

Assessment #14

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Rêgo, Felipe, et al. 'Towards PWA in Healthcare'. *Procedia Computer Science*, vol. 160, 2019, pp. 678–683, <https://doi.org/10.1016/j.procs.2019.11.028>.

Assessment:

After thoroughly reviewing the paper on Progressive Web Applications (PWAs) in healthcare, I gained several insights that significantly influenced the direction of my skin cancer detection project. The most critical piece of knowledge I took away is how PWAs can operate independently of network conditions using features like service workers, the cache API, and the BackgroundSync API. This realization is pivotal for my project because I want to ensure that users in rural or underserved areas, where internet connectivity may be unreliable, can still access the app and its core functionality. By allowing users to continue using the app offline and sync their data when a connection is restored, I can ensure that the tool remains effective for all users, regardless of their network environment. This aligns perfectly with my vision of democratizing access to health technology and promoting early skin cancer detection for everyone, no matter where they live.

Another important takeaway from the paper was the cross-platform nature of PWAs. I learned that instead of needing to develop separate native apps for iOS and Android, a PWA can be built once and function across both platforms (and more), which will save me significant time and development costs. Given the complexity of my project, such as implementing AI-driven image analysis for skin cancer detection and tracking skin lesions over time, this saved time will be critical for focusing on the

app's technical core rather than duplicating efforts across platforms. Instead of worrying about maintaining different versions of the app, I can spend more time refining the AI models, improving user experience, and incorporating essential features like longitudinal skin monitoring. This also means that updates to the app can be rolled out seamlessly across all platforms without needing separate processes for each, reducing future maintenance efforts.

The examples provided in the paper, like OLA Cabs and Twitter, helped reinforce my belief that a PWA is the right approach for my app. OLA Cabs' PWA was able to overcome challenges such as intermittent cellular connectivity and low-end smartphone capabilities, and I realized these same benefits could be applied to my project. Since I want my skin cancer detection app to be accessible to a broad audience, including those who may not have high-end smartphones or live in areas with strong internet infrastructure, the PWA model provides an effective solution. With this approach, I can ensure that my app remains usable and performs well even under poor connectivity or on less advanced devices. This is particularly important for users in underserved regions where access to healthcare professionals is limited, making the need for a reliable app even more pressing.

The paper also highlighted the efficiency of PWAs regarding storage and data consumption, which was an eye-opener for me. PWAs take up significantly less storage space compared to traditional native apps, which is essential for users who may have limited storage capacity on their devices. Additionally, the data usage of PWAs is generally lower, making the app more appealing for users who have expensive or limited data plans. This is an important consideration for the global user base I hope to target, particularly in areas where data costs may be a significant barrier to accessing online tools. By minimizing the app's data footprint, I can remove another potential obstacle that might prevent users from adopting my skin cancer detection tool, making it easier for them to regularly monitor their skin health without worrying about high data consumption.

Another key benefit I derived from the paper is the ability of PWAs to enhance user engagement. Features like the "add to home screen" option and push notifications can help keep users engaged with the app over time. For my skin cancer detection app, user engagement is particularly important since consistent monitoring of skin changes is crucial for early detection. By leveraging PWA capabilities like push notifications, I can remind users to take periodic images of their skin lesions and follow up on any changes flagged by the app's AI. This will increase the likelihood that users will stick to regular monitoring, leading to better health outcomes.

Additionally, PWAs are highly discoverable. Users can access them directly via a web browser without the need to download a full app from an app store. This aspect of PWAs reduces barriers to entry, especially for users who may be hesitant to download an app or have limited access to app stores. For my skin cancer detection project, this feature is particularly advantageous because it allows me to reach users in regions where app store accessibility may be restricted. Users can access the app directly through a link, making it much more convenient to adopt.

Lastly, the paper's comparison of PWAs with traditional development approaches, such as native apps and cross-platform tools like PhoneGap, solidified my decision to pursue a PWA. The overall benefits, including offline functionality, efficient use of device resources, cross-platform compatibility, and lower development costs, align perfectly with my project's goals. The lightweight nature of PWAs, combined with the ability to sync data in the background and support offline usage, ensures that my skin cancer detection app will be both reliable and accessible for a diverse group of users.

Annotations:

<https://docs.google.com/document/d/14V-n6G6O6aBb0X1HSJvoq3O3HxcMyug2803UPAgAhu8/edit?usp=sharing>