Project Report: Eyeballer

UB Hacking 2019

Team members

University of Buffalo

- Ben
  - Computer Science
- Chris
  - Electrical Engineering

Rochester Institute of Technology

- Cat
  - Web and Mobile
- Wendy
  - Computer Science

Overview

Idea

To make a Chrome extension that allows users to control the active window with eye movement that is captured through the webcam of the user's device.

Why?

- Accessibility
- Eye gaze tracking is cool?

Biggest challenge

It turned out to be a way bigger project than what we thought it would be.

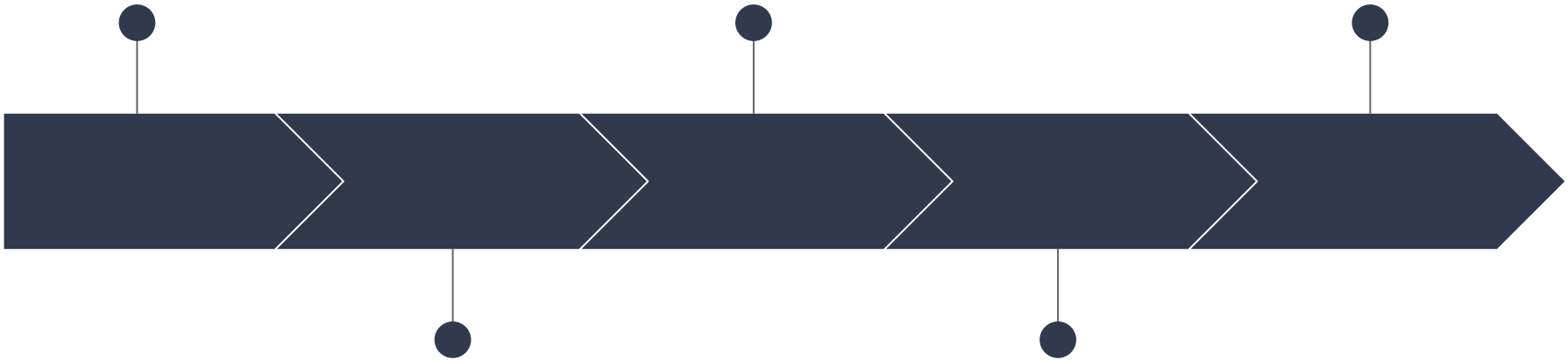
Team formation

Coming up with an idea

Drafting out idea a.k.a the birth of Eyeballer

Working on Eyeballer

Settling with what we have



What does the Eyeballer do?

- Eyeballer lets the user control the currently open website with features such as scrolling up/down or pressing the play button. So, basically not a lot of hands involved.
- Depending on in which quadrant of the screen a special movement (such as a ‘wink’) is detected, different functions of Eyeballer will be carried out.
  - Such as scrolling up or down on the page.
  - The user can set up what the special move in each quadrant should trigger on the extensions configuration page.

Technology

Chrome extension

- Publish extension with Chrome
  - So mostly JavaScript
- Web development

Eye movement tracking

- OpenCV
  - JavaScript library
- WebGazer
  - JavaScript library by Brown University

Challenges

Approach

- We didn’t know what we were getting into so it didn’t hit us how big of a project this is until we were stuck.

Technology

- None of the members had prior experience in this field.
- Both OpenCV and WebGazer don’t have as much resources/documentation that we would have needed.

What we've learned

Even though we did not end up with a functioning end product, all of us learned something new from this project, which is what the goal is after all.

Thank you for your attention!