

Workshop#1:

Applications of data mining and machine learning to ophthalmic medical images

Dr. Siamak Yousefi

Healthcare and research enterprises are producing increasingly large amounts of imaging data. As these large and complex datasets are becoming increasingly available to the research community, advanced data mining and machine learning techniques are required to make sense of data and extract useful knowledge. In this talk, I will briefly review applications of artificial intelligence in ophthalmology since 1970's and then discuss some of the latest developments of supervised and unsupervised machine learning and emerging deep learning models in prediction, screening, diagnosis, and monitoring of different ocular conditions including glaucoma, age-related macular degeneration (AMD), keratoconus, and uveitis.

Workshop Learning Objectives

1. Learn basic ideas of artificial intelligence (AI) algorithms
2. Identify applications of AI models in ophthalmology
3. Evaluate AI challenges for use in clinical settings
4. Describe future uses of AI in ophthalmology

Skyroom Link: <https://www.skyroom.online/ch/mvip2022/workshop>

Time and Date (In Iran):

8AM-10AM {22 February 2022 (3th of Esfand 1400)}



Dr. Siamak Yousefi is Assistant Professor at the Department of Ophthalmology and the Department of Genetics, Genomics, and Informatics of the University of Tennessee Health Science Center (UTHSC) in Memphis. He received his PhD in Electrical Engineering from the University of Texas at Dallas in 2012 and completed two postdoctoral trainings at the University of California Los Angeles (UCLA) working on Brain Computer Interface (BCI) and University of California San Diego (UCSD) working on computational ophthalmology. He is the director of the Data Mining and Machine Learning (DM2L) laboratory at UTHSC.

He has published over 100 peer-reviewed journal articles, conference papers, and abstracts, with over 60 publications in broad applications of Artificial Intelligence (AI) in vision and ophthalmology. He has been an invited guest speaker, moderator, and co-organizer of numerous ophthalmology venues including Association for Research in Vision and Ophthalmology (ARVO), The Glaucoma Foundation, Asia-Pacific Glaucoma Congress (APGC), International Society for Eye Research (ISER), and American Academy of Optometry, New York University Langone Medical Center, and University of Colorado School of Medicine. He has been a member of several National Institute of Health (NIH) grant review panels and is on the editorial board of the Translational Vision Science and Technology (TVST) journal.

His lab develops deep learning, manifold learning, conventional machine learning, unsupervised machine learning, and statistical approaches to screen, diagnose, and monitor different ocular conditions including glaucoma, macular degeneration, keratoconus, keratoplasty, and uveitis from imaging and visual field data.