A PATIENT
- INTEGRATES MULTIPLE DATA STREAMS
- PREDICTS DISEASE PROGRESSION



AI APPLICATIONS IN GERIATRICS

CURRENT APPLICATIONS

- DEMENTIA DETECTION
- FALL RISK PREDICTION
- FRAILTY ASSESSMENT
- MEDICATION MANAGEMENT



AI AND DEMENTIA

- SPEECH ANALYSIS
- IMAGING INTERPRETATION
- BEHAVIORAL MONITORING

SPEECH IN DEMENTIA: AI-ENABLED LANGUAGE ANALYSIS*

SPEECH BIOMARKERS

- LEXICAL DIVERSITY CHANGES
- SYNTACTIC COMPLEXITY
- WORD-FINDING PAUSES
- NON-INVASIVE COGNITIVE BIOMARKER



*This was supported by the UW Alzheimer's Disease Research Center

AI AND MOBILITY

MOBILITY TECHNOLOGIES

- GAIT ANALYSIS
- FALL DETECTION
- SMART WALKERS
- REHABILITATION ROBOTICS

VOCAL FRAILTY: SUPPORTING PERSONS WITH FRAILTY AT CCRS*

PSYCHOEDUCATIONAL LIFESTYLE INTERVENTION

- PHYSICAL ACTIVITY
- NUTRITION OPTIMIZATION
- SLEEP HEALTH
- SOCIAL ENGAGEMENT
- HEALTH PROMOTION BEHAVIORS

*This was supported by the UW SoN dTC for Healthy Aging

Discussion Board

andrew Andrew (Tech Support)

[Click here to go to the homepage](#)

Welcome to the VOCAL discussion board!

Below are our weekly discussion topics arranged in order and split into two parts: (1) general health and (2) problem-solving. As a reminder, we ask that each of you **reply at least twice a week**; feel free to respond to all participants as much as or as a little as you feel comfortable! We look forward to interacting with all of you!

[Discussion board rules](#)

Week	Dates	Topic
PART I: ICE BREAKERS AND INTRODUCTIONS	July 26-August 1	Ice Breaker #0
	August 2-8	Ice Breaker #1
	August 9-15	Ice Breaker #2
PART II: GENERAL HEALTH DISCUSSIONS	1 August 16-22	Self-Care
	2 August 23-29	Sleep Problems
	3 August 30-September 5	Hallucinations and Delusions

Hallucinations and Delusions

This week, we are also going to be providing you with a questionnaire known as the Problem Solving Inventory (PSI), which allows you to better understand the extent of your problem-solving abilities. This can help you identify where you need improvement and can help others improve. Afterward, we hope you will be better equipped to follow along next week as we learn more about problem-solving skills and how these skills can help you identify and manage future problems. [Both help](#)

AI AND MEDICATION SAFETY

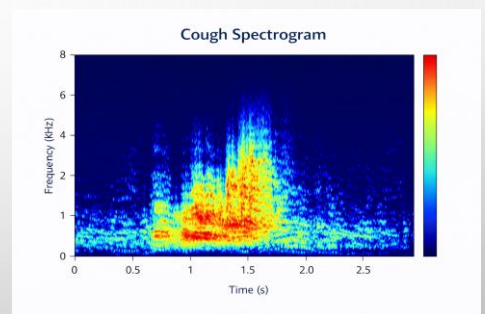
MEDICATION TOOLS

- POLYPHARMACY ALERTS
- DRUG INTERACTION DETECTION
- PERSONALIZED DOSING

SOUNDS IN PNEUMONIA: AI-DRIVEN COUGH ANALYSIS*

ACOUSTIC BIOMARKERS

- EARLY PNEUMONIA DETECTION
- HOME & LONG-TERM CARE DEPLOYMENT
- PREVENT ER VISITS & HOSPITALIZATION
- REDUCE DOWNSTREAM MEDICATION LAYERING



*This was supported by the UW Cross Pacific AI initiative

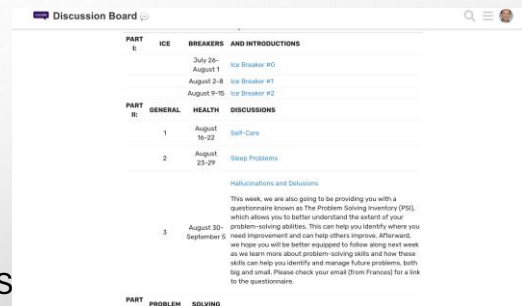
AI AND WHAT MATTERS

- PATIENT-CENTERED AI
- PERSONALIZED CARE PLANNING
- GOAL-BASED DECISION SUPPORT
- QUALITY-OF-LIFE MONITORING

VOCAL LBD: SUPPORTING CAREGIVERS OF PERSONS WITH LEWY BODY DEMENTIA*

REMOTE ASYNCHRONOUS ENGAGEMENT

- CAREGIVER REFLECTION IN REAL TIME
- AI-SUPPORTED NARRATIVE SYNTHESIS
- LONGITUDINAL INSIGHT INTO BURDEN & PRIORITIES
- INFORMING GOAL-ALIGNED CARE



*This was supported by the Garvey Institute for Brain Health Solutions, Emory Roybal Center for Dementia Caregiving Mastery

AGING IN PLACE

TECHNOLOGY SUPPORTING INDEPENDENCE

- SMART HOMES
- REMOTE MONITORING
- SOCIAL CONNECTION TOOLS



ROBOTICS IN ELDER CARE

ASSISTIVE ROBOTS

- MEDICATION REMINDERS
- MOBILITY ASSISTANCE
- SOCIAL ENGAGEMENT



POTENTIAL BENEFITS

BENEFITS OF AI

- EARLIER DETECTION
- IMPROVED DIAGNOSIS
- PERSONALIZED TREATMENT
- REDUCED HOSPITALIZATIONS

RISKS AND LIMITATIONS

- DATA PRIVACY
- ALGORITHM BIAS
- CLINICAL VALIDATION
- OVERRELIANCE ON AUTOMATION



ETHICAL CONSIDERATIONS

- TRANSPARENCY
- ACCOUNTABILITY
- EQUITY
- TRUST



DIGITAL DIVIDE

TECHNOLOGY BARRIERS

- ACCESS TO DEVICES
- DIGITAL LITERACY
- AGE-FRIENDLY DESIGN

CO-DESIGN WITH OLDER ADULTS

BETTER DESIGN REQUIRES

- PATIENT INVOLVEMENT
- CAREGIVER INPUT
- CLINICIAN FEEDBACK



IMPLEMENTATION CHALLENGES

- INTEGRATION WITH EHR
- WORKFLOW DISRUPTION
- COST AND REIMBURSEMENT
- TRAINING NEEDS



CLINICAL CASE EXAMPLE

CASE: FALL RISK PREDICTION

AI ANALYZES

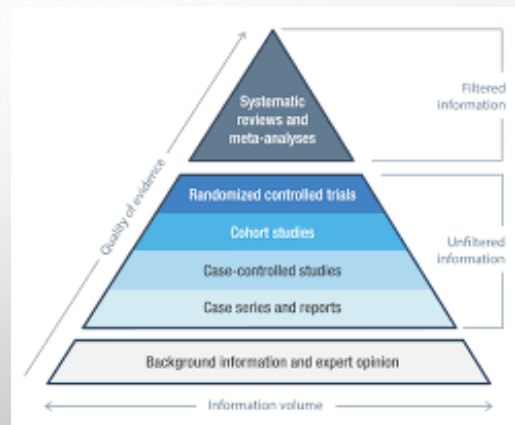
- GAIT SPEED
- MEDICATION LIST
- PRIOR FALLS



GUIDELINES FOR CLINICIANS

USING AI RESPONSIBLY

- EVALUATE EVIDENCE
- UNDERSTAND LIMITATIONS
- MAINTAIN CLINICAL OVERSIGHT



FUTURE DIRECTIONS

EMERGING INNOVATIONS

- DIGITAL BIOMARKERS
- PERSONALIZED AI MODELS
- PREDICTIVE HEALTH SYSTEMS

KEY TAKEAWAYS

AI CAN SUPPORT AGE-FRIENDLY CARE

- EARLIER DETECTION
- PERSONALIZED CARE
- BETTER MONITORING

QUESTIONS

TECHNOLOGY SHOULD HELP OLDER ADULTS

1. AGE SAFELY
2. MAINTAIN INDEPENDENCE
3. RECEIVE BETTER CARE