

IN4MATX 133: User Interface Software

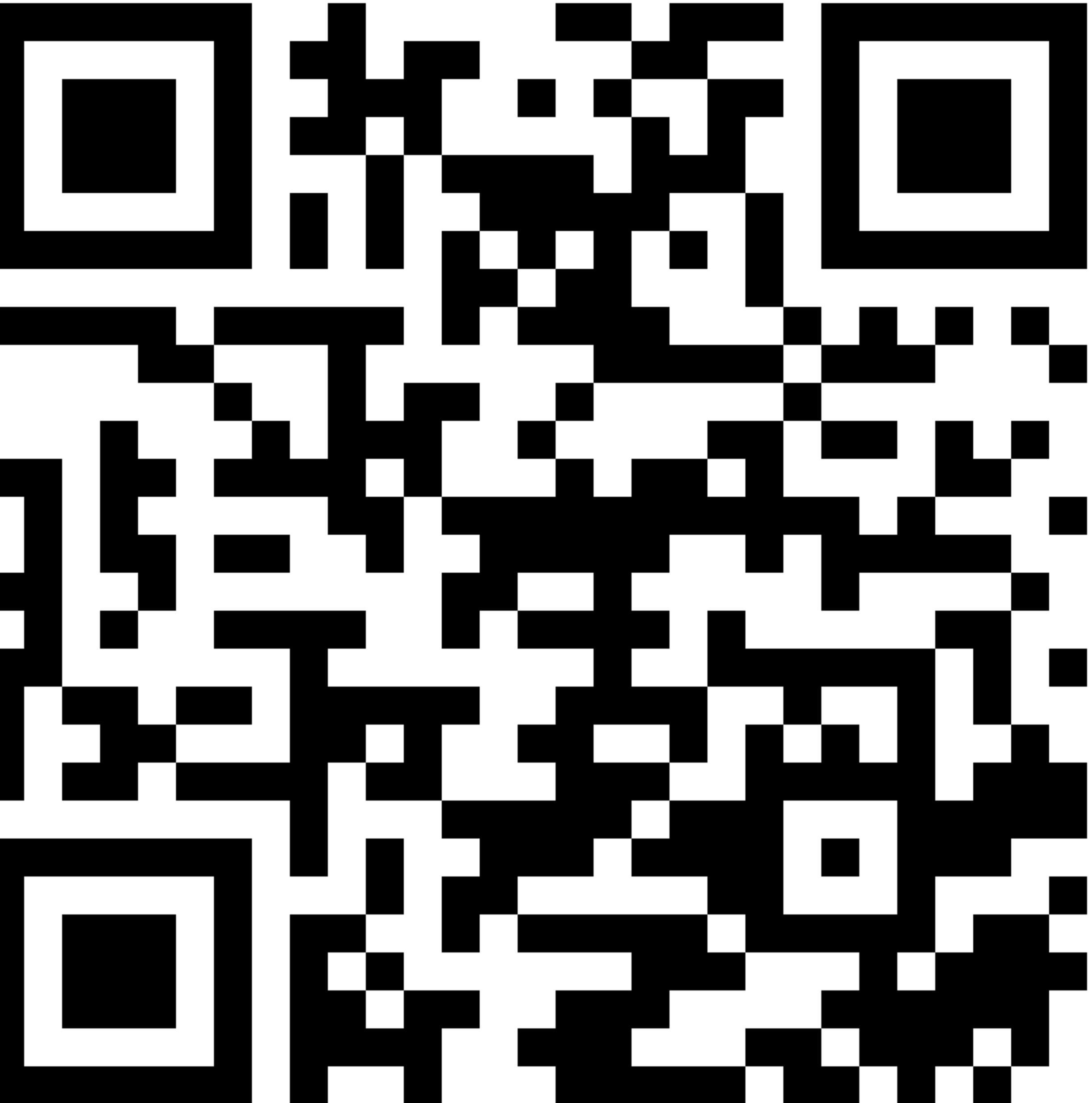
Beyond Web & Mobile

Socrative Quiz!

Enter your UCI Email when prompted for name!!!
e.g.,

xxxxx@uci.edu

<https://api.socrative.com/rc/52QwBu>



What is a wearable computer?

A MUCH More Diversified Market Than Investors Realize



CREDIT SUISSE 

What is a wearable computer?

- A computer on the body that is:
 - Always on
 - Always accessible
 - Always connected
- Other actions:
 - It augments user actions
 - Is aware of the user and their surroundings

Rhodes, B.J. 1997. The wearable remembrance agent: a system for augmented memory.
Personal Technologies, 1(4), 2018-224.

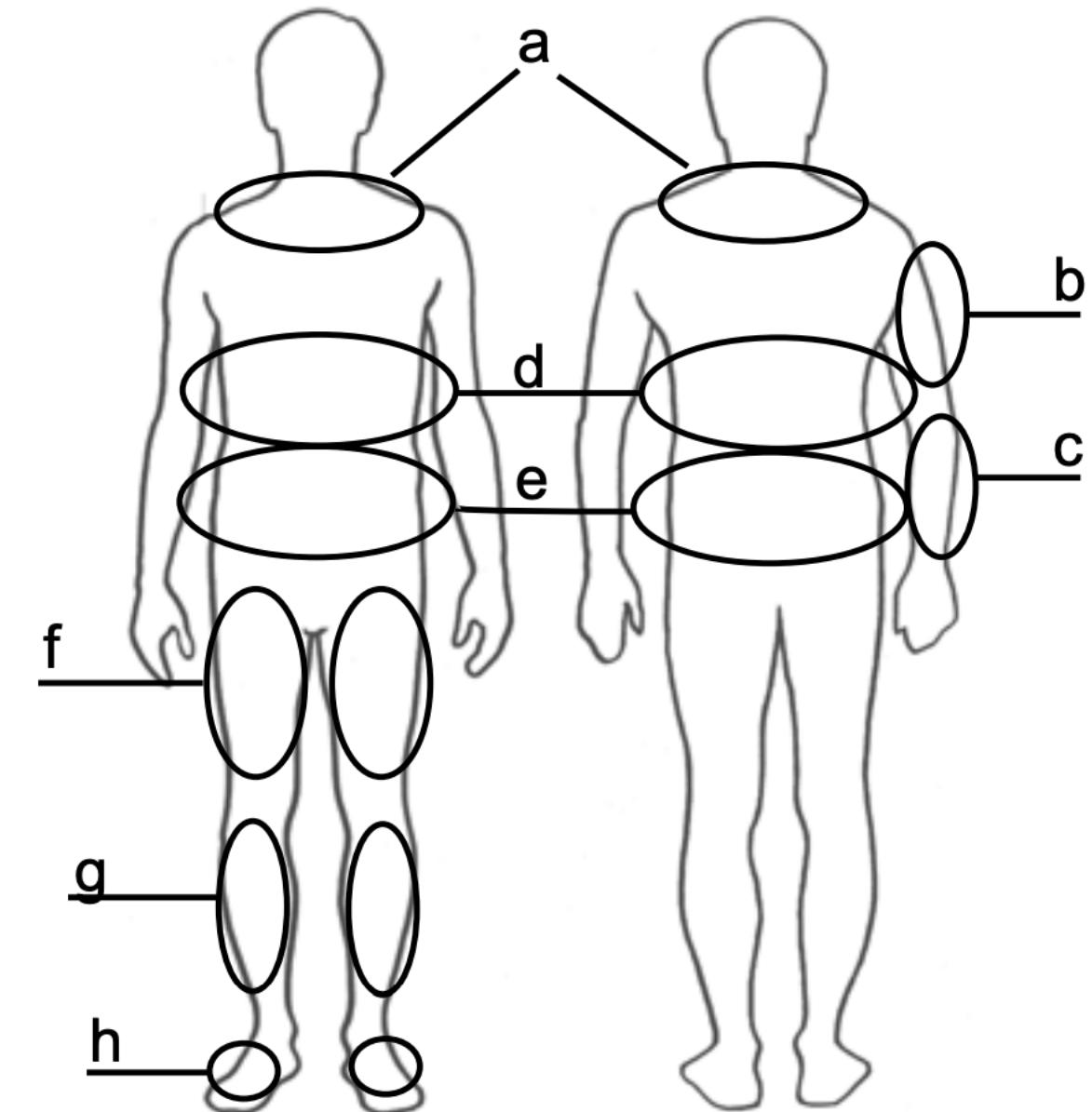
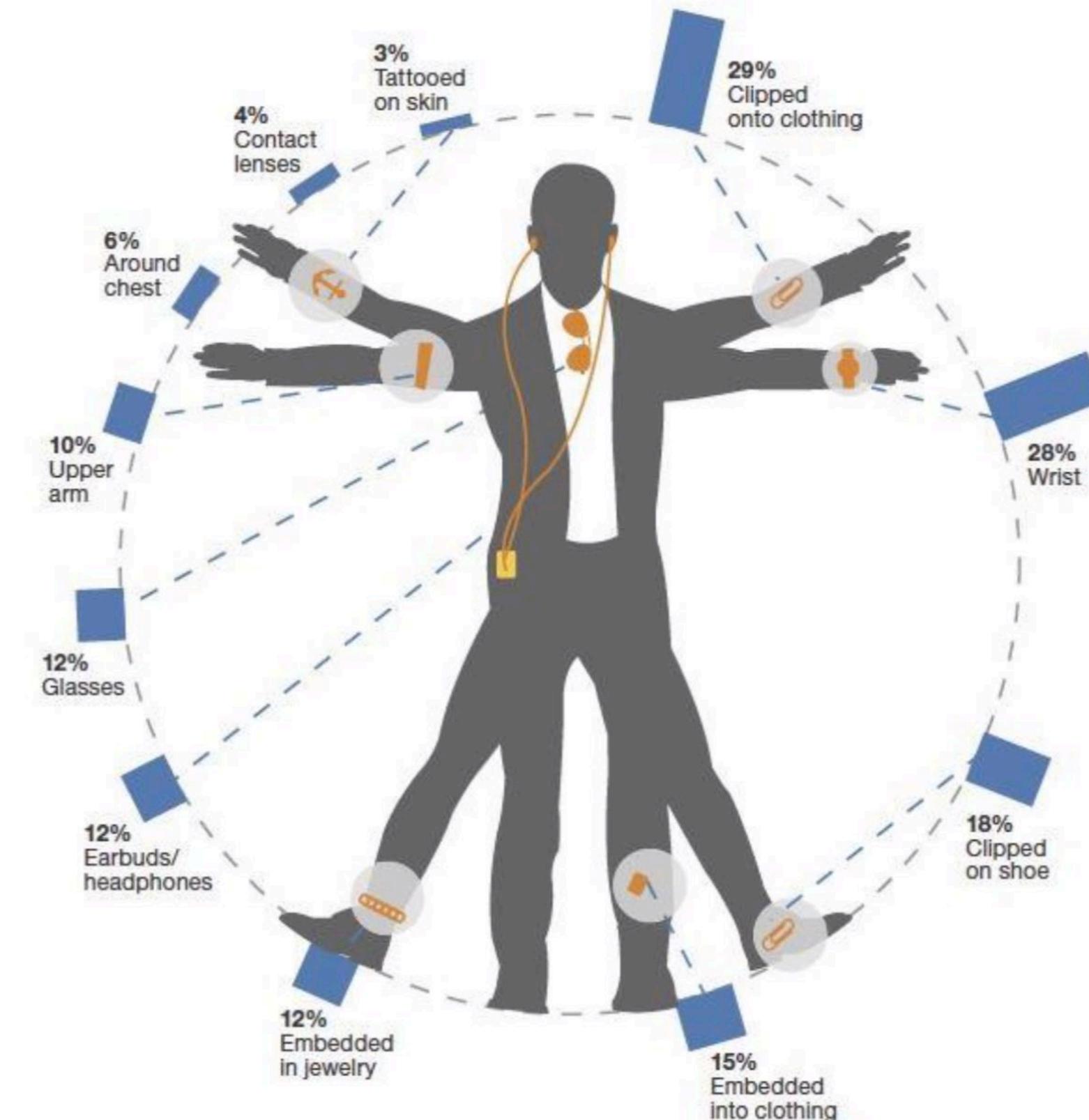


Fig. 1, The general areas we have found to be the most unobtrusive for wearable objects are: (a) collar area, (b) rear of the upper arm, (c) forearm, (d) rear, side, and front ribcage, (e) waist and hips, (f) thigh, (g) shin, and (h) top of the foot.

"How would you be interested in wearing/using a sensor device, assuming it was from a brand you trust, offering a service that interests you?"



Body and head-mounted wearables

MIT Wearable Computing (1996)

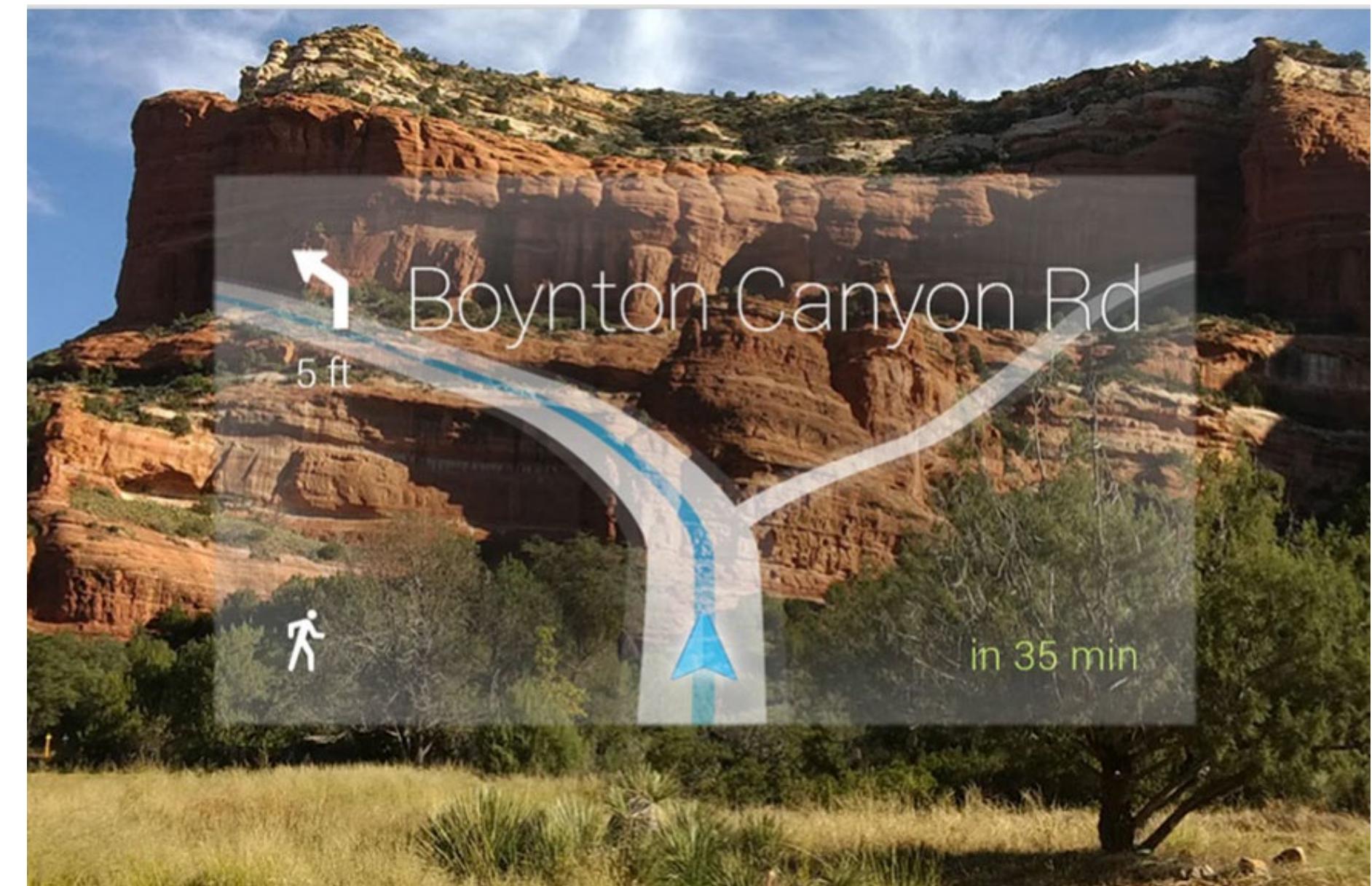


Google glass

- Commercial smart glasses,
released in 2013
 - Technology lead by Thad Starner,
part of the MIT group
 - Front-facing camera,
rear-facing display
 - Gyroscope/accelerometer/magnometer
 - Natural language input capabilities



<https://www.x.company/glass/>



<https://www.x.company/glass/>

Google glass

- Privacy and safety concerns and poor marketing prevented take-off in the consumer space
- Lives on in enterprise spaces
 - New version released in 2017
 - Used in manufacturing, healthcare



<https://www.x.company/glass/>

Enterprise

- Purpose-built, niche products fill some gaps
- Still no general-purpose head-mounted wearable computer
- (Not including VR!)



<https://www.realwear.com/>

Wrist-worn wearables

Fitbit (2011)

- One of the first commercially successful digital pedometers
- Early versions were hip-worn, now almost exclusively wrist-worn
- Current models are “fitness-first” smartwatches
 - Activity prominently included on the home screen
- Acquired by Google in 2019



Pebble (2013)

- Arguably the first commercially successful smartwatch
 - Two of the most funded Kickstarter projects ever
- E-ink display led to high battery life (a week vs. a day)
- Paired with a phone via Bluetooth
 - Could retrieve email, control music, receive notifications, etc.
- Acquired by Fitbit in 2016



Apple Watch (2015)

- From the onset, it was intended to be a “second screen” companion to iOS devices
- Original versions could do almost nothing without pairing to an iOS device
- Apps add a secondary component to an existing iOS app



Wearables in Research



[1
8](https://chrisharrison.net/index.php/Research>Welcome</p></div><div data-bbox=)

Design recommendations for (wrist-worn) wearables

One visual thought per screen

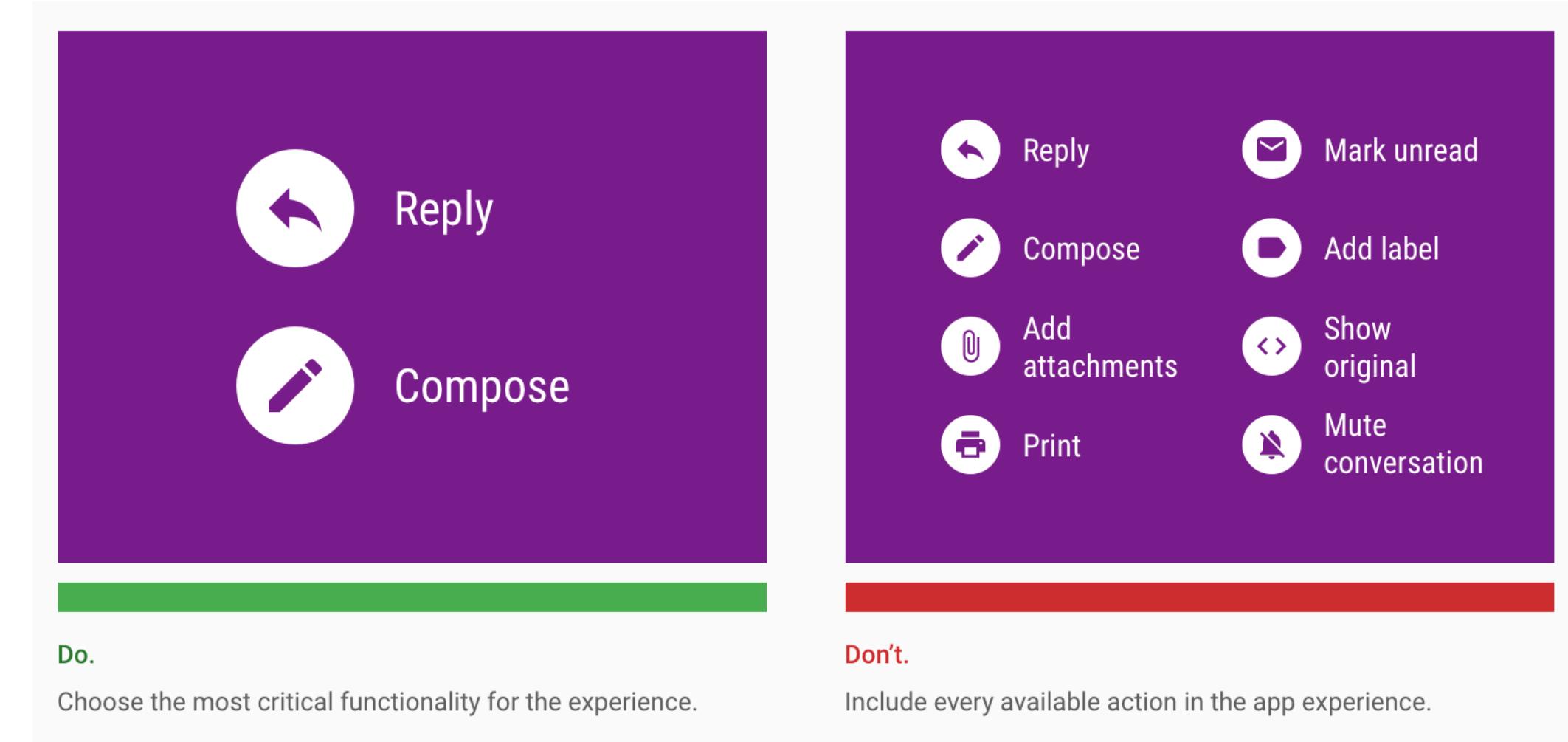
- Real estate is extremely valuable on watches
- Shrinking a mobile or desktop app will create a bad experience
- Keep words and interactions to a minimum



<https://mayvendev.com/blog/10-tips-for-designing-for-wearables-and-watches>

Reduce input options

- Have only a couple of buttons per screen
- This may mean a watch app has fewer features than a mobile app
 - That's okay!
 - The watch augments the experience
 - Consider voice input when longer instruction is needed



<https://designguidelines.withgoogle.com/wearos/wear-os-by-google/designing-for-watches.html>

Some apps don't need a watch interface

- For some apps, a watch app may not add to the experience
- Focus on use cases which make sense
 - Quick input
 - Glanceable feedback



Do.

Design experiences where tasks can be accomplished easily using the watch interface.



Don't.

Complex, detailed apps that include items like spreadsheets may be difficult to edit and view on a watch.

<https://designguidelines.withgoogle.com/wearos/wear-os-by-google/designing-for-watches.html>

Questions to consider

- Would a watch app add anything to my mobile app?
 - Is there timely information the app needs to provide?
 - Can it be shown in a very small format?
 - Are there simple controls to the app that would be added to a watch?
- Do I have the resources/time to do this?
 - Currently limited market impact, but growing
- What type of interaction do you want the user to have?

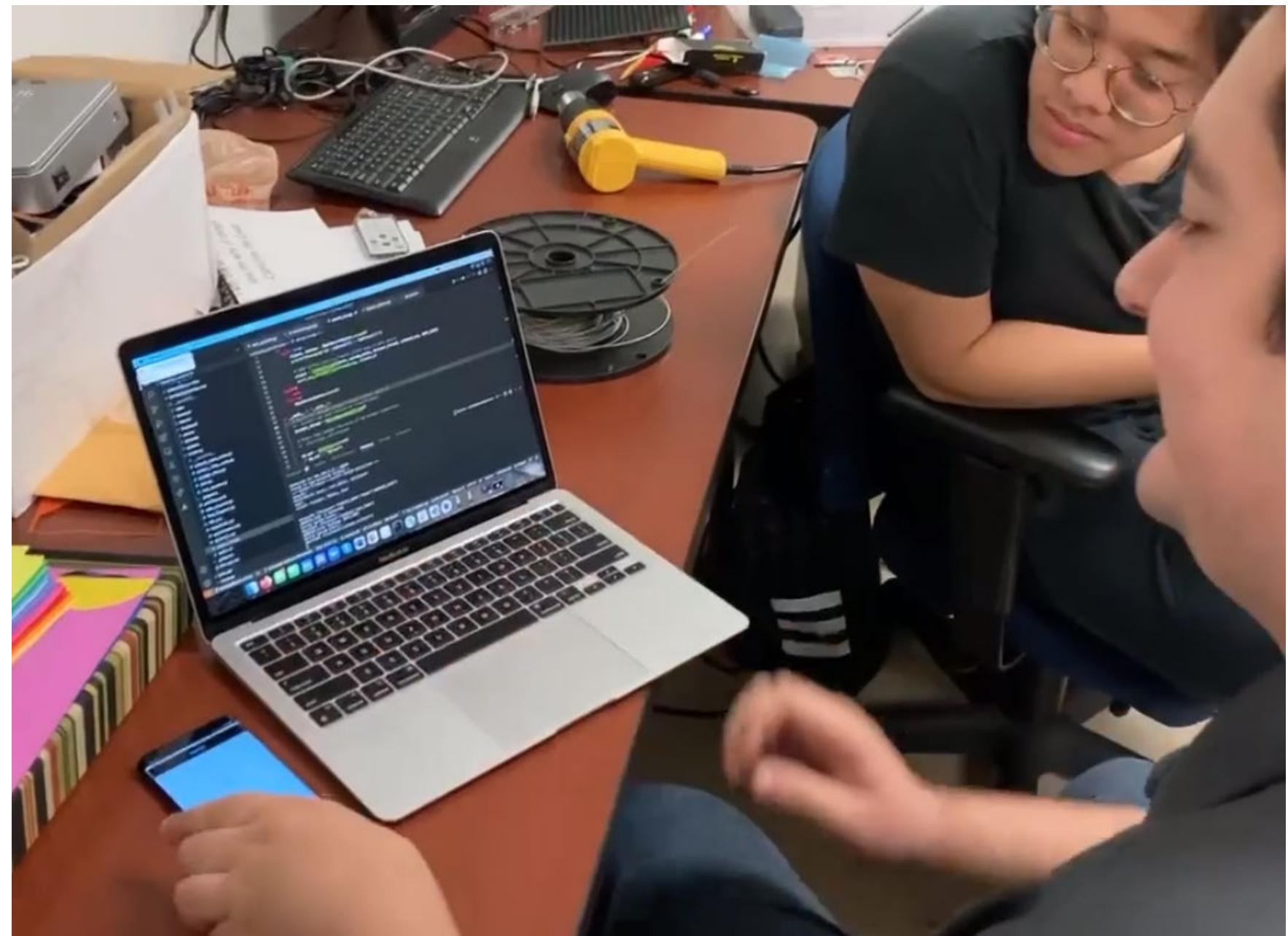
Implementing watch apps

- Requires native development, as far as I know
 - WatchKit for iOS, Wear OS for Android
- Requires a companion iOS or Android app for building/deploying, though may be able to run as a standalone
- However, you can develop a hybrid mobile app and connect it to a native watch app

<https://developer.android.com/training/wearables/apps>

<https://developer.apple.com/documentation/watchkit>

Rethinking The User Interface



Tangible Interaction



Cooperative Interaction



Mixed Ability Interfaces