Imaging Photoplethysmography to Determine Pressure-induced Changes in Cutaneous Vascularization

Alexander Steele
Poster B15

SUNFEST REU Program

PI: Andrew Richardson

Mentors: Andrew Gabros and Avin Khera

Imaging Photoplethysmography to Determine Pressure Induced Changes in Cutaneous Vascularization



Alexander Steele¹, Avin Khera BS^{2,3}, Andrew Gabros BS³, Andrew Richardson PhD³

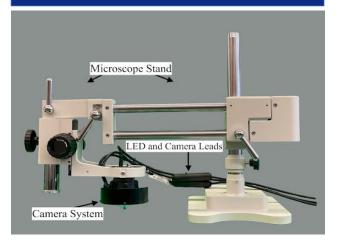


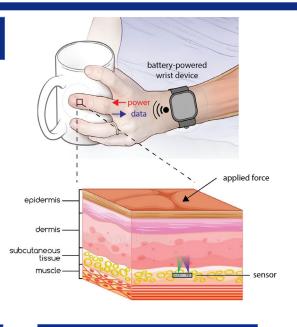
¹Department of Electrical Engineering, University of Notre Dame, Notre Dame, Indiana, ²Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, ³Department of Neurosurgery, Penn Medicine, Philadelphia, Pennsylvania

Background

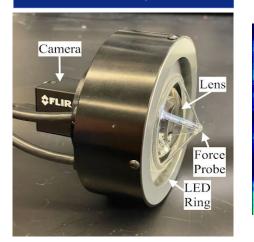
- Sensor:
 - Help paralysis patients regain sense of touch
- **iPPG** for Circulation Imaging:
 - Use imaging photoplethysmography (iPPG) to obtain images of the underlying circulation in the hand

Camera Setup

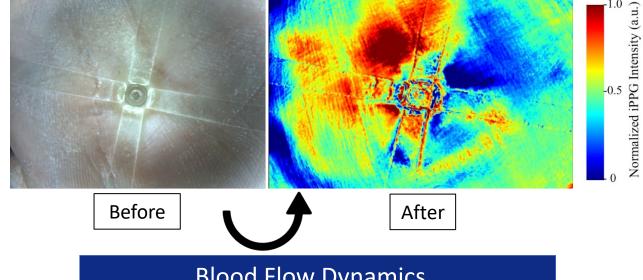




Camera System



Mapping Cutaneous Blood Volume



Blood Flow Dynamics

