

國立中央大學數學系

專題演講

主 講 人：郭柏志教授 (國立清華大學資工系)

演講題目：Fairness in healthcare AI

演講茶會：2022年11月17日(星期四) 3:30 p.m. ~ 4:00 p.m.

茶會地點：中央大學鴻經館M306

演講時間：2022年11月17日(星期四) 4:00 p.m. ~ 5:00 p.m.

演講地點：中央大學鴻經館M107

Abstract：

Bias and discrimination in Artificial Intelligence (AI) systems has been widely studied including tasks like AI-based facial recognition system. However, such bias has not been fully discussed in AI healthcare applications such as skin cancer detection, mortality prediction and healthcare utilization prediction algorithms. The state-of-the-art AI models have been shown to produce significant differences in underdiagnosis rates across racial and other demographic groups even when models only have access to the image itself. We introduced the bias problem in medical AI and then showed the experiments we conducted to comprehensively evaluate the ability of AI to recognize a patient's racial identity from medical images. Both private (Emory CXR, Emory Chest CT, Emory Cervical Spine, and Emory Mammogram) and public (MIMIC-CXR, CheXpert, National Lung Cancer Screening Trial, RSNA Pulmonary Embolism CT, and Digital Hand Atlas) datasets were used for the evaluation. Our results showed that medical AI systems can easily learn to recognize racial identity ($AUC > 0.96$) from medical images. However, the ability of AI deep learning models persisted over all anatomical regions and frequency spectrums of the images, suggesting the efforts to control this behavior are challenging. Finally, we proposed some possible solutions to eliminate the bias in the prediction of the AI imaging model. Our findings indicate that future AI medical imaging work should emphasize model performance audits on the basis of race, sex, and age.

敬 請 公 告 ， 歡 迎 參 加