

Getting more from behavioral data: Computational approaches for exploring early visual experiences

Joseph Michael Burling¹, Yukie Nagai², Hanako Yoshida¹

¹University of Houston, United States of America;
²Osaka University, Japan;
jmburling@uh.edu

There has been a recent push toward implementing more technical solutions for behavioral data collection, such as the addition of head-mounted eye-trackers, motion sensors, and depth sensor cameras, which has called for unconventional computational techniques for data analysis and thus promoting cross-disciplinary research. The proposed talk provides a unique perspective on how the two fields of developmental science and computer vision may be combined for resolving complex questions regarding multiple, interacting factors at multiple timescales that influence the development of infant-guided attention and active exploration. We demonstrate the application of image processing techniques such as estimation of optical flow, perceptual saliency, and time series analyses between eye gaze and behavioral events for uncovering the role of parental involvement in entraining infant attention between four to fifteen months. These highly approachable methods are particularly suitable for investigating dynamic parent-child interactions during frequent, small timescale, yet highly critical learning moments.