Title: A Low Power Occlusion Dose Monitor for Compliance to Glasses Wearing

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I. Abstract Body (up to 250 words)

To investigate the effect of Amblyopia treatment involving the wearing of eyeglasses, eyeglass dose monitoring using a wearable sensor provides an objective measure of compliance. Subjective approaches such as diary entries and interviews are open to bias and interpretation, thus are less reliable than objective measurements of compliance. Previous approaches to eyeglass compliance monitoring include thermal and skin resistance sensing. [1] We prototype a device to monitor compliance through motion and thermal tracking, attached to the eyeglasses. Requirements of the device are low power to be able to log data for a long time, small size, child safe, and easy retrieval of data. A magnetometer, accelerometer, and thermistor collect position, movement and thermal data respectively, every second. Compliance with eyeglass wearing is determined through magnetometer and accelerometer data, with thermal data to verify using previous approach by Maconachie et. al [2].

II. Reference:

1 . C. Stewart, et al. "Occlusion dose monitoring in amblyopia therapy: status, insights, and future directions." *Journal of American Association for Pediatric Ophthalmology and Strabismus {JAAPOS}* 21.5 (2017): 402-406.

2 . G. D. E. Maconachie, et al. "Association between adherence to glasses wearing during amblyopia treatment and improvement in visual acuity." *JAMA ophthalmology* 134.12 (2016): 1347-1353.

III. Biography:

Chenxi Dai is a PhD student at Department of Electrical and Computer Engineering at the University of Arizona. His research interest are low power circuit design for machine learning and reconfigurable caches.

IV. Presenting author details