

# Investigating Webcam-Based Eye-Tracking as an Alternative Input Modality for Micro-task Work

## 1. Background

People who perform crowdsourced micro-tasks, often do so using a mouse and/or keyboard for many hours at a time. They could benefit from an alternative form of input.

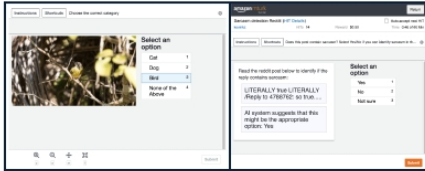


Figure 1: Amazon MTurk, a popular micro-task crowdsourcing platform.

Recent improvements in webcam-based eye-tracking technology have made it possible to perform gaze tracking on commodity hardware such as mobile phones and laptops, without the need for additional sensors or devices. [1]

While the accuracy of webcam-based eye-tracking technology is well-researched, it is not clear whether the input method is feasible for use in a real-world work environment.

[1] Krafcik, K., Khosla, A., Kellnhofer, P., Kannan, H., Bhandarkar, S., Matusik, W., & Torralba, A. (2016). Eye tracking for everyone. In Proceedings of the IEEE conference on computer vision and pattern recognition (pp. 2176-2184).

[2] Papoutsaki A., Sangkloy P., Laskey J., Daskalova N., Huang J., & Hays J. (2016). WebGazer: Scalable Webcam Eye Tracking Using User Interactions. In Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI) (pp. 3839-3845)

## 2. Research Question

"Is webcam-based eye-tracking a feasible input modality for performing micro-task work?"

## 3. Method

A user study is set up on the Amazon MTurk platform, where actual workers perform a set of tasks representative of common micro-task work, using either eye-tracking or conventional input.



During this experiment, the participant followed the following process:

1. Privacy Notice & Consent Form
2. Calibration (eye-tracking only)
3. 10 image classification questions using the assigned input method. Webcam-based eye-tracking will be performed with Webgazer.js [2]
4. 12 survey questions about perceived ease of use, interest in the experience, and task load.

## 4. Results

Participants using a webcam are generally able to complete the tasks adequately. However, they perform somewhat slower and less accurate, and are less content with their overall experience.

