

CS377Q: Today's goals

- AI followup
- Class update
- P2a: Prototyping check-in
- Design best practices
- Color



Special Interest Group for Neurodiversity (SIG)

- Monday, May 13, 4:00pm
- Graduate School of Business, room C223
- **Ronan McGovern**, Banking Executive at AIB Bank in Ireland
- **Chapters of my Life in Stories.** Mr. McGovern was diagnosed with ADHD in 1996 and subsequently Asperger's in 2018. He looks back on his life through the lens of his diagnosis and growing awareness of ADHD and Asperger's.



Automatic Alt-text: Computer-generated Image Descriptions for Blind Users on a Social Network Service

<https://dl.acm.org/citation.cfm?id=2998364>

Reactions

Useful: over 90% of the write-in feedback AAT is useful. The major reasons were:

(1) better understanding of images: *"I like how what is in the picture and how many people people are doing if they are smiling etc."*

(2) make people feel included: *"For the first I can enjoy FB like my sighted friends.... Li part of the community."*

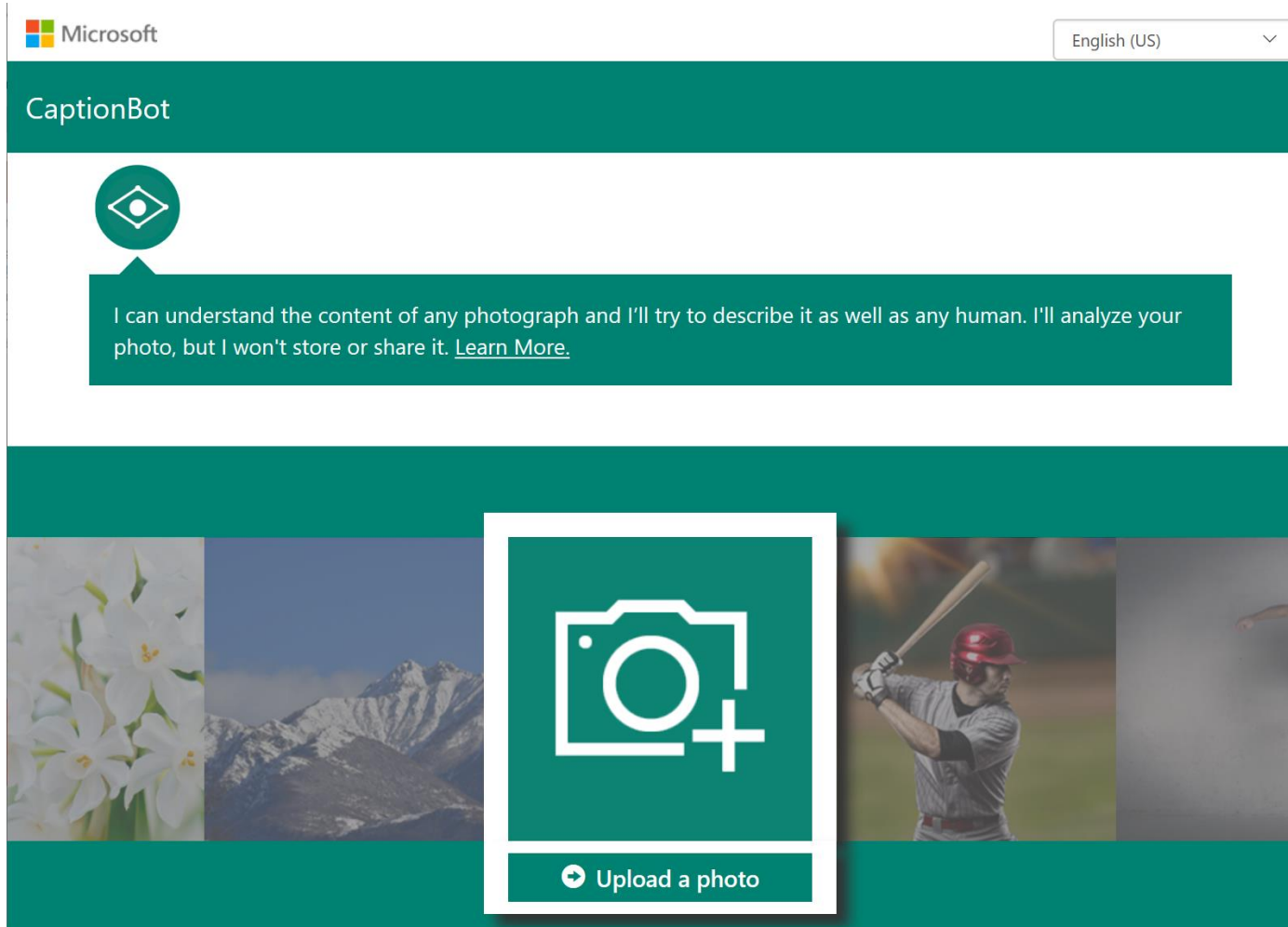
(3) show SNSs' efforts on improving accessibility: *appreciate that Facebook is making an e photos more accessible to those using screen*

Not useful: a few people also expressed their disappointment in this feature, citing a lack of descriptiveness and uncertainty on how much they can trust the algorithm. For example, one user wrote, *"The descriptions are incredibly vague, and don't really give any information. I still have to ask friends what the photo actually is"*. And another user asked for *"[...] more accuracy. I saw one photo that only stated it was indoors when in fact the person that added a description said it was some guide dogs out on the front porch of a restaurant. I do appreciate that FB is trying to work out this type of thing; I just hope it gets a little more reliable."*

Contrary to the self-reported data, we did not see a significant difference in the number of photos liked by users from the test group as compared to the control group.

MSR's captionbot.ai

- <https://www.captionbot.ai/>



Visual recognition APIs

- Microsoft Cognitive Services

<https://azure.microsoft.com/en-us/services/cognitive-services/directory/vision/>

- IBM Watson API

<https://www.ibm.com/watson/services/visual-recognition/>

Visual question answering

Who is wearing glasses?

man



woman



Where is the child sitting?

fridge



arms



Is the umbrella upside down?

yes



no



How many children are in the bed?

2

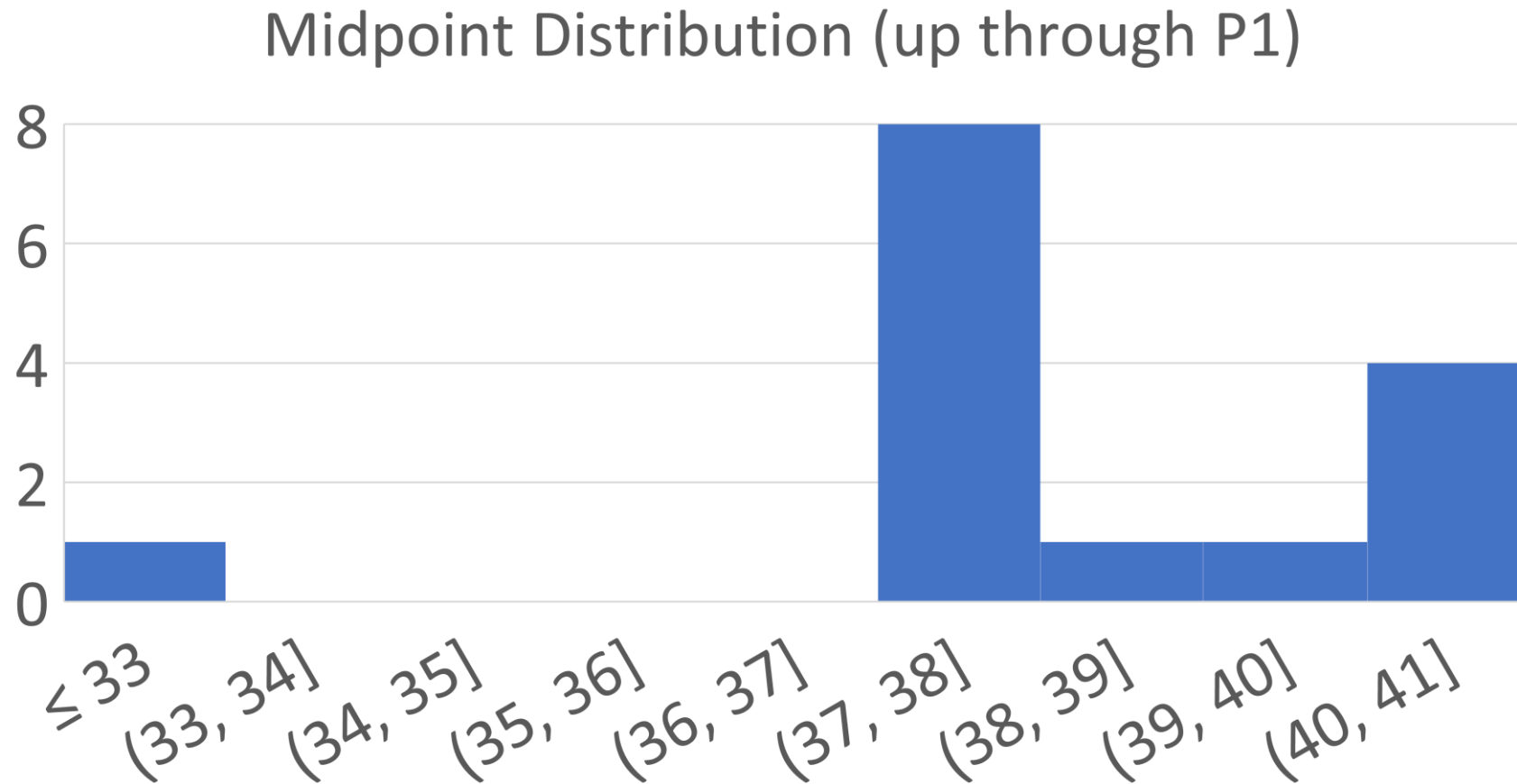


1



<https://vqa.clouddcv.org>

Grading distribution



- Max of 45

Feedback on the class

- First time through is an experiment
- I'm learning a lot about scheduling and use of class time
- Let us know how you're feeling about grading feedback
- Feel free to submit anonymous comments on Piazza

P2, part a

- 3-minute presentation per team
- Need to focus on prototype concept
- May ask for a revised submission (via email to me and Trijeet)
 - johntang@microsoft.com
 - trijeetm@stanford.edu

Design best practices for a11y

- Visual & Interaction Design
 - Color contrast
 - Color choice and meaning
 - Tap targets
 - Gestures and alternative inputs

High contrast colors for text and UI elements

- 4.5:1 color contrast ratio
- <https://webaim.org/resources/contrastchecker/>

15.9:1

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Deleniti iusto inventore magni error, qui, eligendi sint pariatur dolorum.



5.7:1

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Deleniti iusto inventore magni error, qui, eligendi sint pariatur dolorum.



3.5:1

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Deleniti iusto inventore magni error, qui, eligendi sint pariatur dolorum.



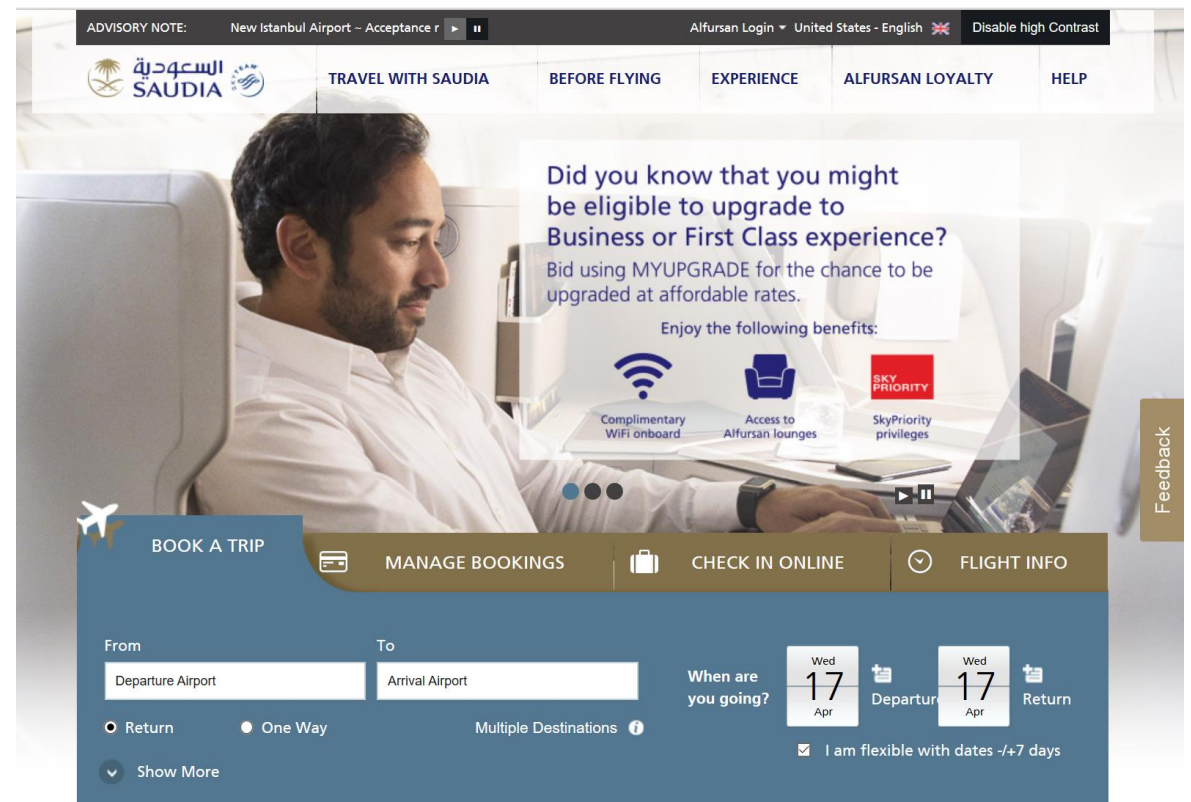
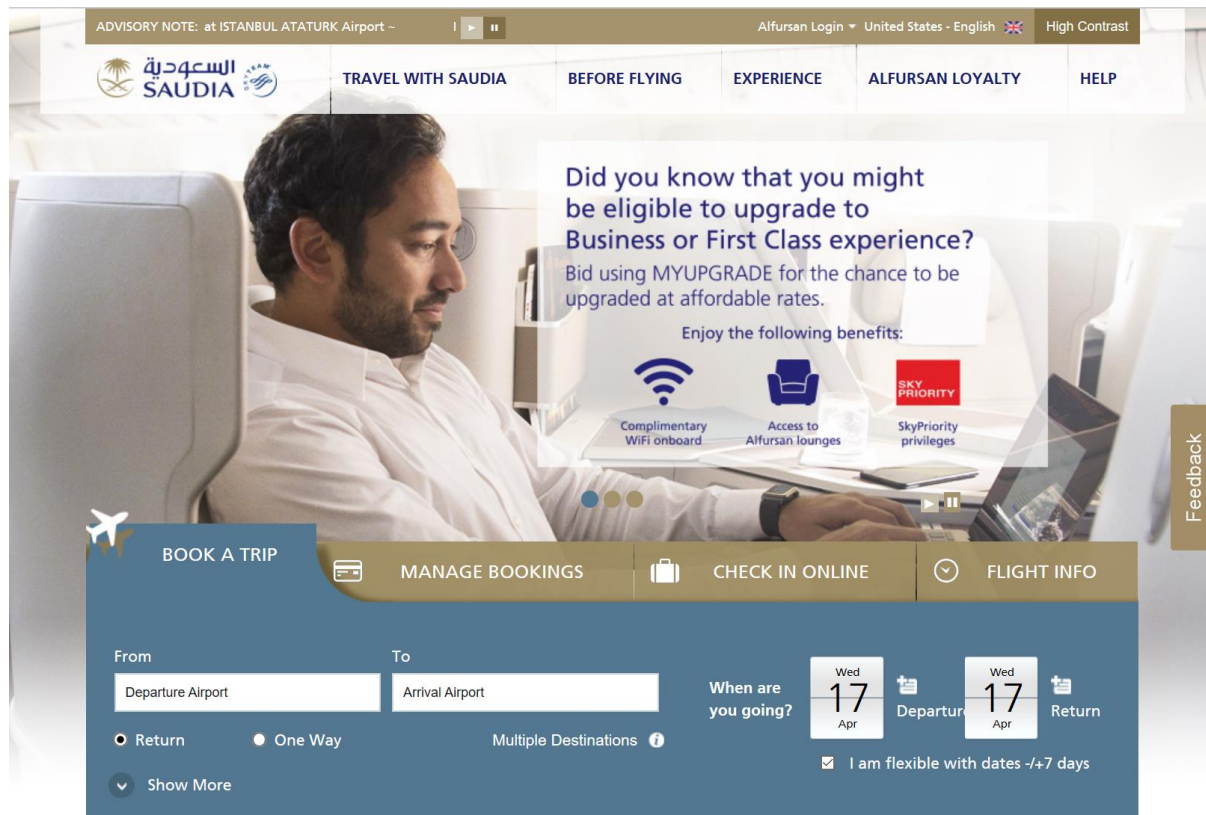
1.6:1

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High contrast colors for text and UI elements

- Dealing with branding colors
 - <https://www.saudia.com/>



Multi-modal cues

- Don't rely on just one modality (especially color) to communicate

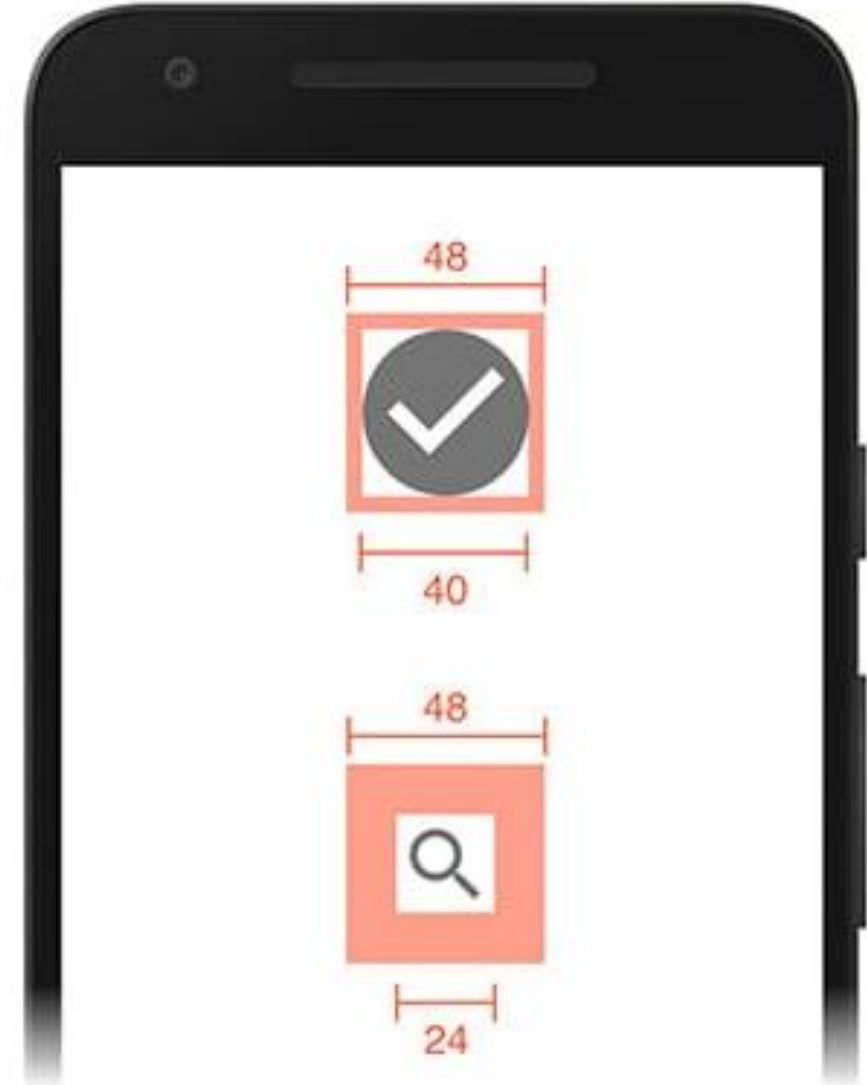


Multi-modal



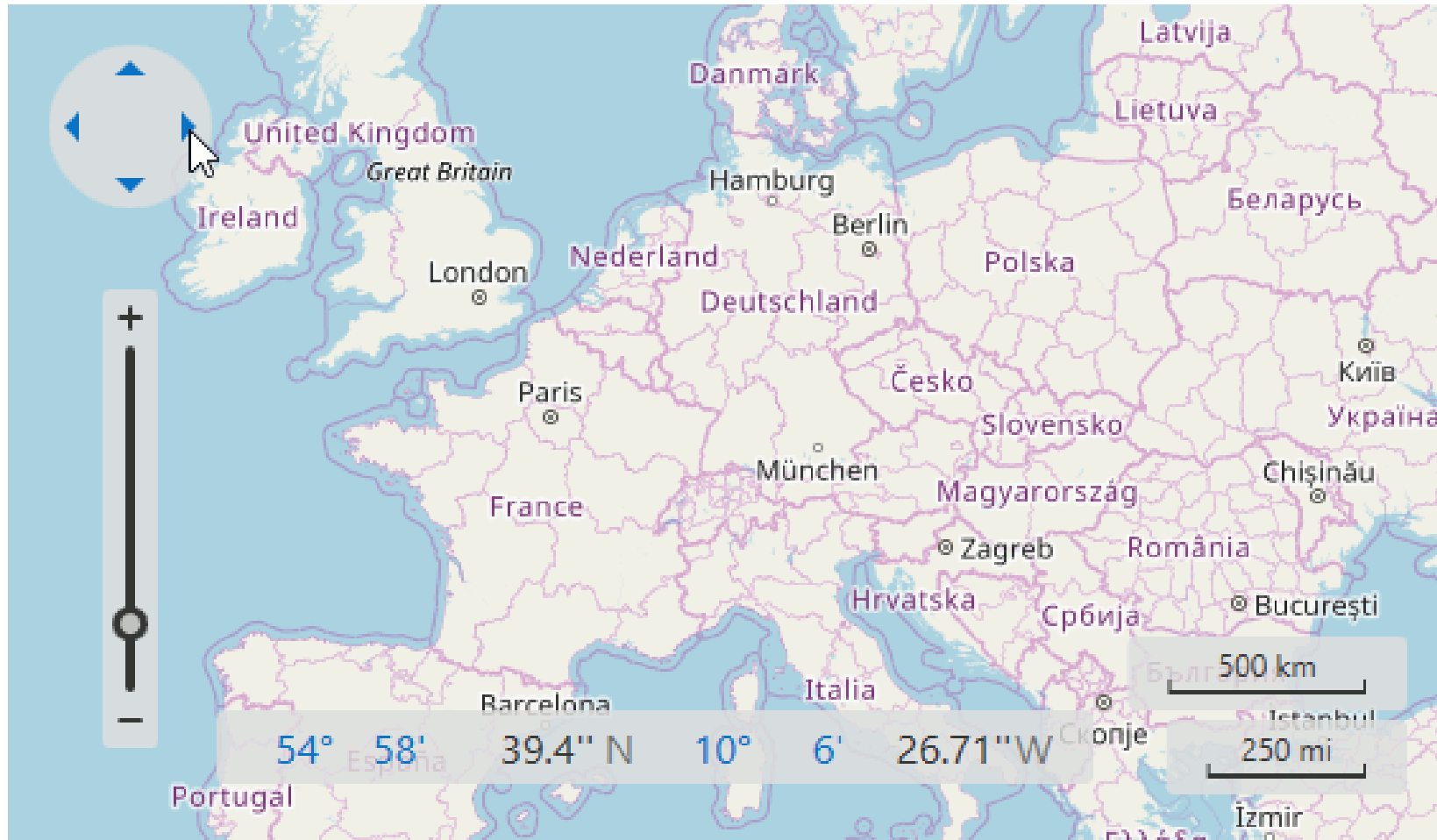
Tap targets

- At least 48 x 48 density-independent pixels
- Can add padding around icon for target area
- Separated by 8 dp of space
- Density-independent pixel: 1 pixel on a 160 dpi screen



Gestures and alternative inputs

- Multi-contact gestures can be hard for people with motor control issues.



POUR: Web Content Accessibility Guidelines ([WCAG](#))

- **Perceivable**

- Provide [text alternatives](#) for non-text content.
- Provide [captions and other alternatives](#) for multimedia.
- Create content that can be [presented in different ways](#), including by assistive technologies, without losing meaning.
- Make it easier for users to [see and hear content](#).

- **Operable**

- Make all functionality available from a [keyboard](#).
- Give users [enough time](#) to read and use content.
- Do not use content that causes [seizures](#) or physical reactions.
- Help users [navigate and find content](#).
- Make it easier to use [inputs other than keyboard](#).

- **Understandable**

- Make text [readable and understandable](#).
- Make content appear and operate in [predictable](#) ways.
- Help users [avoid and correct mistakes](#).

- **Robust**

- Maximize [compatibility](#) with current and future user tools.

Perceivable: TED talks with transcripts



[Return to talk](#)

Subtitles and Transcript

Select language

0:12 Imagine you are a part of a crew of astronauts traveling to Mars or some distant planet. The travel time could take a year or even longer. The space on board and the resources would be limited. So you and the crew would have to figure out how to produce food with minimal inputs. What if you could bring with you just a few packets of seeds, and grow crops in a matter of hours? And what if those crops would then make more seeds, enabling you to feed the entire crew with just those few packets of seeds for the duration of the trip?

Operable: Apple Assistive Touch



When you turn on AssistiveTouch, you'll see the AssistiveTouch menu.



You can drag it to any edge of the screen. Tap the menu to open it. To close the AssistiveTouch menu just tap it while it's open.

Understandable: Twitter error message



Language: English ▾ Have an account? Log in ▾

Join Twitter today.

Full name

✗ What's your name?

abc@

✗ Please enter a valid email.

•

✗ Your password must be at least 6 characters.

☒ Tailor Twitter based on my recent website visits. [Learn more.](#)

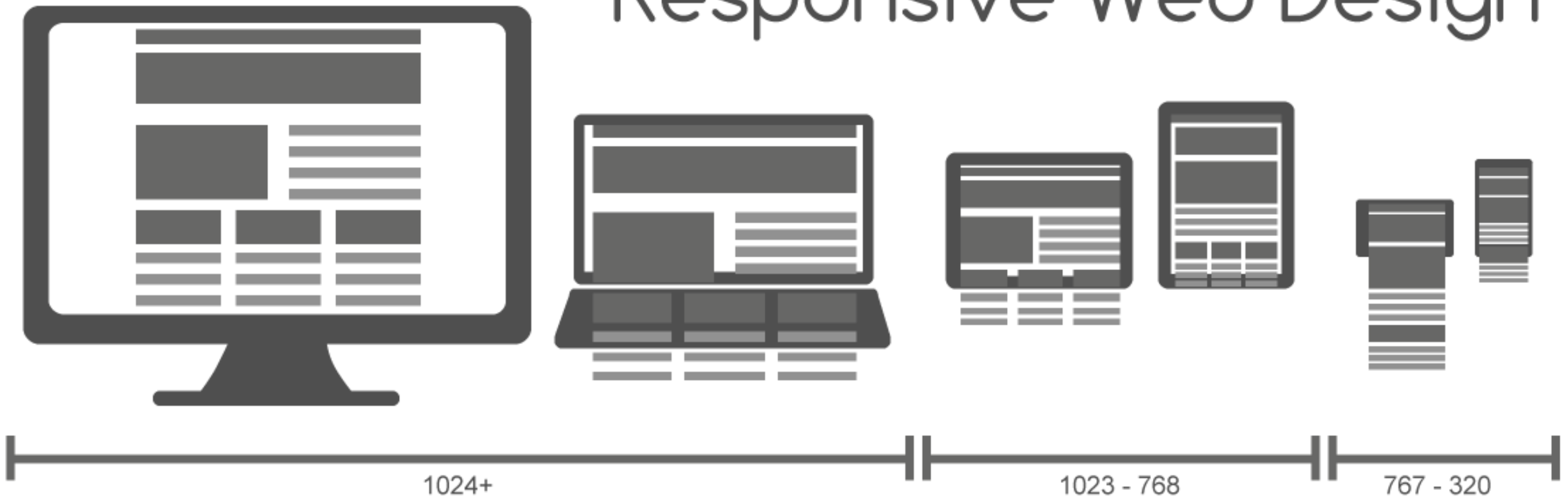
Sign up

By signing up, you agree to the [Terms of Service](#) and [Privacy Policy](#), including [Cookie Use](#). Others will be able to find you by email or phone number when provided.

[Advanced options](#)

Robust: Responsive web design

Responsive Web Design



Usability

- User research (e.g., interviews, personae, user testing)
- Use cases
- Information architecture

	Screen Reader Users	Screen Magnifier Users	Control Group (no disabilities)
Success Rate	12.5%	21.4%	78.2%
Time on Task (min:sec)	16:46	15:26	7:14
Errors	2.0	4.5	0.6
Subjective Rating (1-7 scale)	2.5	2.9	4.6

Design tips

- Avoid complex language
- Avoid unrecoverable errors
- Avoid timed content
- Avoid turning off/circumventing default interactions

Avoid flickering content

- Flashing can visually induce seizures
- Avoid any sequence of flashing images that lasts for more than 5 seconds
- Avoid more than three flashes in a single second, covering 25%+ of the screen (especially avoid red)
- Photosensitive Epilepsy Analysis Tool
<https://trace.umd.edu/peat>

Don't make people hover to find/operate things

- Place secondary actions inside of menus (or non-modal dialogs), without using hover states to hide the trigger.
- Lighten the contrast of secondary icons and darken them on hover.
- Use tangible items as triggers for larger hovers. An info icon is a better trigger than white space to launch a content-filled hover.

Home

Find a setting

Ease of Access

Vision

Display

Cursor & pointer size

Magnifier

Color filters

High contrast

Narrator

Display

Make everything brighter

[Change brightness automatically or use night light](#)

Simplify and personalize Windows

Show animations in Windows

☒ On

Show transparency in Windows

☒ On

Automatically hide scroll bars in Windows

☒ On

Show notifications for

5 seconds ▼

Show desktop background image

5/25/12

Note @ Princeville, Hawaii

Tent Beach wear Rental car



5/25/12

Note @ Princeville, Hawaii

Tent Beach wear Rental car

4/15/13

Foods

Egg Milk Nuts Apples



4/15/13

Foods

Egg Milk Nuts Apples



2 WEEKS AGO

My Note

Make sure you have good looking data on your blog post.



2 WEEKS AGO

My Note

Make sure you have good looking data on your blog post.

Tailor configuration

- Especially for universal design, aim for diverse user base
- Allow for tailoring to specific abilities
 - Font size
 - Output channel

Alternative communication

- Alternative text for images
- Alternative transcript for audio files
- Closed captioning for video files

Resources for automatically subtitling videos

- YouTube Automatic Captioning

<https://support.google.com/youtube/answer/6373554?hl=en>

- IBM Watson and Amara

<https://photography.tutsplus.com/tutorials/3-ways-to-subtitle-and-caption-your-videos-automatically-using-artificial-intelligence--cms-26834>

- Microsoft Stream

<https://docs.microsoft.com/en-us/stream/portal-autogenerate-captions>



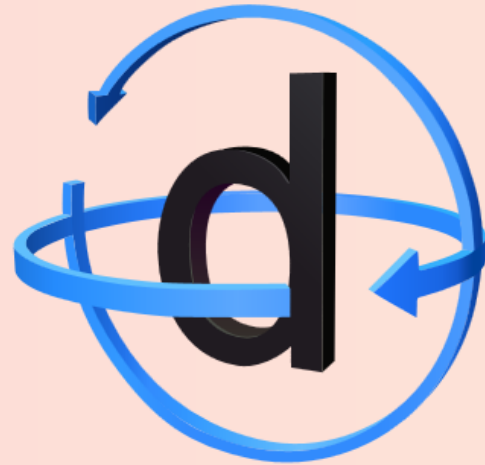
Like 17K Share



ORDER

LOGIN

HOME TYPEFACE FOR WHO PRODUCTS ABOUT US BLOG



Dyslexie font, the
revolutionary font
for people with
dyslexia



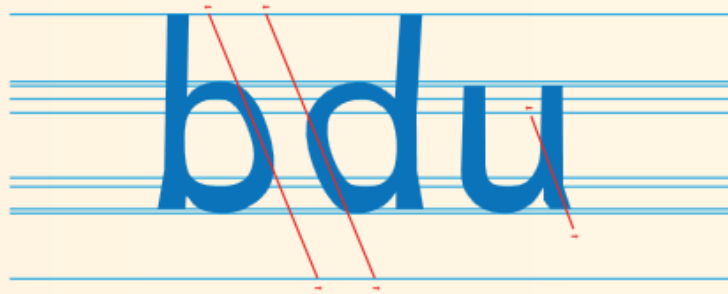
The letters of the Dyslexie font are designed by taking the experience of dyslexia into consideration.

The Dyslexie font is especially designed for people with dyslexia, in order to make reading easier – and more fun. During the design process, all basic typography rules and standards were ignored. Readability and specific characteristics of dyslexia were used as the guidelines for the design.

The most common reading errors of dyslexia are due to letter swapping, mirroring, changing, turning and melting letters together. In the Dyslexie font, every letter is individually shaped, eliminating the common reading errors of dyslexia. The innovative font increases the ease of reading for people with dyslexia, meanwhile offering non-dyslexic people some reading benefits as well.

Check out the 10 most important features of the Dyslexie font:





1. Heavy bottom

The center of gravity is placed at the bottom, avoiding turning letters upside down, while adding a clear base line.

2. Inclined letters

Let's face it, who doesn't confuse "b" with "d"? Letters that look alike are placed slightly inclined, which makes them easier to distinguish.

3. Enlarged openings

The openings of the Dyslexie font letters are enlarged. This way letters look less alike and will be easily recognized by their shape.



[Ann Dyslexia](#). 2018; 68(1): 25–42. PMCID: PMC5934461
Published online 2017 Dec 4. doi: [10.1007/s11881-017-0154-6](https://doi.org/10.1007/s11881-017-0154-6) PMID: [29204931](https://pubmed.ncbi.nlm.nih.gov/29204931/)

Dyslexie font does not benefit reading in children with or without dyslexia

[Sanne M. Kuster](#),^{1,2} [Marjolijn van Weerdenburg](#),¹ [Marjolein Gompel](#),¹ and [Anna M. T. Bosman](#)¹

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<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5934461/>

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Good Fonts for Dyslexia – An Experimental Study

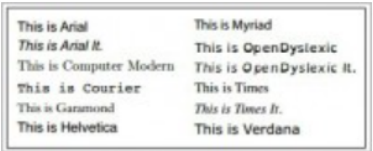
by [Abigail Marshall](#) / Filed under [About Dyslexia](#), [Accessibility](#), [Dyslexia Research](#), [Open Access Journals](#), [Technology](#) / tagged as [fonts](#), [readability](#), [typography](#) / [16 Comments](#)

Share

Tweet

Pinit

Listen



A team of researchers in Spain has recently published the results of a study to determine which fonts were easiest for dyslexic individuals to read. Based on the evaluation of 48 dyslexic subjects ages 11-50, reading 12 texts with 12 different fonts, they determined that reading performance was best with sans serif, monospaced, and roman fonts used in the study. They also found that reading was significantly impaired when italic fonts were used.

<https://blog.dyslexia.com/good-fonts-for-dyslexia-an-experimental-study/>

Design checklist

- Do I have sufficient contrast between text/UI elements and background?
- Is color or other visual means the only indication?
- Is the written content simple and easy to understand?
- Are there any cases where the screen is flashing or flickering?
- Does every mouse interaction have a keyboard-only equivalent interaction?
- Have captions been included with any audio or audio/visual presentation?
- Is any interaction involving a timed response or session timeout explained?

The Basics of the Color Wheel



Warm Colors : Triggering / Sensual



Cool Colors : Conserved / Relaxing



Using Appropriate Color “Harmonies”



Complementary	Analogous	Triad	Split Complementary	(Tetradic)	Square

Complementary

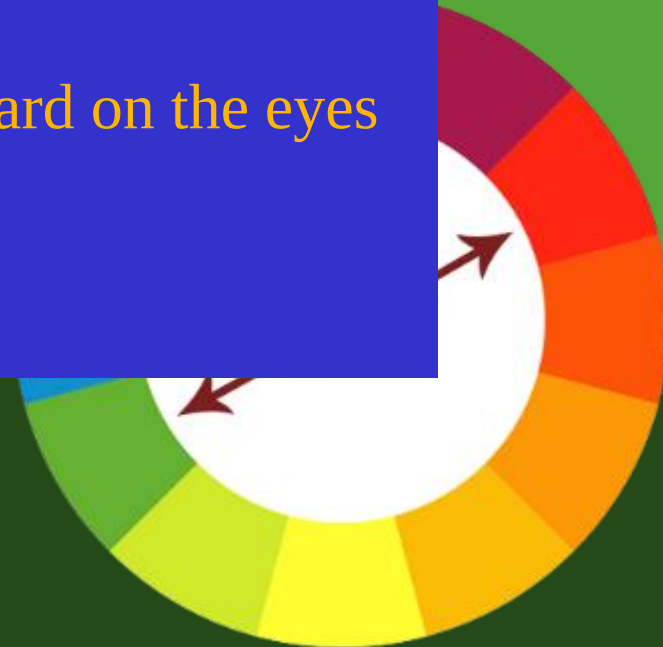
Christmas..maybe
Everyday use...

Not so much!

Not so good for text

Hard on the eyes

This color scheme should be managed
jarring. Bad with Text!!



Complementary (e.g., Children's Bedroom)



Analogous

Always easy on the eyes,
this type of color scheme
always looks “natural”

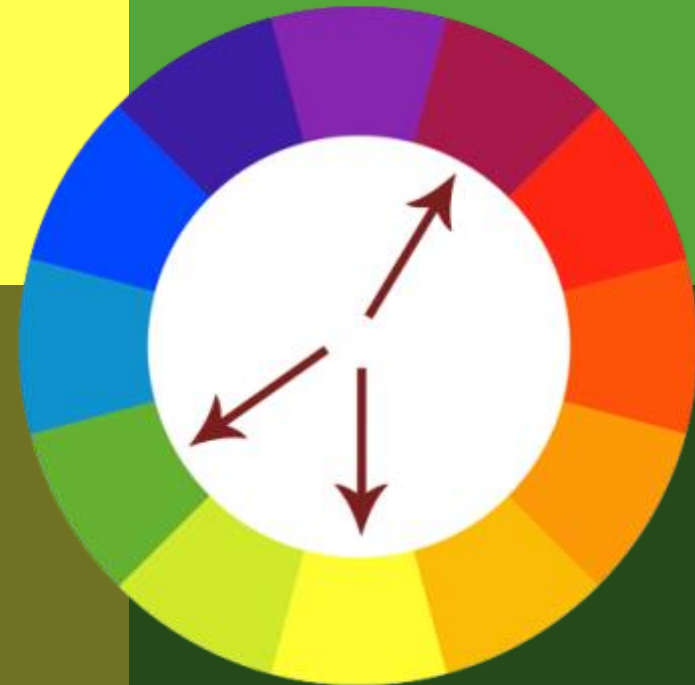


Analogous (e.g., Beyond Oil)



Split Complementary

Often a good choice for beginners, because it is difficult to mess up.





split-complementary



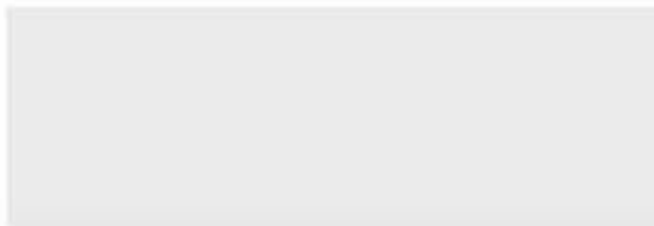


analagous

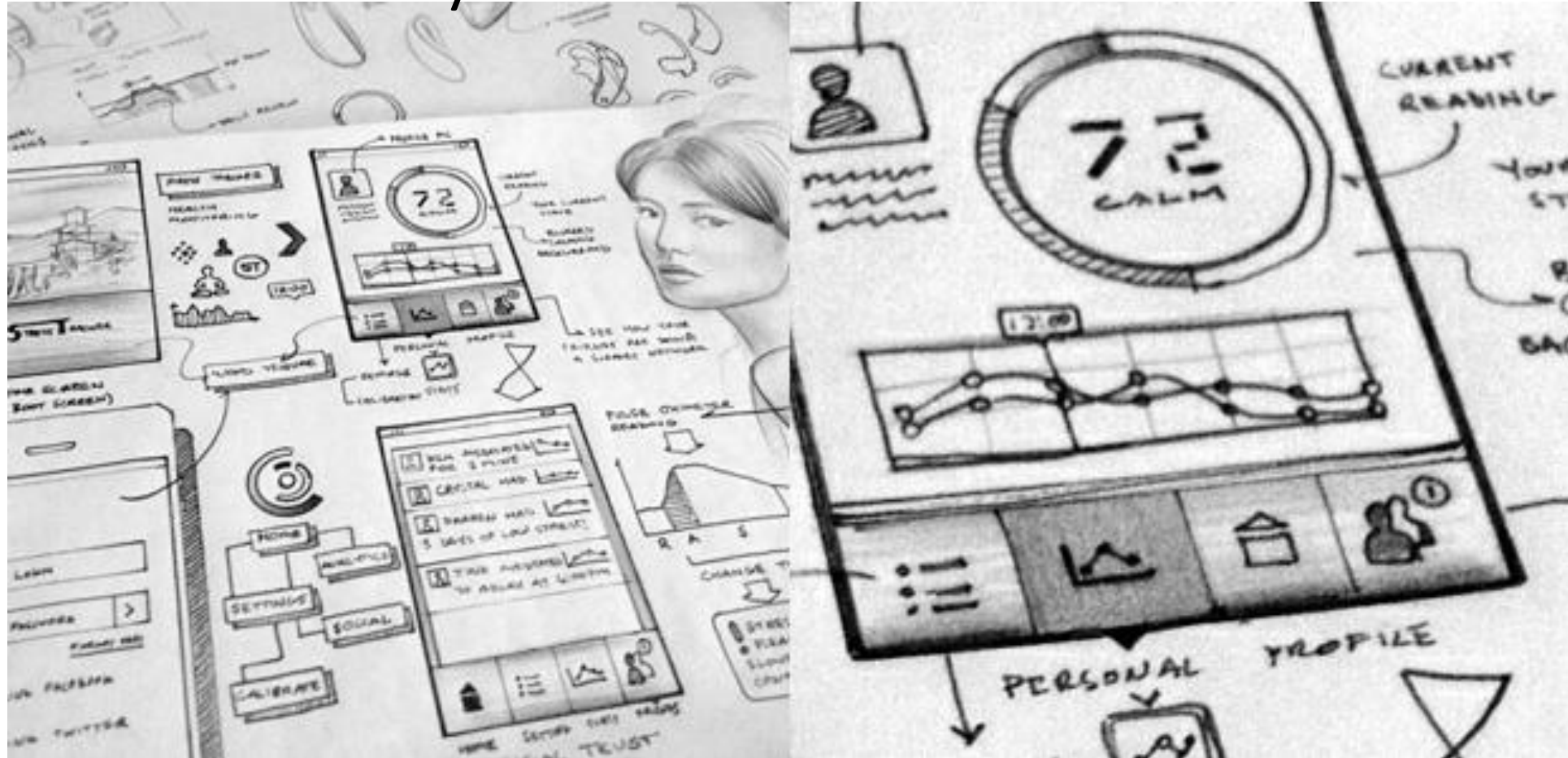




monochromatic

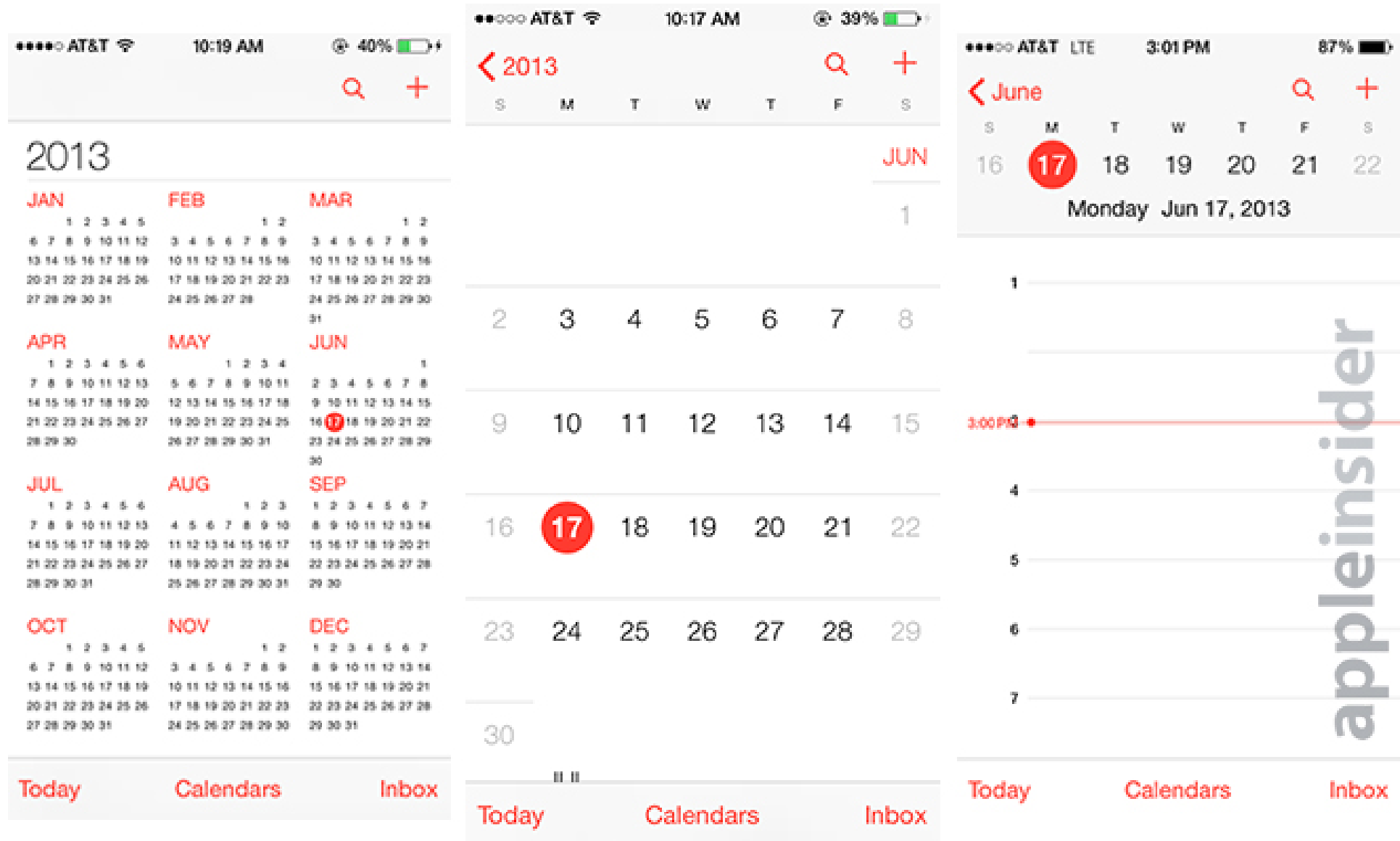


Start with Greyscale

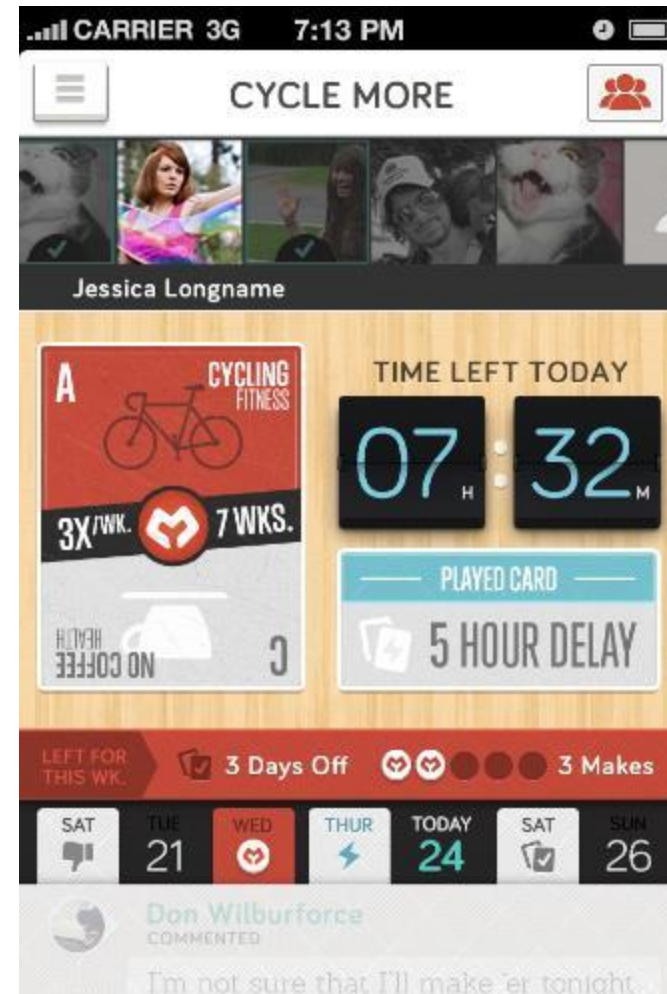
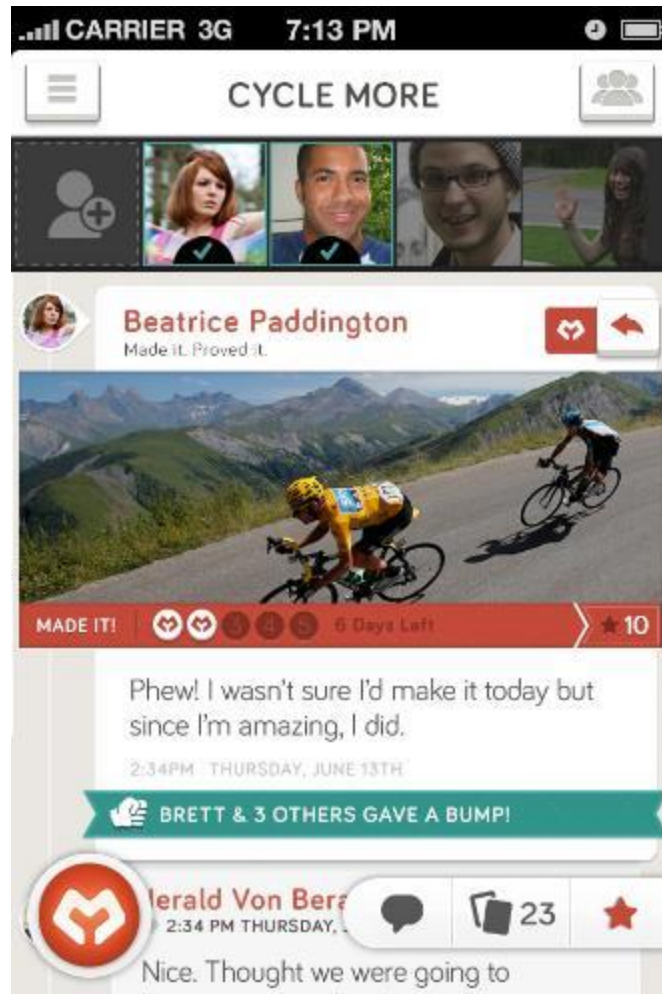


... then *accent* or *enhance* with color

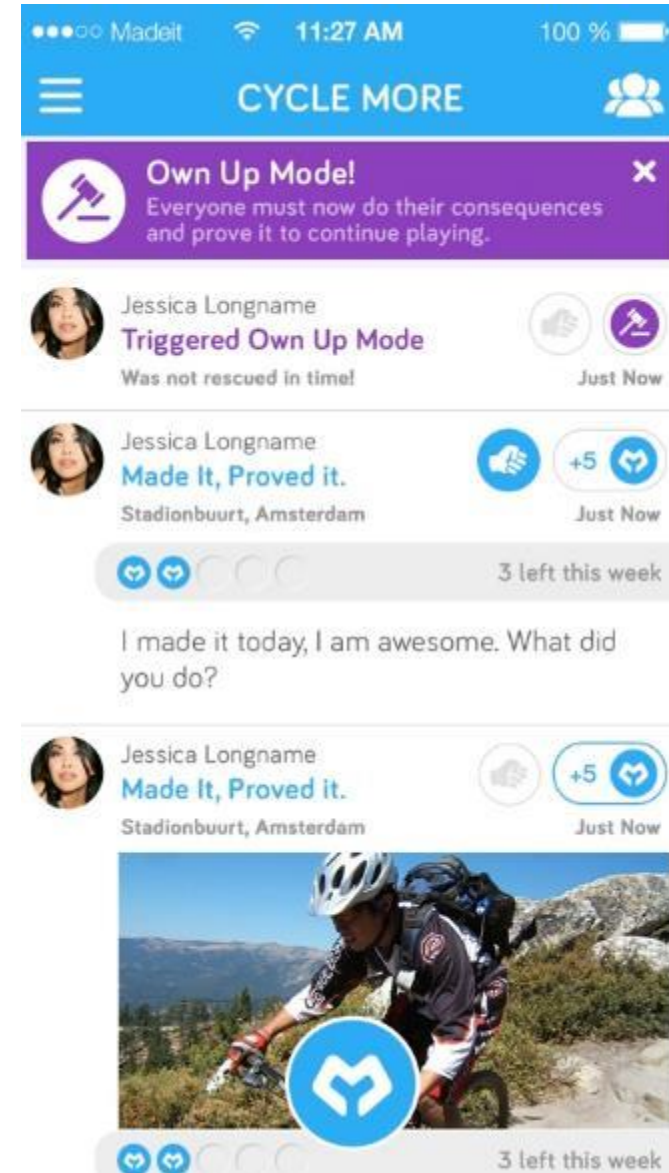
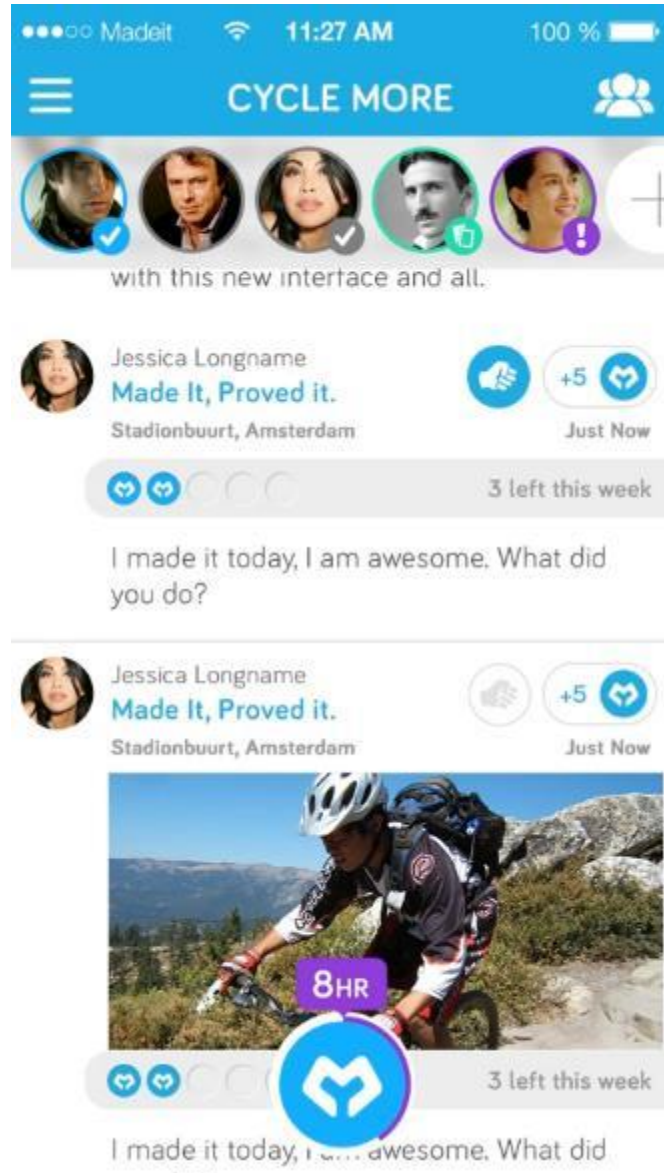
Action + Passive Colors

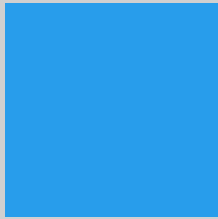


Poor Use of Color

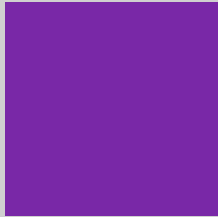


Redesigned to Use 3 Actionable Colors





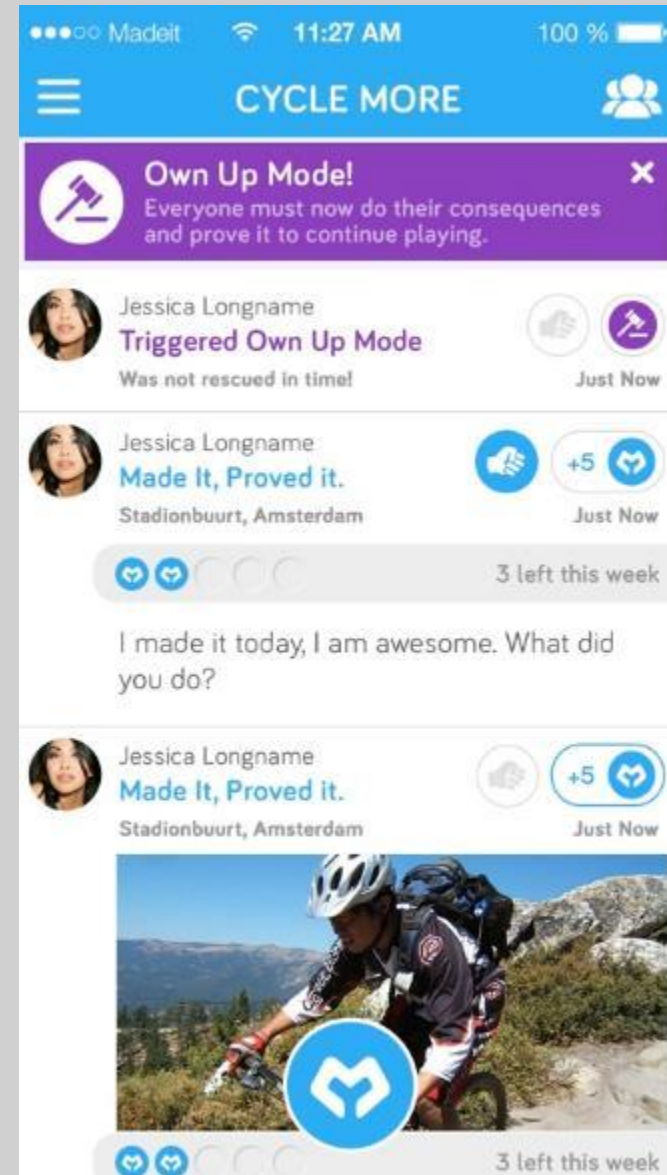
Action



Immediate



Analogous



Tools that help with color selection

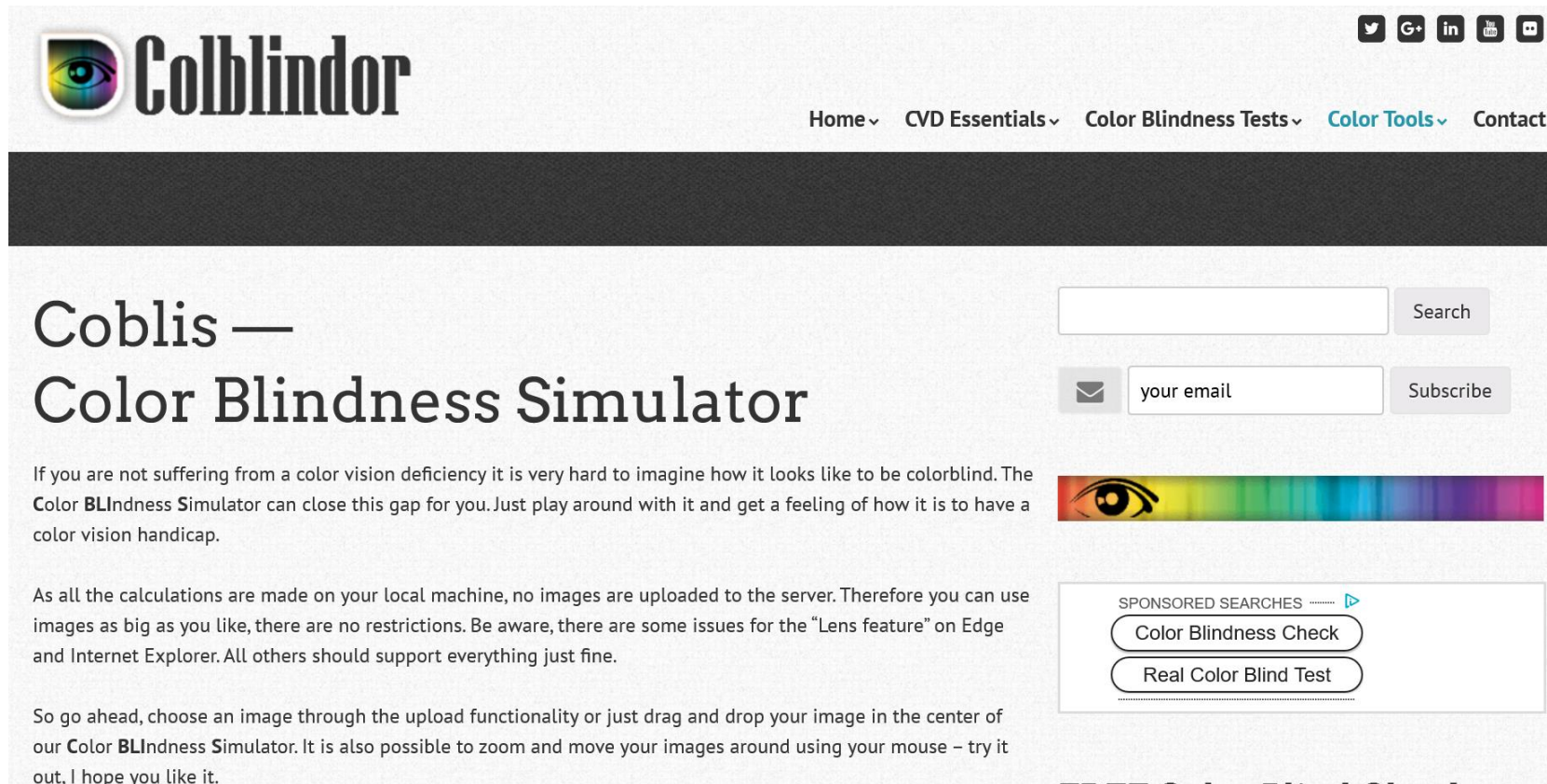
- <http://colorschemedesigner.com/>
- <http://kuler.adobe.com/>
- <http://colorbrewer2.org/>
- <http://www.colourlovers.com>

Color design tools

- Color contrast analysers
- <https://www.digitala11y.com/color-contrast-analyzers-checkers/>

Color blind checker

- <https://www.color-blindness.com/coblis-color-blindness-simulator/>



The screenshot shows the homepage of the Coblis Color Blindness Simulator. The header features the 'Colblindor' logo on the left, which includes a stylized eye icon. To the right of the logo is a navigation menu with links: 'Home', 'CVD Essentials', 'Color Blindness Tests', 'Color Tools', and 'Contact'. Further right are social media icons for Twitter, Google+, LinkedIn, YouTube, and Facebook.

Coblis — Color Blindness Simulator

If you are not suffering from a color vision deficiency it is very hard to imagine how it looks like to be colorblind. The Color **BL**indness **S**imulator can close this gap for you. Just play around with it and get a feeling of how it is to have a color vision handicap.

As all the calculations are made on your local machine, no images are uploaded to the server. Therefore you can use images as big as you like, there are no restrictions. Be aware, there are some issues for the "Lens feature" on Edge and Internet Explorer. All others should support everything just fine.

So go ahead, choose an image through the upload functionality or just drag and drop your image in the center of our Color **BL**indness **S**imulator. It is also possible to zoom and move your images around using your mouse – try it out, I hope you like it.

On the right side of the page, there is a search bar with a 'Search' button, an email subscription form with a 'Subscribe' button, and a section for 'SPONSORED SEARCHES' containing two buttons: 'Color Blindness Check' and 'Real Color Blind Test'. Below the sponsored searches is a horizontal rainbow color bar with an eye icon on the left.