MARQUETTE UNIVERSITY

HELEN WAY KLINGLER
COLLEGE OF ARTS AND SCIENCES

Department of Mathematics, Statistics and Computer Science

COLLOQUIUM ANNOUNCEMENT

Smartphone-based Hemoglobin Level Measurement Using Chromatic Analysis of Fingertip Videos on Different Color Spaces

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3:30 PM, Thursday, October 5, 2017

Cudahy Hall, Room 401

Abstract

There is increasing interest and research on non-invasive methods in the assessment of health parameters. Investigations of non-invasive methods beginning with simple red-green-blue(RGB) imaging extending to hyperspectral camera-based images have encountered portability, usability, and reliability issues. This communication presents a smartphone-based non-invasive hemoglobin level prediction model that addresses portability, accuracy, and ease-of-use by taking advantage of the built-in high-resolution camera, significant computation ability, storage, and communication facility of current smartphones. This model is based on analysis of a 10-second video clip of the fingertip. The RGB images of the frames are used to reconstruct different color spaces including hue (H), saturation (S), value (V), lightness (L), a, b (a and b for the color dimensions) and gray (g). Later, features are extracted from all the combinations of the specific color space components and applied to a Partial Least Squares (PLS) algorithm. We have evaluated our prediction model with 5 Americans (30 observations) and 74 Bangladeshi patients (74 observations). Our model achieves an accuracy approaching 95%.

POST COLLOQUIUM REFRESHMENTS SERVED IN CUDAHY HALL, ROOM 342 AT 4:30 P.M.