

CHECKERVISION

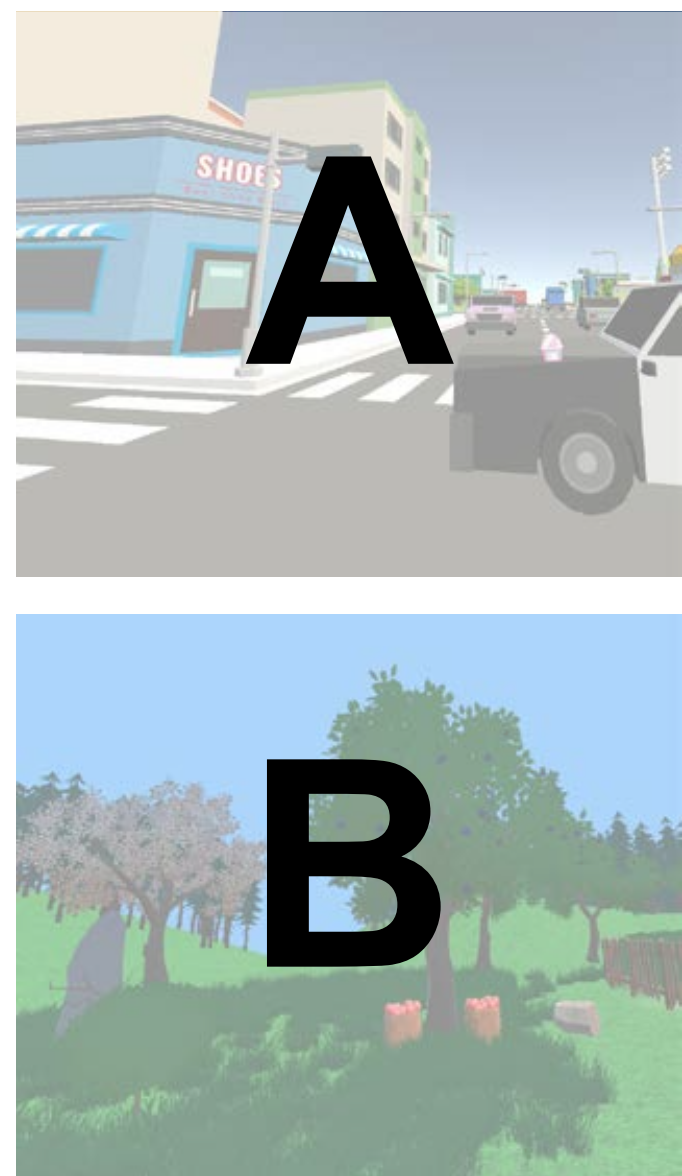
Grid-Based Interleaving of Concurrent 3D Environments in VR

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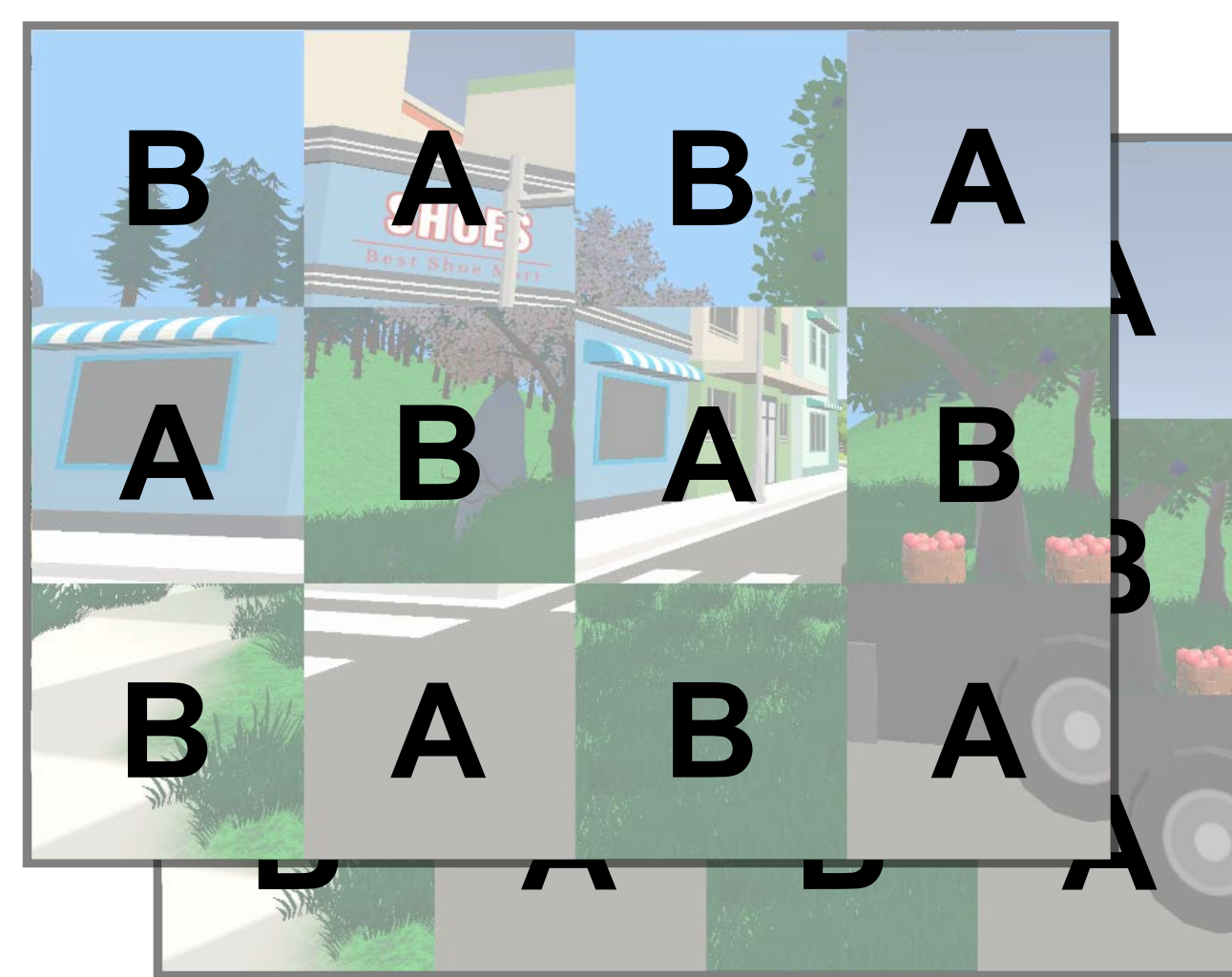


Video + Project Page

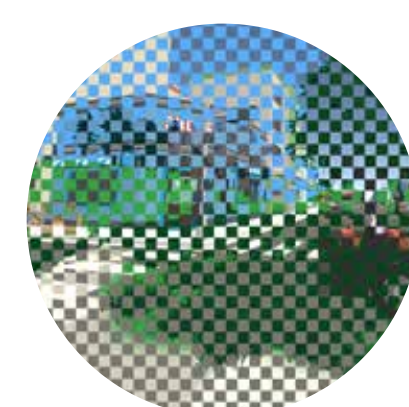
3D Environments



Grid-Based Interleaving



8x8



64x64



512x512

Stereoscopic CheckerVision



CHECKERVISION uses a checkerboard segmentation pattern to interleave two virtual environments (A/B) across the entire field of view while preserving stereoscopic depth perception. We implemented three grid resolutions: coarse (8x8), medium (64x64), and fine (512x512).

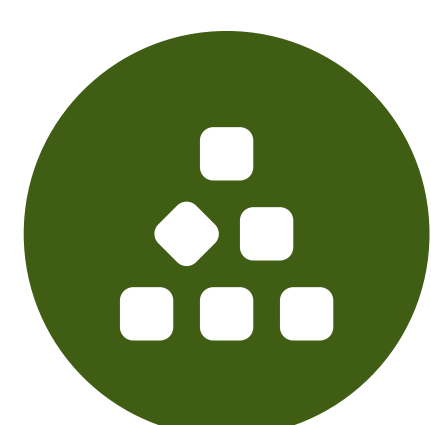
User Study

We compared different resolutions:



Design

Within-subject study
N = 12 participants



Conditions

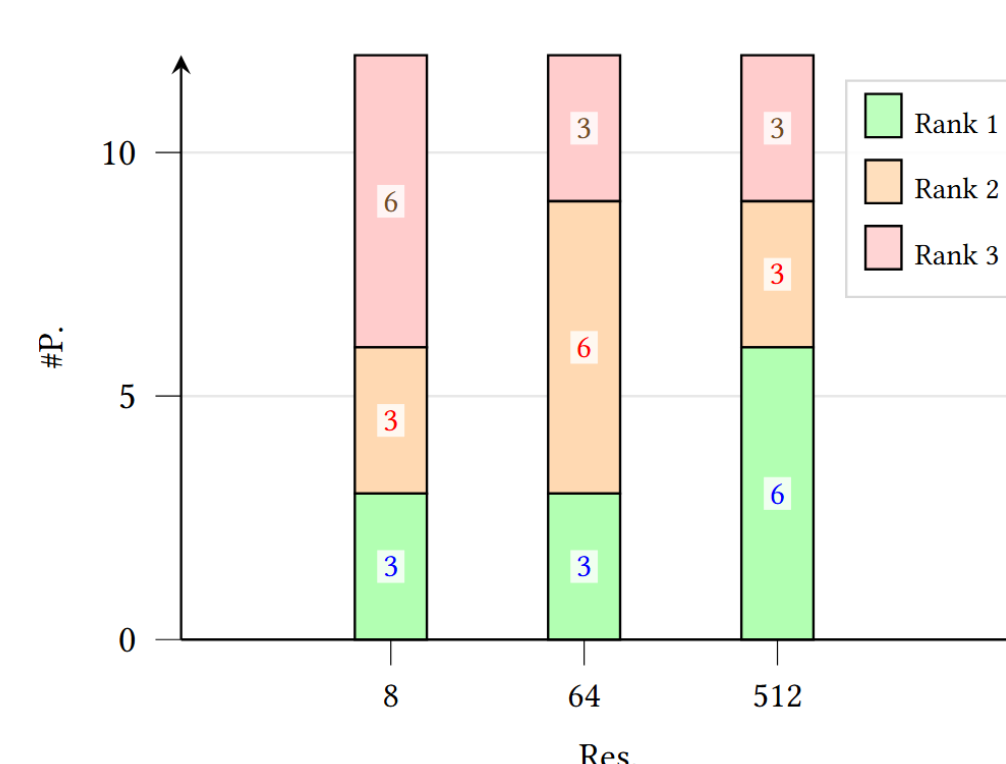
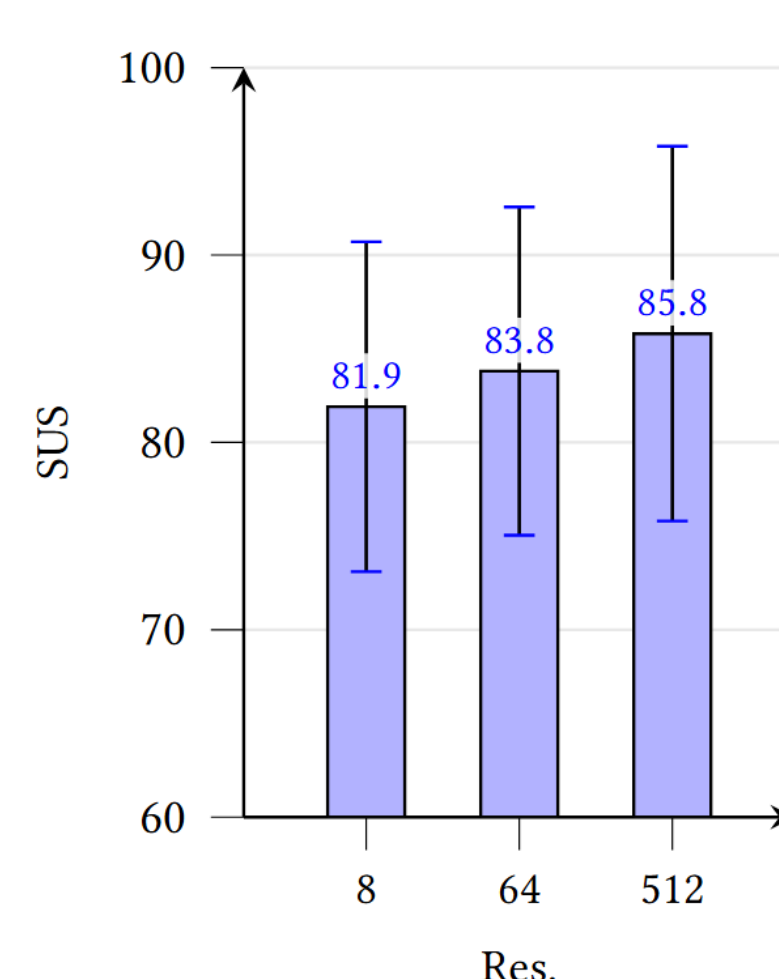
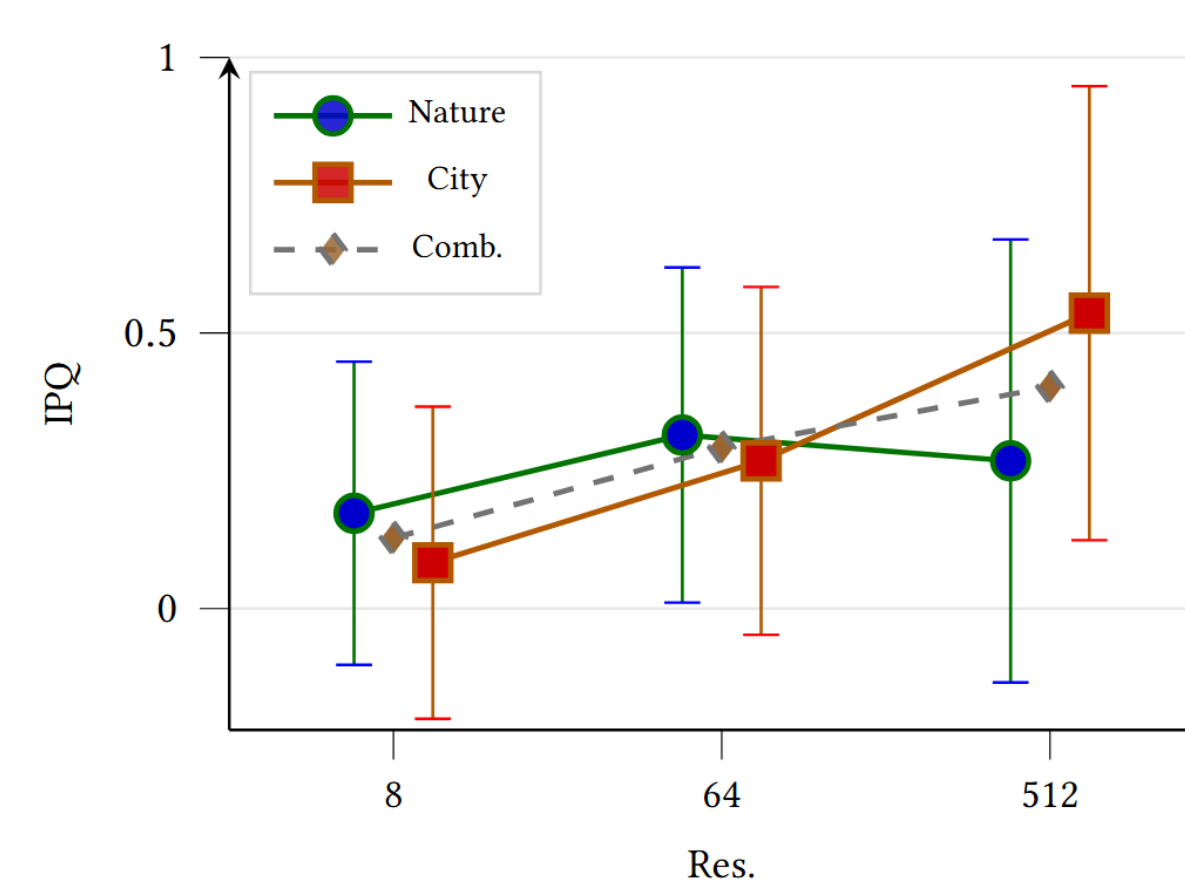
3 resolutions: 8x8, 64x64, 512x512
2 environments: Nature and City
Counterbalanced order



Measures

Presence: IPQ (subscales + overall)
Usability: SUS
Preference ranking
Qualitative Feedback

Results



Presence remained stable

IPQ scores did not differ significantly across grid resolutions or environments. Descriptively, the finest grid showed the highest combined presence score.

Usability was high

SUS ratings were consistently high for 8x8, 64x64, and 512x512. Grid resolution had no significant effect on perceived usability.

Fine grids were preferred

512x512 was ranked first most often (6/12 participants), but preference rankings did not differ significantly between resolutions.

Conclusion



CheckerVision enables simultaneous visibility of two stereoscopic virtual environments across the entire field of view.



Across coarse, medium, and fine grid resolutions, participants reported comparable levels of presence and high usability



While no resolution was significantly preferred, 512x512 showed a descriptive trend as the most favored condition.