

ProjectLive

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CS377M Spring 2016

Motivation

Stress from daily activities can build up and lead to panic attacks

How can we prevent people from escalating to that point and improve their general health?



Solution

Tai Chi has been proven to help with stress and anxiety relief by lowering heart rates and blood pressure

Users: from **less extreme of anyone dealing with stress** or looking to improve their well-being to the **most extreme of people susceptible to panic attacks**

Hardware: HoloLens and Band

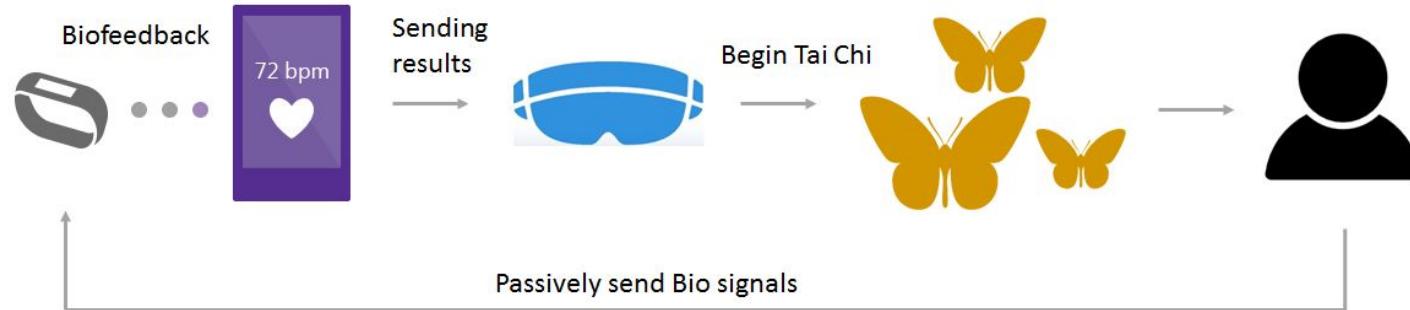
Video Demo: <https://www.youtube.com/watch?v=k6xjvZNmlP4>

Why Augmented Reality?

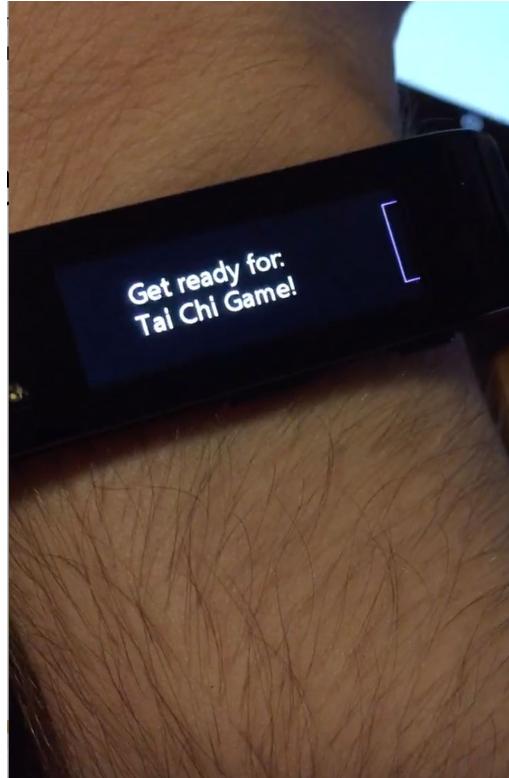
If you were to self learn on your own, you would probably be following a video on your laptop

- Self-learn without an instructor through precise guided movements-> portability
- Focus on your own movements
- Enjoy the outdoors simultaneous

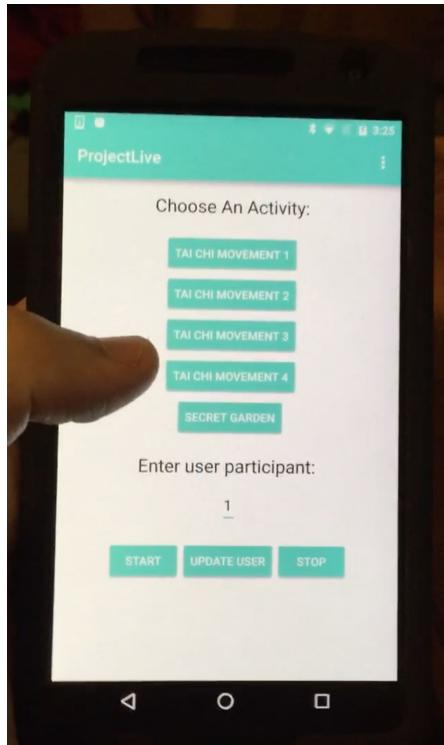
Architecture



Microsoft Band for BioFeedback



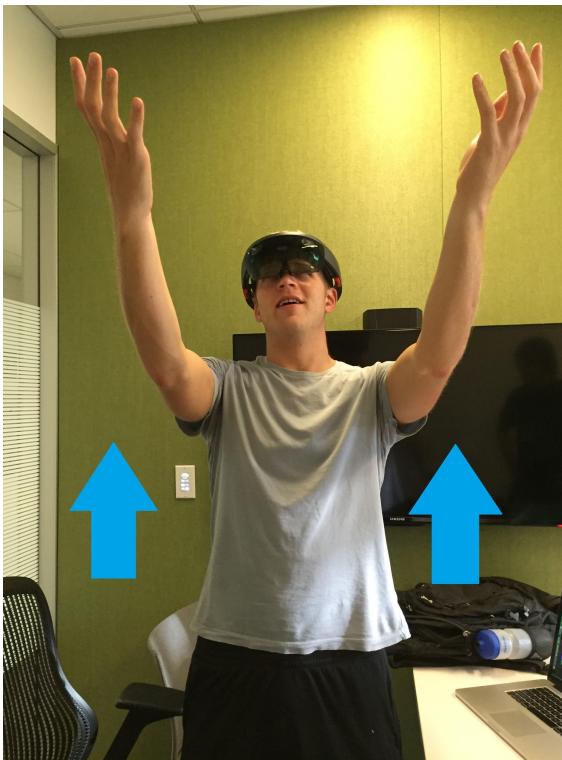
Android App for User Controls



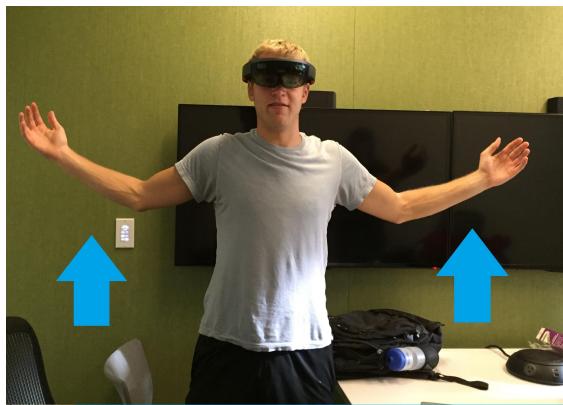
HoloLens View



Tai Chi Exercise 1



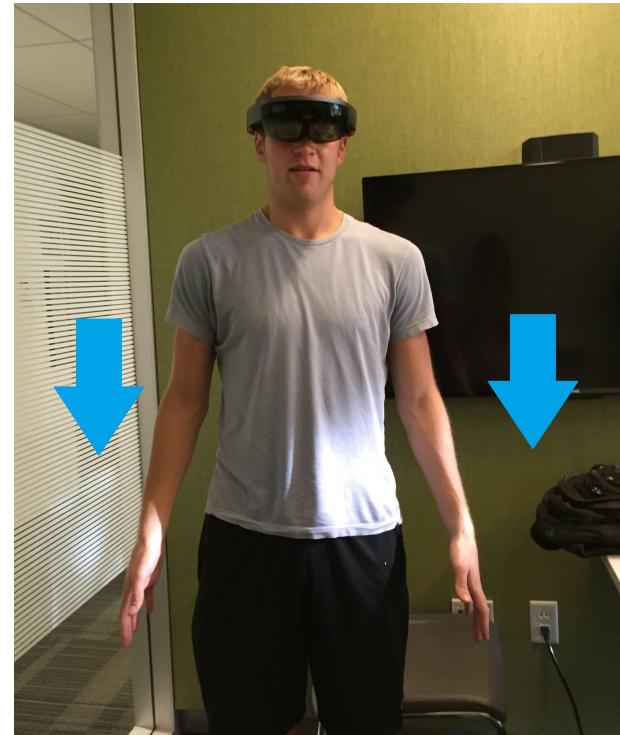
Tai Chi Exercise 2



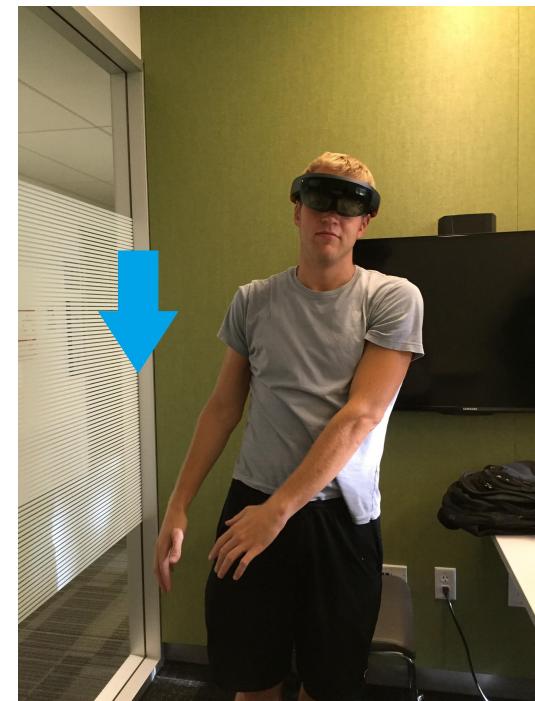
Tai Chi Exercise 3



Tai Chi Exercise 4

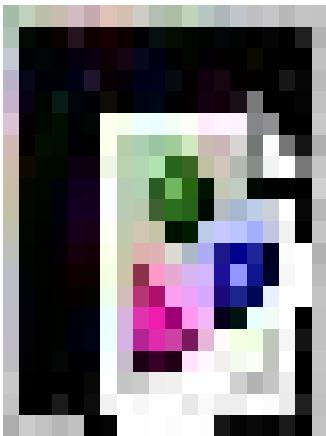
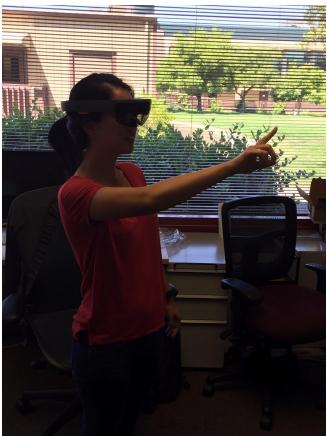


Tai Chi Exercise 5



User Study

(qualitative, mostly)



Biofeedback Results

HR (Before)	HR (Right After)	HR (3 Minutes Later)
61	69	62
42	52	52
75	75	49
62	68	65
71	71	73
58	57	54
69	67	61

BP (Before)	BP (Right After)	BP (3 Minutes Later)
102/61	99/65	100/68
125/76	128/79	139/83
106/70	109/67	124/93
116/80	114/79	118/80
108/74	97/66	106/68
102/71	100/68	102/78
102/77	104/76	110/60

User study feedback

- 3/7 users said they felt more relaxed, 2/7 said they felt the same, 2/7 said they felt less relaxed
- 5/7 users were comfortable with the device
- 5/7 users would definitely use such a system if it were fully fleshed out and production quality

User study feedback (continued)

Pros

- Users made the correct arm movements
- Some users were engaged with the activity and didn't want to stop

Cons

- HoloLens itself was a bit too heavy to be relaxing
- Confusion over 3d vs 2d space
- Some users had to move head to keep butterflies in field of view

Future Work

Conduct a longitudinal study

Incorporate additional biofeedback (e.g. Galvanic Skin Response)

Explore more lightweight devices

Tweak game parameters based on user study (wider FOV, slower butterflies)

Use face tracking to improve user feedback/experience

Thank you!

ProjectLive Website: cs377m.github.io

Video: <https://www.youtube.com/watch?v=k6xjvZNmlP4>

Code: github.com/cs377m