



MONASH University

Information Technology

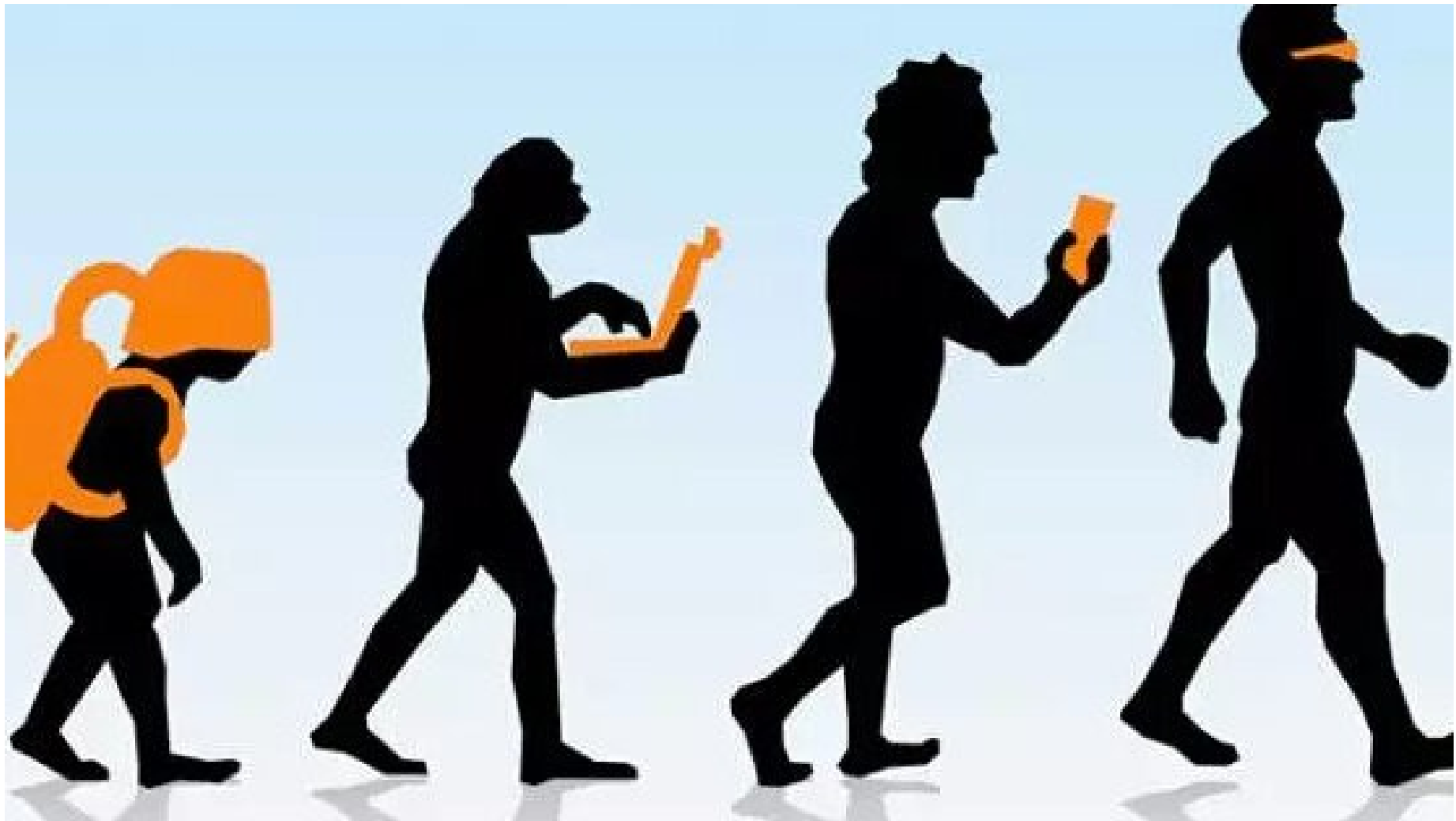
FIT5183: Mobile and Distributed Computing Systems (MDCS)

Lecture 10B – HCI Supplementary Secret of Virtual Reality and Augmented Reality

Virtual Reality & Augmented Reality



HCI Evolution



Google Cardboard VR



Facebook Oculus VR



Video Overlay



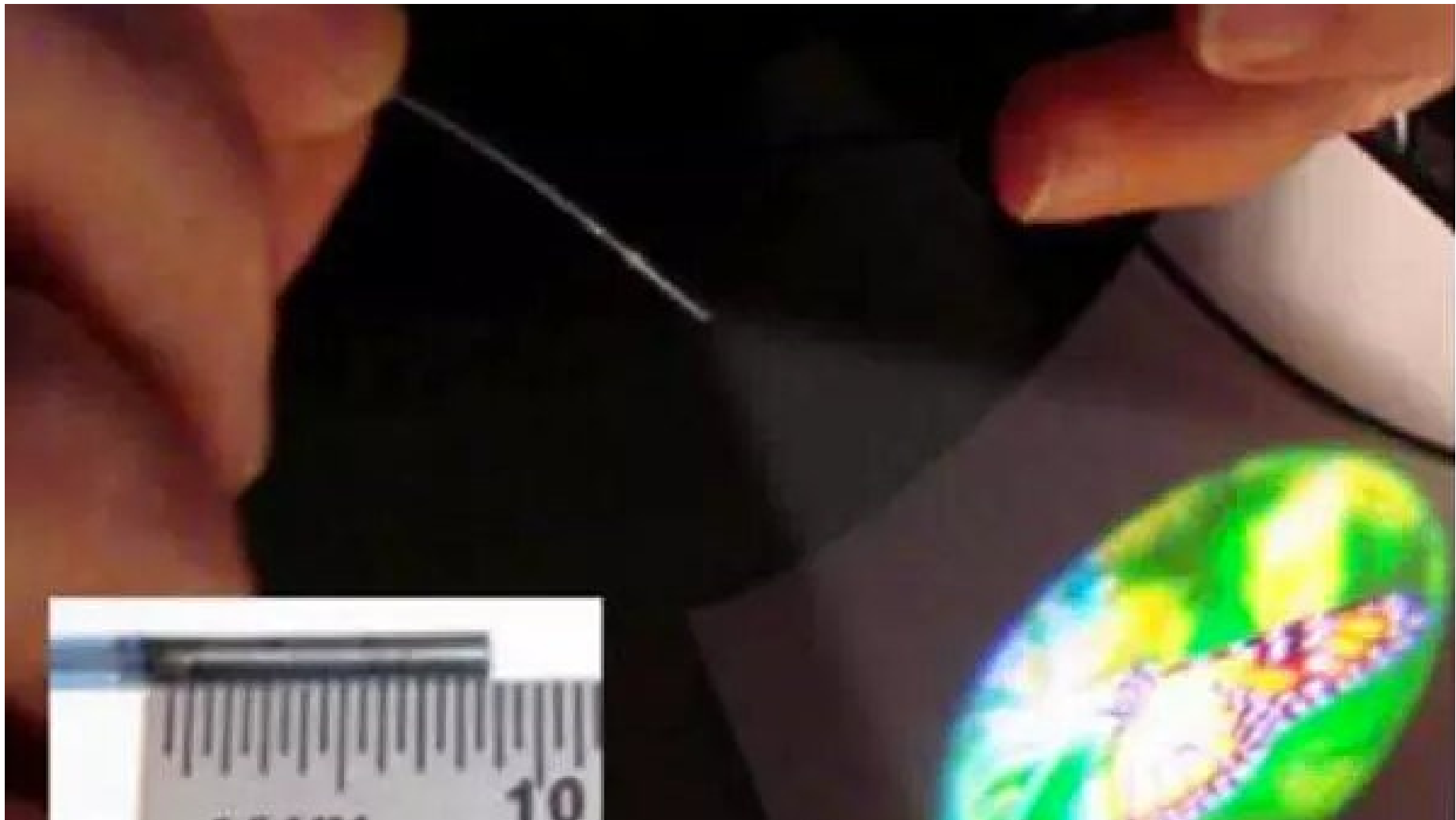
Video See-through



Holography and Light Field Display



Scanning Fiber Endoscope



Magic Leap

<http://www.magicleap.com/#/home>



Microsoft HoloLens



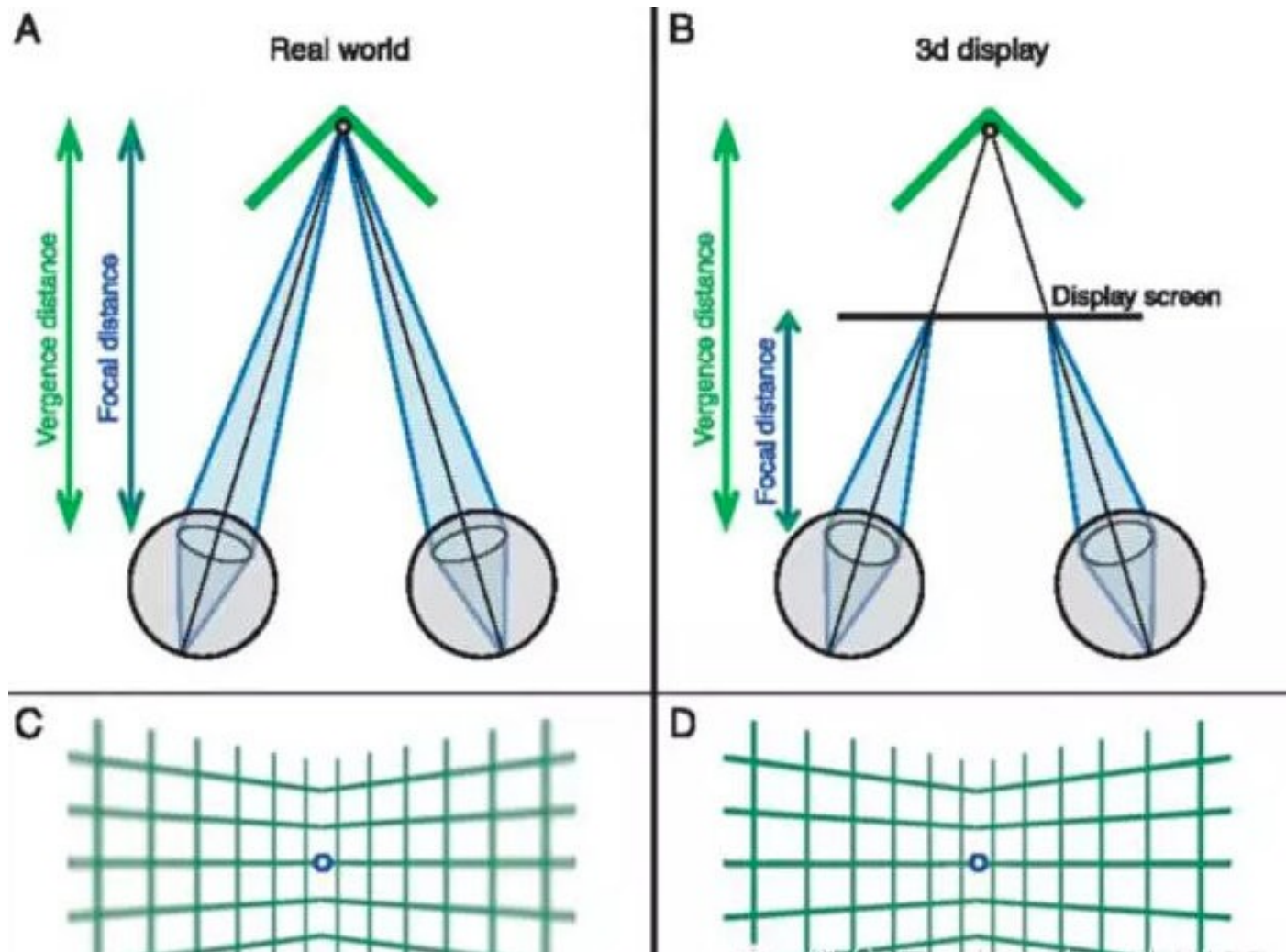
<https://www.microsoft.com/microsoft-hololens/en-us>



Stereoscopic 3D



Accommodation & Vergence



Challenges of the True 3D Using Light Field

Display

Lens

Field of View and Resolution

Occlusion

and more...



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References

- ❑ Brian T. Schowengerdt et al., 3D Displays using Scanning Laser Projection, SID Symposium Digest of Technical Papers, Volume 43, Issue 1, pages 640–643, June 2012.
- ❑ Brian T. Schowengerdt et al., True Three-Dimensional Displays that Allow Viewers to Dynamically Shift Accommodation, Bringing Objects Displayed at Different Viewing Distances Into and Out of Focus, CYBERPSYCHOLOGY & BEHAVIOR Volume 7, Number 6, 2004.
- ❑ Xu Liu and Haifeng Li, The Progress of Light-Field 3-D Displays, Information Display, 2014.
- ❑ David M. Hoffman et al., Vergence–accommodation conflicts hinder visual performance and cause visual fatigue, J. Vis. 2010.
- ❑ K. J. MacKenzie, D. M. Hoffman, and S. J. Watt, Accommodation to Multiple-Focal-Plane Displays: Implications for Improving Stereoscopic Displays and for Accommodation Control, Journal of Vision(2010).
- ❑ <http://blog.sciencenet.cn/blog-2472277-954754.html>