SUPPLEMENTARY MATERIAL:

In this supplementary material for Li et al. [1], we briefly discuss mipmapping as an alternative to summed-area tables. More supplementary material is available at https://augmentariumlab.github.io/foveated-360-video/.

Mipmapping

Mipmaps can be pre-computed similar to multi-resolution methods to avoid the run-time computational overhead of computing summed area tables. However, mipmapping only allows averaging of fixed predetermined rectangles compared to summed area tables which allow averaging over rectangles of arbitrary size and location. In our testing, we found that mipmapping reduces aliasing but does not reduce flickering as large changes can occur when sampling crosses over pixel boundaries of the mipmapped video frames. A qualitative example of log-polar foveation with and without mipmapping is shown in Fig. 1.

Fig. 1: A qualitative example of a log-polar foveated ERP frame with and without mipmapping. Mipmapping is able to reduce aliasing as shown here but not flickering as the user’s gaze changes.

REFERENCES