Diabetes

For the past 100 years, we have has the ability of externally regulating blood glucose.

Models of the blood sugar levels exist but require blood oxygenation levels.

Current devices for measuring blood origination levels require specialized hardware.

Physics Behind Setup

As light passes through the finger its absorption is a function of: blood, skin, etc.

Different chemicals dissolved in the blood change the absorption spectrum.

Phone hardware

- This project attempts to use a smartphone without additional hardware to measure blood oxygenation level.
- The phones flash is used to provide constant illumination.
- The phones camera is used to collect light in the red, green and blue spectrum.

Future Work

- Testing is required to determine.
- Accuracy and Precision of percent oxygenation characterization.
- Robustness to personal factors like skin color and different phones.
- Human testing requires IRB approval.
- Improving stability.
- Incorporate movement data collection and pulse tracking to improve sensitivity.

Acknowledgments

References