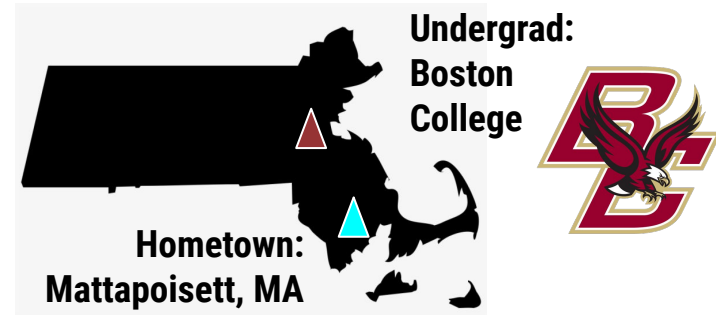


Hannah O'Day



Improving walking for people with **Parkinson's disease**



I was diagnosed with Parkinson's

At the age of sixty-five.

I was told — “a pill and exercise”

Would get me out alive.

I was told that my arms weren't swinging,

And that I had an **improper gait**.

My body wanted to walk ahead,

— my FEET said, “this can wait.”

...

~Alan Ascher

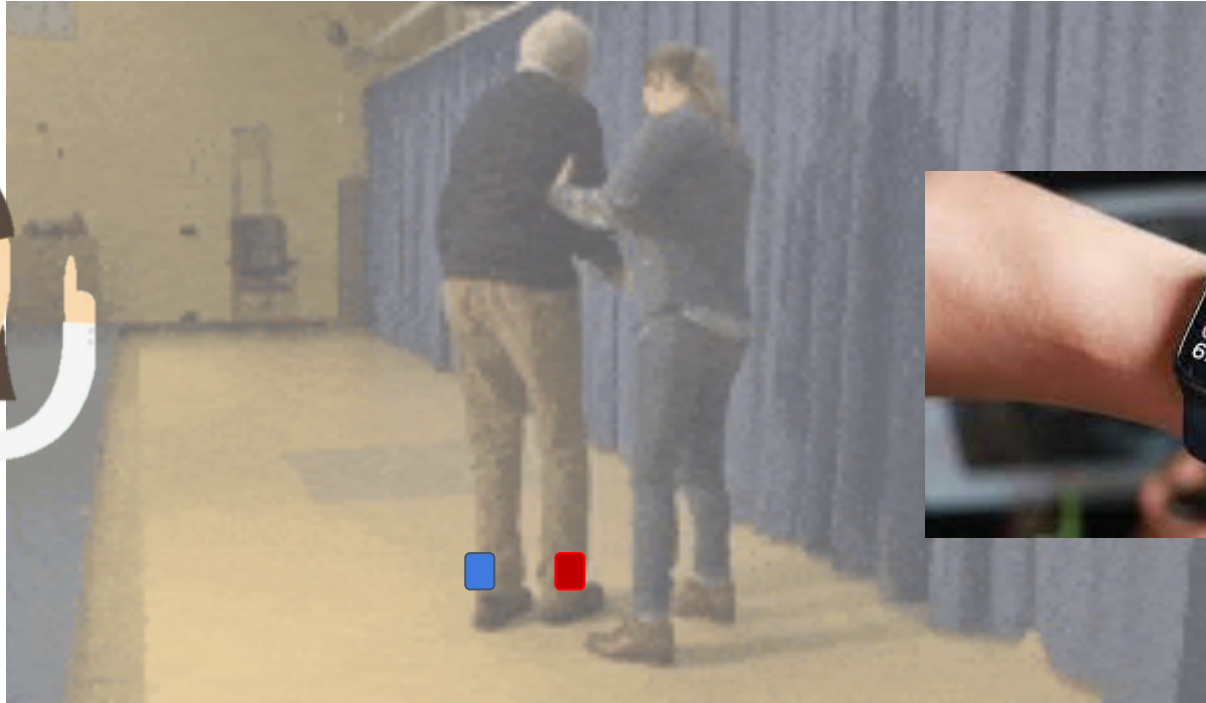


NMBL

Freezing of Gait



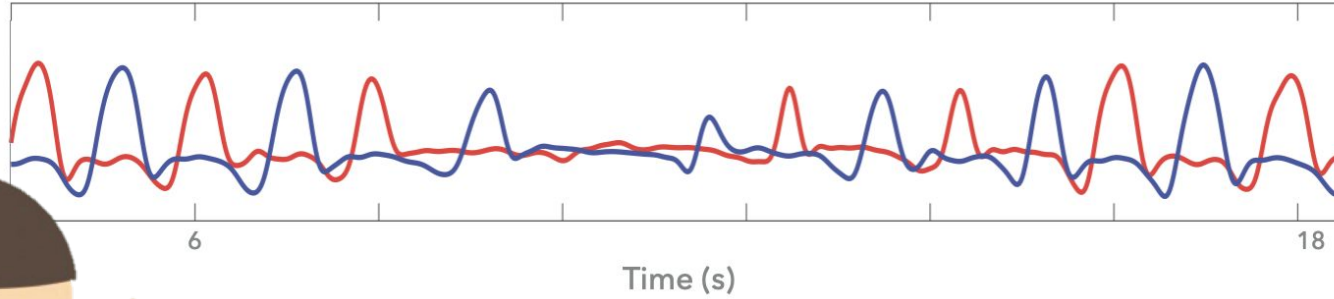
Freezing of Gait



Freezing of Gait

right ankle left ankle

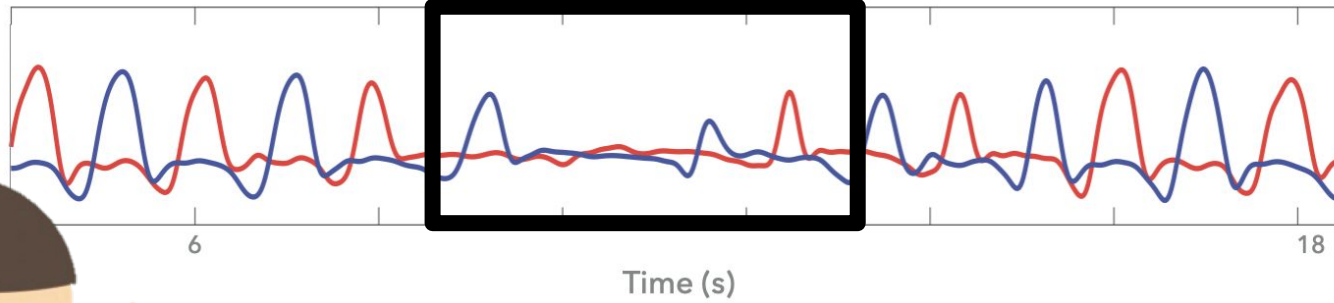
Ankle
Angular
Velocity



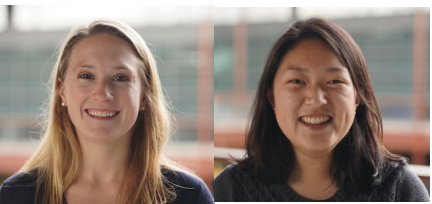
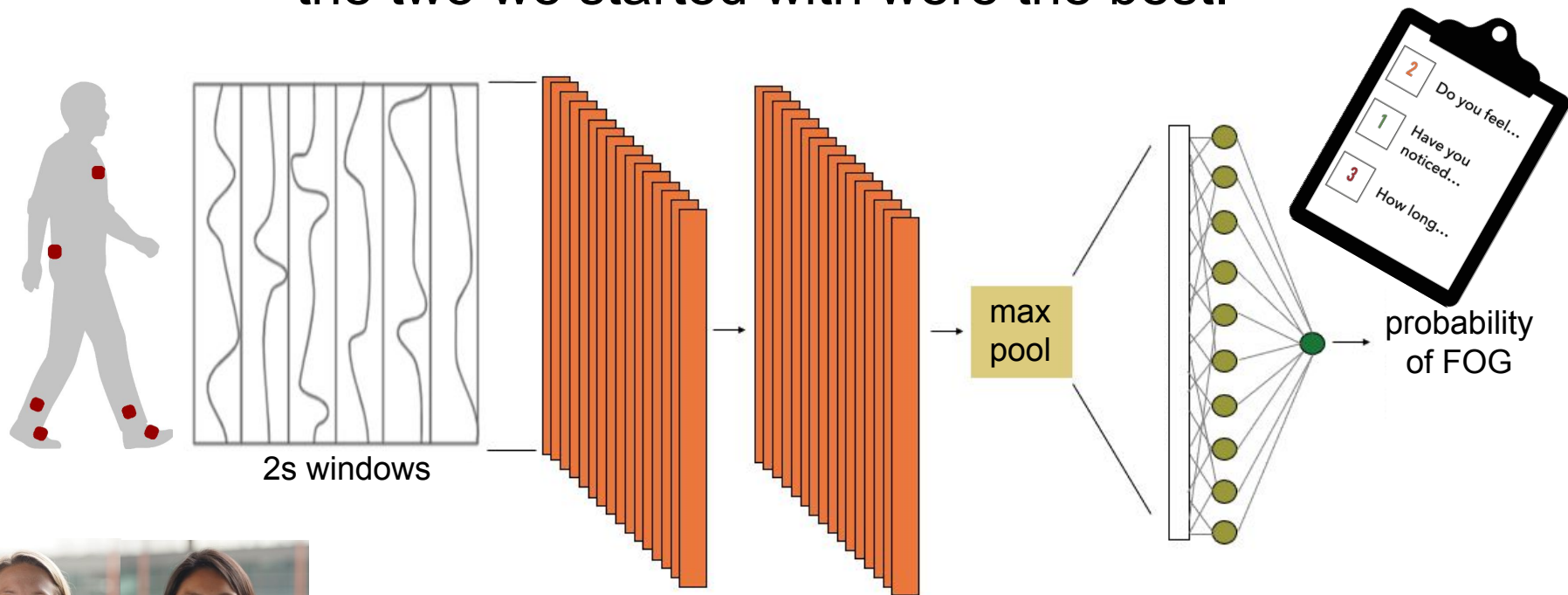
Freezing of Gait

right ankle left ankle

Ankle
Angular
Velocity



We did some fancy machine learning and patient surveying to optimize the number and placement of sensors... and found that the two we started with were the best.

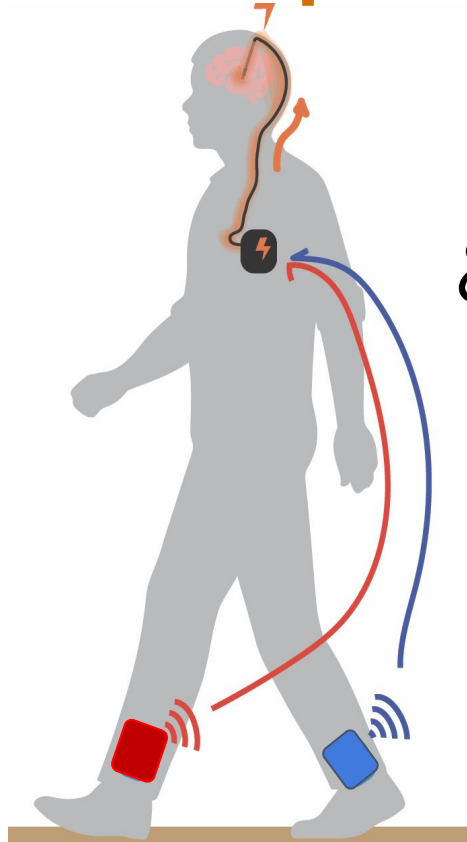


Deep Brain Stimulation (DBS)



Video: Andrew Johnson

A smart brain pacemaker: **Closed-loop DBS**



& responds with **therapy**

Reads **data** from motion
sensors

Our participant walked around the lab **most regularly** on closed-loop therapy.



Questions?



"I want to run on the beach more with
my daughter and Ozzy our dog."
~ Kevin