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국문 강연제목: 색상의 기계 학습을 이용한 모바일 헬스

영문 강연제목: Machine learning of colors for mHealth applications

Abstract

“A picture is worth a thousand words.” A photograph is more than just a picture; it contains detailed spectral information that can be used for a variety of diagnostic applications. Hyperspectral learning enables the recovery of high-resolution spectra from three red-green-blue (RGB) color values acquired by the built-in camera of a smartphone. Simply put, no additional hardware components are necessary for hyperspectral learning. Diagnostic information can be reliably predicted from digital photos of peripheral tissue using a smartphone camera by taking advantage of ‘informed learning’ approaches. This presentation covers representative ongoing studies about noninvasive blood hemoglobin assessment among pregnant women, sickle cell patients, and malaria risk-stratification among school-age children in sub-Saharan Africa. This approach fosters reciprocal innovation, allowing mHealth technologies developed in resource-limited settings to be brought back to the US. Machine learning of colors, specifically hyperspectral learning, to mHealth technologies has the potential to provide mobility, simplicity, and affordability for rapid and scalable adaptation in various digital health applications.

Brief Biosketch

Young Kim’s current areas of research include data-centric biophotonics and hybridization of physical and digital properties and physics/biology-informed machine learning. Young Kim received his PhD from Northwestern University and postdoctoral training supported by NIH NCI Cancer Research Careers program.