



GreenReader: A Putting Aid for Visually Impaired Golfers

Team DAV: Ryan Amer, Nol Nimmanpipak, Terry Cheng, Rohan Raman, Annabelle Li-Kroeger.
MultiD Faculty: Alissa Burkholder Murphy, Isabella Allen. Supported by John DeMaggio, John Kleindienst, and DAV.



JOHNS HOPKINS
WHITING SCHOOL
of ENGINEERING

Project Background

Blind Golfing

is a popular sport in the Blind and Visually Impaired community that provides:

- Opportunities to socialize with others
- Both casual and competitive environments.

Our Users' Need

Blind and visually impaired golfers need a way to **understand the nuances of the landscape** around the hole for putting, to set up better shots. Because they have **limited proprioception** and face much higher difficulty wayfinding than the average golfer.

Design Requirements

Usability

1. No more than 45 added seconds
2. No specialist training needed to use
3. Putts closer to the pin 6/10 times



Technical

1. Product adds no more than 20g of weight
2. Computed angle is within 1 degree of actual angle
3. Computed slope within 0.5 degrees of actual slope

Our Solution



Attach April Tag to Pin



Place Phone and Walk Putt



Hear slope reading

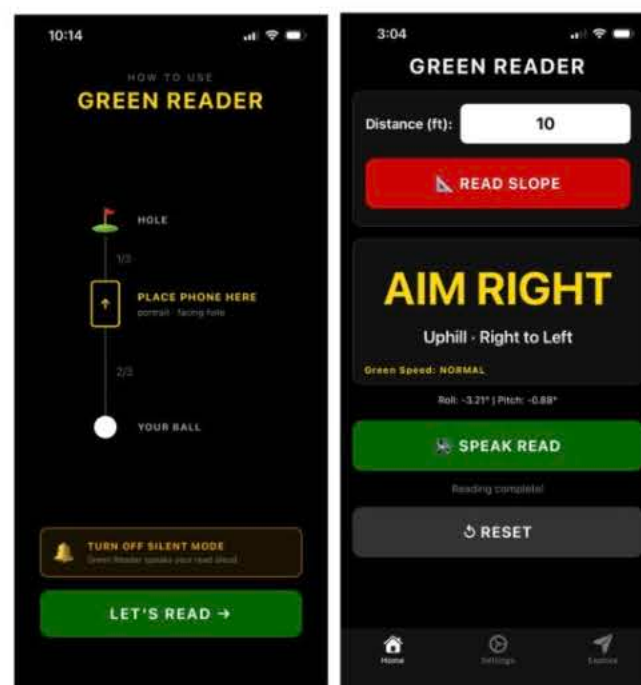


Get in stance, adjust until aligned



Check out this demo of the steps!

Slope Reading



Phone App User Interface

Alignment + Distance Reading



Attachable Camera

Product Testing

Test with Hopkins Golfers

Key Findings: tag detection is difficult over longer distances



Left: JHU golfer simulating blindness to test alignment features.
Right: The group taking turns making putts, improvement seen in most shots taken

Test with visually impaired golfers

Key Findings: Use simple, practical cues with golf terminology



Left: Explaining our product to veterans with various visual impairments
Right: Comparing results when veterans are using vs. not using our product

Check out our product!



We are targeting a launch of our product onto the App Store for future iterations, and preparing for hand-off to project partners.

Scan this QR code to see a live demo!