

Arco van Beek, Yan Feng, Dorine C. Duives, Serge P. Hoogendoorn,
Studying the impact of lighting on the pedestrian route choice using Virtual Reality,
Safety Science,
Volume 174,
2024,
106467,
ISSN 0925-7535,
<https://doi.org/10.1016/j.ssci.2024.106467>.
<https://www.sciencedirect.com/science/article/pii/S0925753524000572>

This VR study isolates lighting color as a causal factor for pedestrian route choice and finds people prefer green and avoid red paths regardless of competing conditions, showing evidence that color alone can steer flow. For our gap, it validates the core mechanism behind “smart color paths”: color is a strong, intuitive cue that can shape micro-routing without maps or text. But the work is in controlled VR—not a live, chaotic expo with dozens of tables, noise, and occlusions—so it doesn’t tell us whether personalized, per-guest colors and reactive table beacons can improve route efficiency and ease. It leaves space for us to experiment with more actionable applications, testing to see if some colors are easier to follow and if they are better than simple text maps.

Lu, M.; Arikawa, M.; Oba, K.; Ishikawa, K.; Jin, Y.; Utsumi, T.; Sato, R. Indoor AR Navigation Framework Based on Geofencing and Image-Tracking with Accumulated Error Correction. Appl. Sci. 2024, 14, 4262. <https://doi.org/10.3390/app14104262>

They built a smartphone AR navigation framework that stabilizes indoor guidance by combining geofencing with image-tracking to mitigate drift, an engineering advance toward reliable on-device indoor AR. Relative to our gap, it shows how to deliver arrows and overlays without huge infrastructure, but it still centers on screen-based AR, not ambient, shared lighting that everybody can see (LED strips, table beacons). It is more focused on improving error rate of AR navigation, but does not compare to see if people may perform better with physical signs.

Kunhoth, J., Karkar, A., Al-Maadeed, S. et al. Indoor positioning and wayfinding systems: a survey. Hum. Cent. Comput. Inf. Sci. 10, 18 (2020).
<https://doi.org/10.1186/s13673-020-00222-0>

A comprehensive survey of indoor positioning (RF, vision, sensors) and wayfinding pipelines. It maps the technology landscape, Bluetooth beacons, vision, sensor fusion, etc., and highlights accuracy/latency trade-offs and deployment complexity. For our gap, the review underscores that many solutions require infrastructure and app adoption, while ambient light-based cues remain under-represented as primary guidance. The paper also lacks hands-on experiment with which combinations of the existing technologies can serve as efficient ways to perform indoor navigation.

Mojtaba Valizadeh, Babak Ranjgar, Alessandro Niccolai, Hamid Hosseini, Soheil Rezaee, Farshad Hakimpour,
Indoor augmented reality (AR) pedestrian navigation for emergency evacuation based on BIM and GIS,
Heliyon,
Volume 10, Issue 12,
2024,
e32852,
ISSN 2405-8440,
<https://doi.org/10.1016/j.heliyon.2024.e32852>.

Develops an AR evacuation system integrating BIM & GIS, demonstrating how AR can guide people during emergencies. This is the best evidence that overlaid visual cues can drive decisive movement under pressure. However, the domain is evacuation (safety-critical, route certainty, compliance), not voluntary exploration in noisy, crowded club halls where engagement and choice matter. It also did not explore physical vs. AR, and did not focus on developing something everyday and low-cost.

Qiu, Z., Mostafavi, A. & Kalantari, S. Use of augmented reality in human wayfinding: a systematic review. Virtual Reality 29, 154 (2025).
<https://doi.org/10.1007/s10055-025-01226-w>

A systematic review of AR wayfinding that synthesizes user experience, performance, and cognition findings. It notes AR can reduce cognitive load and aid cognitive map formation, but real-world results on wayfinding performance are mixed, with distraction risks depending on modality. For our gap, this flags a research opportunity: test ambient, non-screen cues (e.g., LED strips + reactive table beacons with personal colors) that potentially avoid screen distraction, while measuring practical outcomes (lost-rate, time-to-table) in live events like esports meetings.