Motivation

Sensor-based computational models have the potential to **revolutionize behavioral research** by providing insights on human behavior, advancing our understanding of behavioral models to **enhance health and well-being.**

Background

The development and validation of computational models to detect daily human behaviors using wearable devices require fine-grained labeled data of human behavior in natural settings. But, existing **groundtruth measures are inadequate.**

Current Challenges

Wearable cameras can collect fine-grained labels of human behavior in their natural setting. However, wearers and bystanders feel uncomfortable using wearable cameras, creating a **catch-22 paradox around privacy and utility.**

Aim Re-imagine how we collect fine-grained visual groundtruth for sensor-based behavioral models.

Approach Investigate the privacy-, energy-, burden- information tradeoff space to design efficient and practical systems.

Understanding visual observation discomfort

Can the lens location and orientation (i.e., device recording affordances) affect discomfort?

We should move away from the ego-centric position. By utilizing the device recoding affordances to communicate the recording's focus, we can minimize privacy and stigma concerns.

IMWUT 2018

Reducing visual observation discomfort

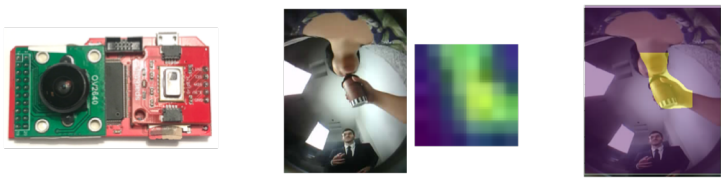
Can we enhance privacy while maintaining groundturth utility?

Privacy is hard to define. It is easier to define the behaviors that we want to observe. Privacy-by-default approaches enhance privacy more than other methods while maintaining utility.

IMWUT 2019

Enabling Efficient Foreground Extraction

How can we efficiently extract information from visual groundtruth systems?



We built an efficient thermal-RGB wearable camera that can extract foreground. We demonstrate how foreground can enhance privacy and enable spatio-temporal attention.

RawanAlharbi.com