Artificial Intelligence and Machine Learning in Healthcare

Enrollment Period:	Spring 2022
Course Dates:	1/21, 1/28, 2/4, 2/11, 2/18, 2/25 (Fridays, 1:00 – 3:00 pm)
Student Max:	30
Class Year:	MS1, MS2
Course Director:	Michael Pinsky, MD pinsky@pitt.edu
Student Coordinator:	Amrish Selvam Email: Selvam.Amrish@medstudent.pitt.edu
Location:	Zoom
Registration:	Via Amp Up during PEC enrollment period
Course Description:	The aim of Artificial Intelligence and Machine Learning in Healthcare is to a provide a physician specific introduction to artificial intelligence (AI) and machine learning (ML) as well as to provide examples in healthcare where AI/ML will have expanding clinical use. Students will be provided an overview of data science, clinical informatics, and AI/ML concepts to serve as a knowledge base for collaborating with scientists and integrating AI into clinical practice. Applications to healthcare such as predictive analytics, automated imaging interpretation, and natural language processing be provided, as will real-world examples of AI/ML in specific fields of medicine.
Objectives:	1. To understand the basic concepts of data science, clinical informatics, ML, and AI. 2. To understand the role of AI/ML in medicine. 3. To appreciate the applications of AI/ML across different medical specialties. 4. To appreciate specific examples of AI/ML in biomedical research, medical imaging, acute care medicine, and primary care. 5. To understand how AI can improve healthcare delivery.
Pre-Requisites:	None
Requirements:	Attend all sessions
Texts:	Good Machine Learning Practice for Medical Device Development

Course Outline:

UPSOM Artificial Intelligence and Machine Learning in Healthcare Mini-Elective 2021-22

Course Director:
Michael R. Pinsky, MD

Participating Faculty:
Michael R. Pinksy, MD
Shandong Wu, PhD
Zaid Siddiqui, MD
Giles Clermont, MD
Yoram Vodovotz, PhD
John Stewart Maier, MD, PhD
Kyle Miller, PhD
Shyam Visweswaran, MD, PhD
Christopher Deible, MD, PhD
Panagiotis Benos, PhD
Douglas Hartman, MD
Kunal Dansingani, MD
Yufei Huang, PhD
Joo Yoon, MD
Rema Padman, PhD

Session 1: Introduction to Data Science and Clinical Informatics
> Gilles Clermont, Shyam Visweswaran, Christopher Deible

Session 2: Overview of AI/ML approaches across healthcare
> Shandong Wu, Zaid Siddiqui, Kyle Miller

Session 3. ML to deconvolute systems biology
> Yoram Vodovotz, Panagiotis Benos

Session 4: AI in medical imaging
> Shandong Wu, Douglas Hartman, Kunal Dansingani

Session 5: AI in cancer/oncology
> Zaid Siddiqui, Yufei Huang

Session 6: AI to improve in-hospital healthcare delivery
> Joo Yoon, Michael Pinsky, John Stewart Maier, Rema Padman