

(Supplementary Material)

ChromaTag: A Colored Marker and Fast Detection Algorithm

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1. Example ChromaTag Detections and Failures

Figure 3 shows example images of ChromaTag detections and missed detections subsampled from the trajectory and labeled with tag size and viewing angle. Tag size is calculated from the square root of $width \times height$ in pixels. Viewing angle is between the normal vector of the tag plane and the vector of camera center to tag plane center.

2. RuneTag Successful Detections

RuneTag was unsuccessfully detected in all the images we collected for comparison with ChromaTag. Example images from the dataset (NWB) are shown in Figure 1. The reason is that RuneTag detection was unable to detect the ellipses when the tag size was small. We collected extra data for timing successful RuneTag detections, and examples of these frames with successful detections are shown in Figure 2 (with labeled tag size). Tag size is calculated from the square root of $width \times height$ in pixels.

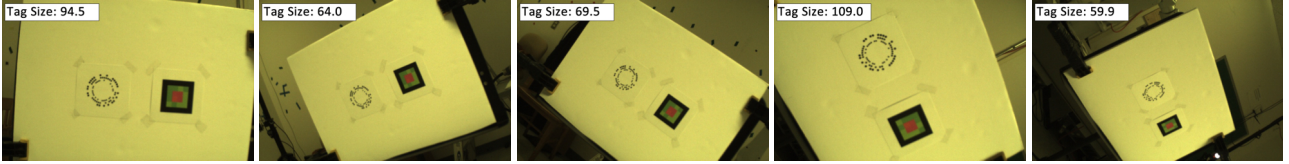


Figure 1: Original images processed by RuneTag with labeled tag size. No detections are found.

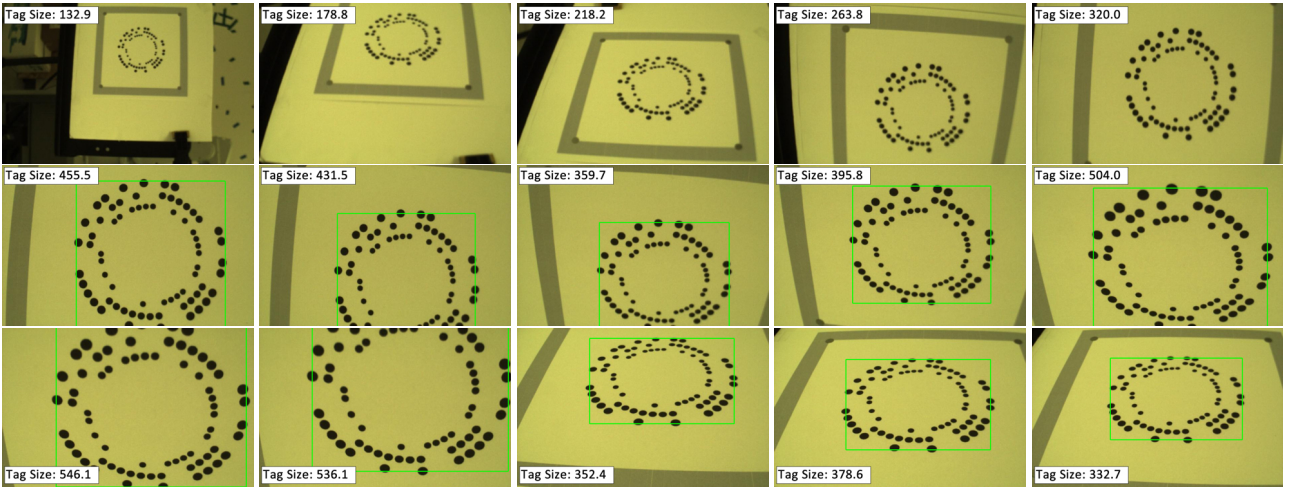


Figure 2: Extra images processed by RuneTag with labeled tag size. The top row shows missed detections. The next two rows show successful detections. Detection fails below a tag size of about 320 and succeeds for a tag size above about 360.



Figure 3: Example images processed by ChromaTag with labeled tag size and viewing angle.