Supporting in-situ exploration and filtering of geolocated content without unnecessary interference in people's everyday behaviour

Using multimodal feedback to help break the barriers between the digital and physical worlds we live in

Casual discovery
- Exploring the effect of different levels of feedback on users' pointing and targeting accuracy
- Point to indicate direction; tilt to refine distance and mark target

Results: Aerial view most accurate for targeting, but low-attention interfaces can also offer benefits in some cases

Low-attention browsing in-situ
- Comparing visual and vibrotactile feedback for efficiency, accuracy and speed in target discovery and selection
- Point and sweep to browse; feedback felt when on-target

Results: Tactile feedback effective; visual can cause false positives. Similar performance between systems in ⅔ cases

Vibrotactile navigation
- Exploring low-attention tactile feedback for pedestrian rendezvous and navigation
- Navigation: comparing speed and accuracy of fixed-width versus dynamic feedback

Results: Users successfully fused physical and digital to navigate to an unknown target

Haptic filtering
- Investigating content filtering via haptic feedback and small, unobtrusive hand gestures
- Feedback felt when requested content type is present; aims to maintain real-world engagement

Results: Haptic filtering successful with low level of familiarity. Visual more efficient when standing still; tactile offers benefits while moving

What's next?
- Pico projectors offer huge potential for real-world mobile augmented reality
- Projection for collaboration, browsing and sharing

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