دانشگاه علوم پزشکی و خدمات بهداشتی، درمانی ایران

Artificial Intelligence in Internal Medicine

Dr. Ali Arash Anoushirvani

Hematologist-oncologist at Firoozgar Hospital

Associate Professor, Department of Internal Medicine
School of Medicine, Iran University of Medical Sciences, Tehran, Iran

Internal Medicine

Key Issue:
Early Detection of Disease

Earlier Cancer Detection Improves Quality of Life and Patient Outcomes

Artificial Intelligence (AI)

AI Process

Data collection	Data preparation	Feature selection
Model training	Model evaluation	Model deployment

AI in Hematology

Diabetes

Normal blood glucose
High blood glucose
glucose
blood
glucose
blood

DIABETES
COMPLICATIONS
STROKE
HEART ATTACK
PERIPHERAL ARTERY DISEASE
DIABETIC RETINOPATHY
CATARACTS
GLAUCOMA
DIABETIC FOOT
DIABETIC NEPHROPATHY
PERIPHERAL NEUROPATHY

An artificial intelligence decision support system for the management of type 1 diabetes

Nature Metabolism **volume 2**, pages612–619 (2020)

AI-based pathology predicts origins for cancers of unknown primary

Nature **volume 594**, pages106–110 (2021)

Machine learning based early warning system enables accurate mortality risk prediction

Nature Communications **volume 11**, Article number: 5033 (2020)

AI and Early Detection in Cardiology

Low attenuation
Spotty calcification
Positive remodelling
Napkin-ring sign
CCTA
Lumen
Fibrous cap
Macrophage
Intraplaque haemorrhage
Necrotic core
Lipid core
Fibrotic tissue
Thrombus
Microchannel
IVUS
OCT
Plaque burden
Calcification
Microchannels
IVUS–NIRS: lipid pool necrotic core
Cholesterol crystals
Thrombus
Plaque rupture
Macrophages
Microchannels
TCFA
OCT–NIRS: lipid pool necrotic core
NC

AI and Infectious diseases

Laboratory imaging and factor-analysis based diagnosis

Antimicrobial resistance prediction and antibiotic discovery

AMR analysis by WGS, MALDI-TOF, SERS

CNN training & antibiotic property prediction

Prediction, prevention and risk stratification of HAIs

VAP
CLABSI
SSI
Sepsis
Colonization/infection with MDR pathogens
CDI complications
Hand hygiene

AI and Liver diseases

AI in Respiratory diseases

Nature Machine Intelligence **volume 4**, pages494–503 (2022)

AI in Bone and joint diseases

AI and Early Detection in Nephrology

AI in Neurological diseases

Deep learning in rheumatological image interpretation

Nature Reviews Rheumatology **volume 20**, pages182–195 (2024)

AI in Continuous Monitoring and Proactive Intervention