



CERN Search Portal - Support For Mobile Devices

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Mehdi Golbaz

- I was born in Iran.
- I studied **Mathematics and Physics**(High School).
- I studied bachelor of **Architectural Engineering**.
- I have had two personal **exhibitions**(Conceptual Illustrations).
- I worked in Architecture Field.
- Master of science in Engineering in **Human Computer Interaction(HCI)**, at **Salzburg University & FH Salzburg**(joint master).
- My interests: Design, History, Neuroscience, Traveling, programming, and human behaviors.



What I am doing at CERN Openlab

- I started **CERN OpenLab Summer Student** Program at the first week of July 2021.
- My internship started by setting up my local system with necessary backend tools(INVENIO).
- I have learned and practiced Front-End Developing(React Library) by watching and reading tutorials.
- I am working with my team on **CERN Search Portal**, to redefine, redesign and develop those based on **The User Friendliness & Mobile Responsiveness rules**.
- I reviewed Guidelines for CERN websites at:
<https://design-guidelines.web.cern.ch/guidelines/guidelines-cern-websites> and applied them to the new **Designs**, and also created a **Consistent Design** between different CERN Web Pages.
- I am getting in practice **Figma app** to design, and **React.JS Library & Semantic-UI** to develop and implement codes.



The Importance of a Mobile Responsive Website

- There were around **3.5 billion smartphone** users in the world by **2020**. This equates to **45 percent** of the world's population. People used over **9000 different devices** to access the internet in 2019.
- The percentage of **mobile users** is increasing every day.
- Search engine optimization(**SEO**) & **Google's** better ranking.
- Responsive design is easier to interact and more readable(**Better User Experience**).
- **Cost effectiveness**(One Platform for Every Device).
- Ease in management in the final products.

<https://www.ironpaper.com/webintel/articles/importance-mobile-responsive-website>
<https://www.tributemedia.com/blog/why-mobile-responsive-web-design-is-important>
<https://www.webfx.com/web-design/why-responsive-design-important.html>
<https://www.browserstack.com/guide/ideal-screen-sizes-for-responsive-design>



Worldwide Screen Resolution Stats (Jan 2020 – Jan 2021)

- The following are the most commonly used **Mobile, Desktop, and Tablet** resolutions:

1920×1080 (8.89%)

1366×768 (8.44%)

360×640 (7.28%)

414×896 (4.58%)

1536×864 (3.88%)

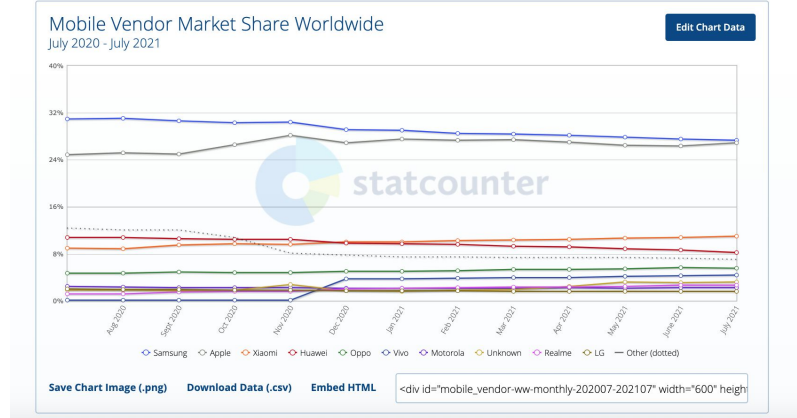
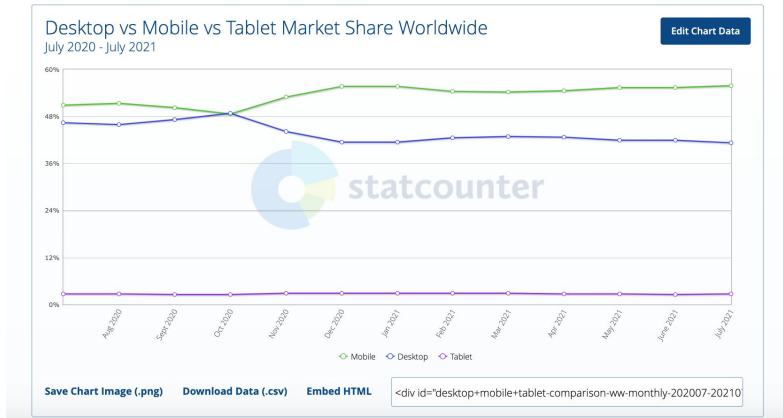
375×667 (3.75%)



Figure 0: Variety of different screen sizes



The percentages of users on Desktops, Mobiles or Tablets:



<https://gs.statcounter.com/vendor-market-share/mobile>

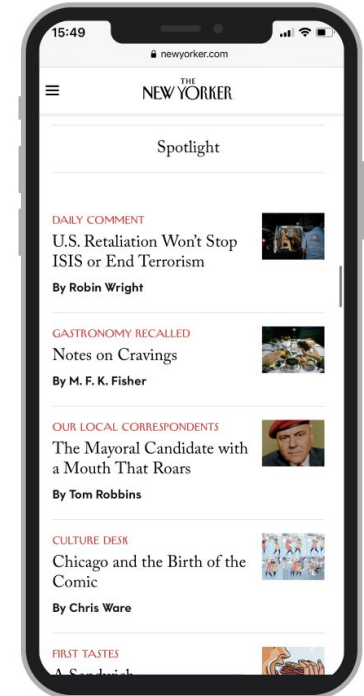
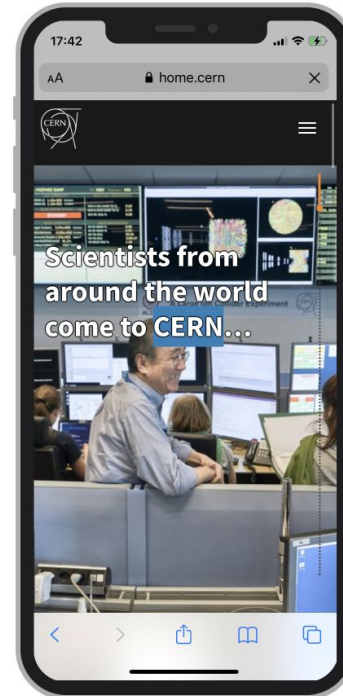
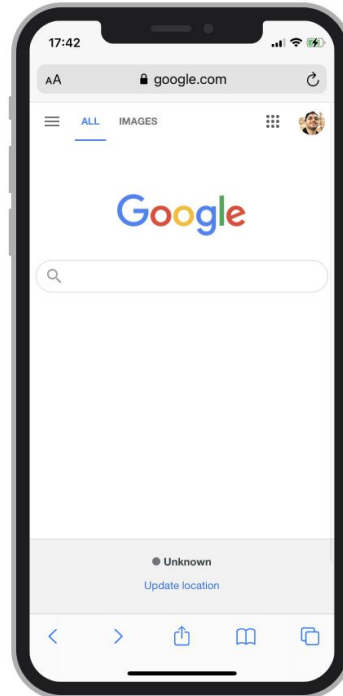
Figure 1: Shares of percentages of users & different devices



Some Examples

A Mobile-Responsive Web Application on the Mobile Devices.

<https://www.google.com/>
<https://home.cern/>
<https://www.newyorker.com/>

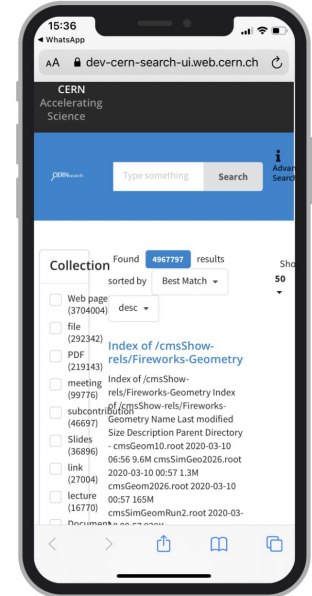
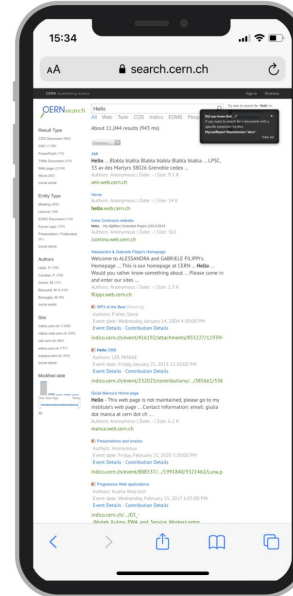
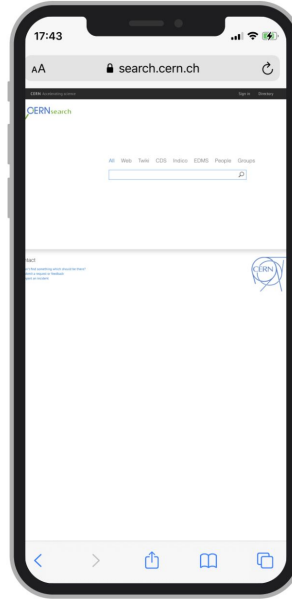




The Problems(Mobile Friendliness)

A not Mobile-Responsive Web Application on the Mobile Devices.

<https://search.cern.ch>



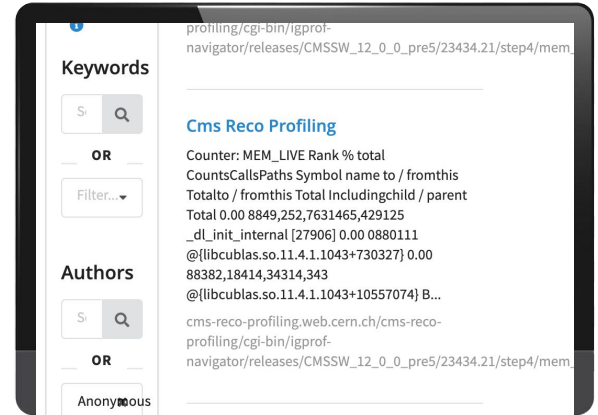
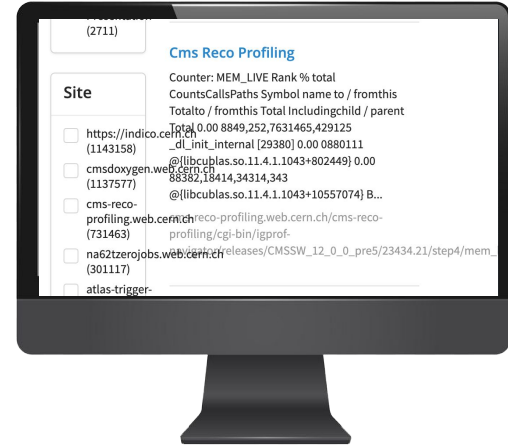
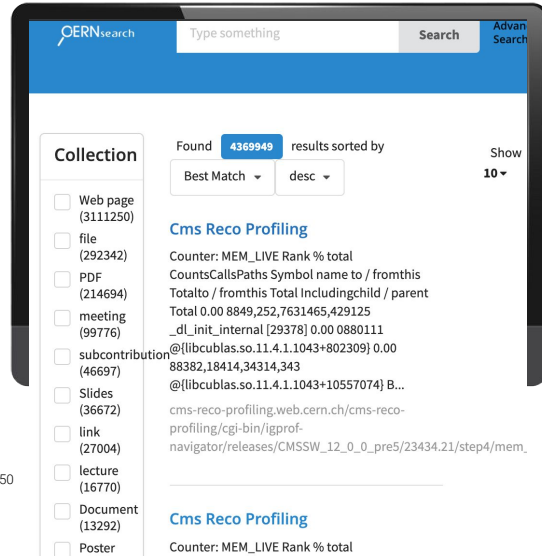


The Problems(Web Responsiveness)

Users Feeling:



https://dev-cern-search-ui.web.cern.ch/?q=&sort=bestmatch&order=desc&p=1&s=50





Solutions

- **What is a breakpoint in responsive Design?**

-A breakpoint is the “point” at which a website's content and design change in a certain way to deliver the greatest possible user experience in responsive design. Because of the enormous variety of devices on the market, there will be always challenges for designers and developers to find and fix those breakpoints.

- **Defining the main breakpoints?**

-For developers, working with Media Query is a challenge, or CSS Libraries.

-For designers, the design and how it should look on different websites/screens is the main challenge.

- **To conduct Heuristics Evaluation to define Usability Problems**

<https://www.browserstack.com/guide/responsive-design-breakpoints>
<https://medium.com/@pixelspearl/heuristic-analysis-for-ux-a-walkthrough-35db09a9c708>



Figure 2:Heuristics Evaluation



First Step: Search Portal Landing Page - Desktop Version

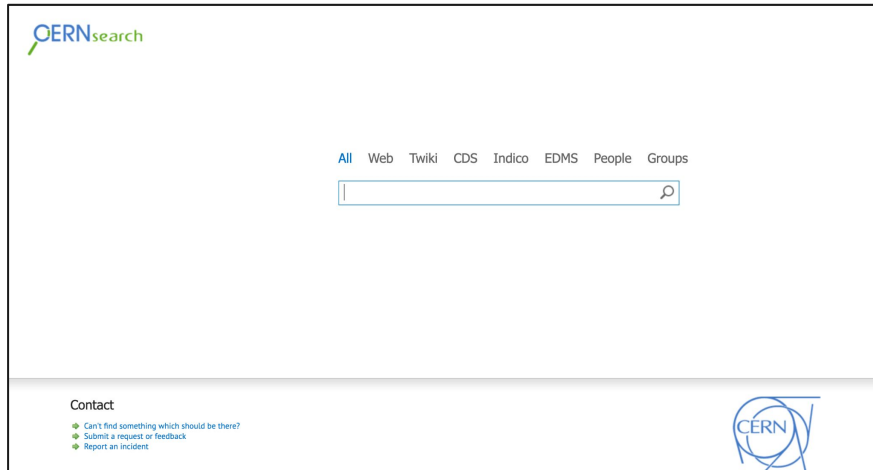


Figure 3: The Old Landing Page of CERN Search

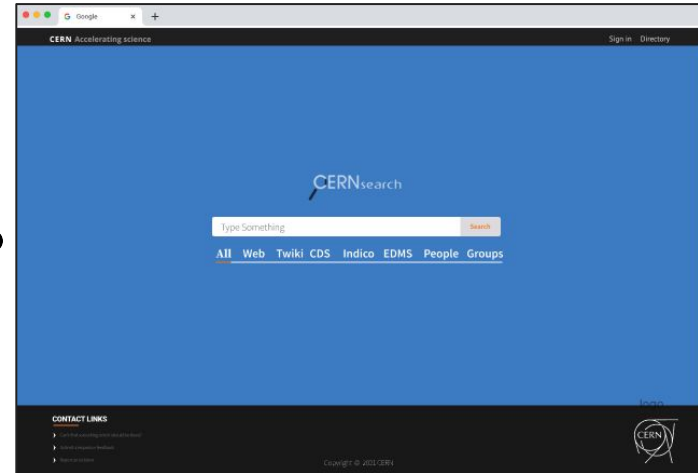


Figure 4: The New Landing Page Designed and Implemented

Second Step: Search Portal Landing Page -Mobile Version

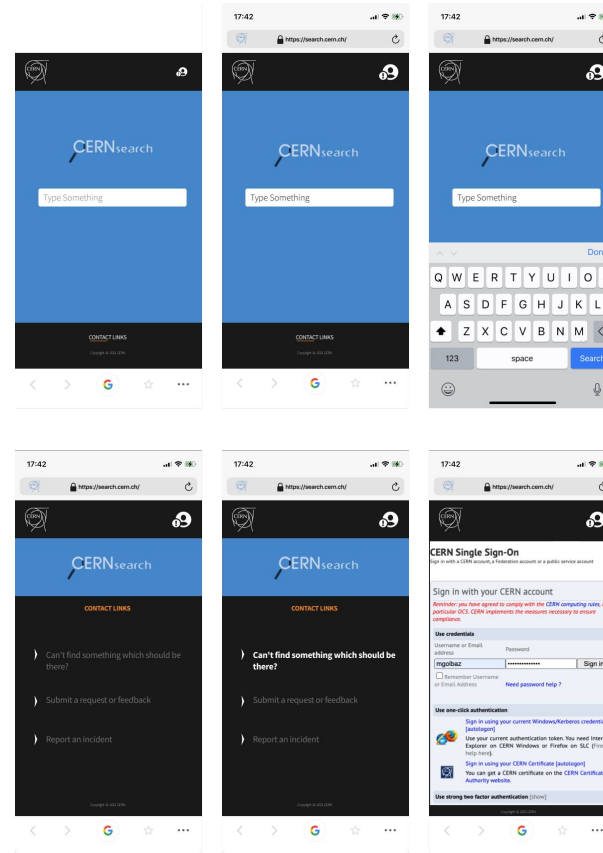


Figure 5: High Fidelity Wireframes



Third Step: Search Portal Results-Mobile Version

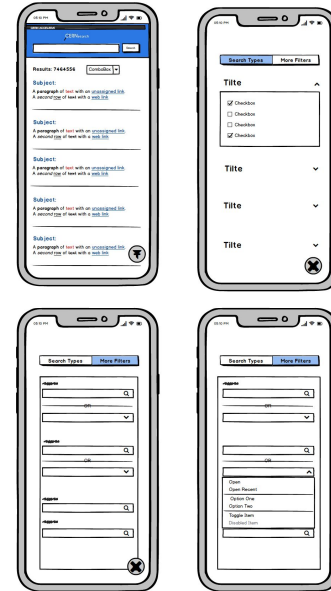
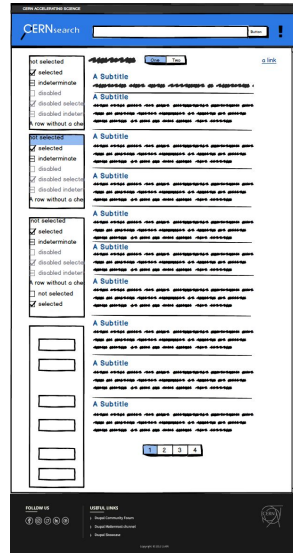
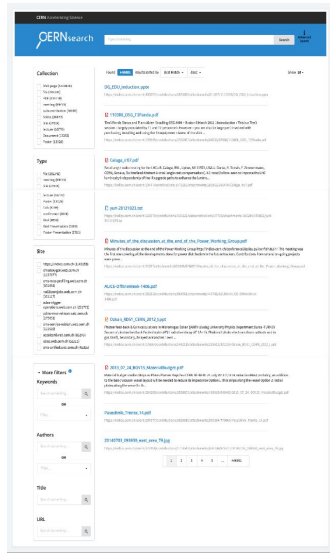


Figure 6: Screenshot & Low Fidelity of CERN Search Result

Figure 7: Low Fidelity Mockups of CERN Search Result- Mobile Version



What Next: CSS Media Query

Media queries are an important part of **responsive web design** because they allow you to create different layouts depending on the size of the viewport.

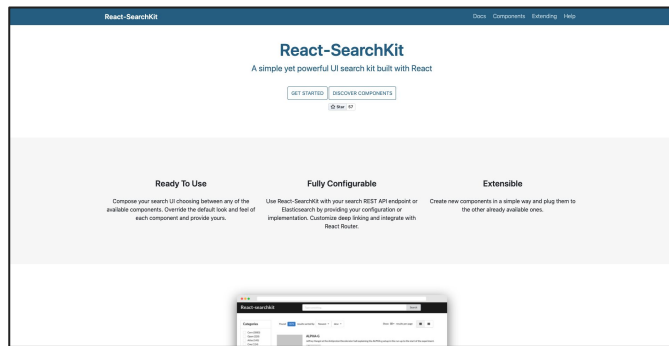
https://developer.mozilla.org/en-US/docs/Learn/CSS/CSS_layout/Media_queries

The screenshot shows the MDN Web Docs page for 'Using media queries'. At the top, there is a navigation bar with 'MDN Web Docs mozilla', 'Technologies', 'References & Guides', and 'Feedback'. A search bar is on the right. Below the navigation is a breadcrumb trail: 'Web technology for developers > CSS: Cascading Style Sheets > Media queries > Using media queries'. A 'Change language' button is also present. The main content area is divided into two columns. The left column contains a 'Table of contents' with links for 'Syntax', 'Targeting media types', 'Targeting media features', 'Creating complex media queries', and 'Syntax improvements in Level 4'. Below this is a 'Related Topics' section with 'Learn CSS' and several sub-topics like 'CSS first steps', 'CSS building blocks', 'Styling text', and 'CSS layout'. The right column features the article title 'Using media queries' and an introductory paragraph explaining that media queries are used to modify a site or app based on device characteristics. A list of three bullet points provides examples of how to use media queries. A blue callout box contains a note: 'Note: The examples on this page use CSS's @media for illustrative purposes, but the basic syntax remains the same for all types of media queries.' Below the note is the 'Syntax' section, which explains that a media query consists of an optional media type and any number of media feature expressions, and that multiple queries can be combined using logical operators.

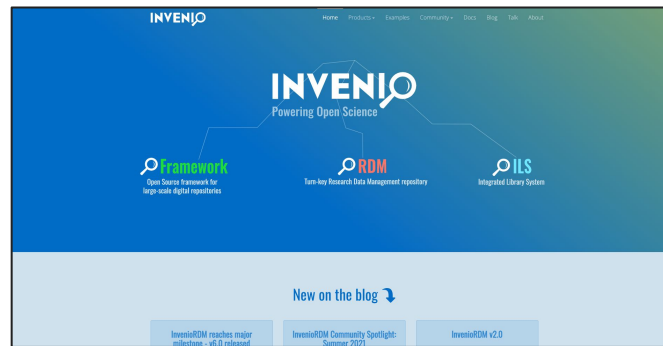


Future Work at CERN Openlab

- I have extended my internship to the end of October 2021
- I will keep working on the implementation of High Fidelity Wireframes until then



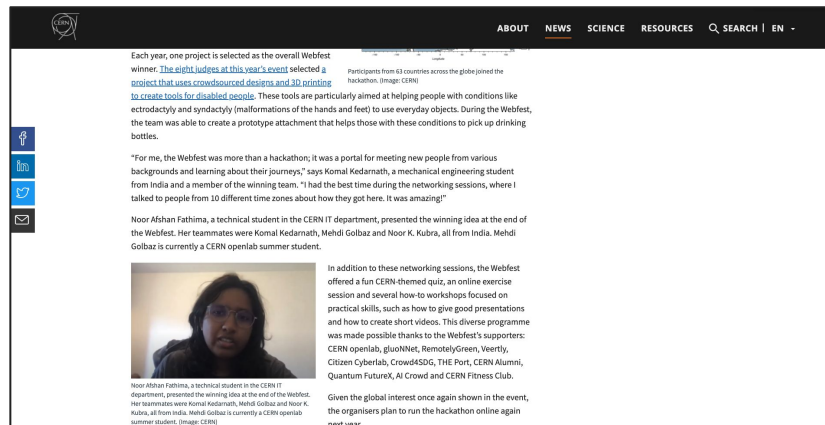
<https://inveniosoftware.github.io/react-searchkit/>



<https://inveniosoftware.org/>



Our Project is selected as the overall CERN Webfest 2021 winner



<https://home.cern/news/news/cern/hacking-humanity-cerns-global-webfest>

Thank You

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