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Legal Implications and Sustainability of X5GON Mobile APP

Introduction

X5GON is an online learning platform, it forces on create a solution that will help users (mainly students) find what they need not only in Open Educational Resources (OER) repository but across all open education resources platform. This year my task is to build a mobile app for X5GON platform in another word put X5GON inside a mobile app. As a developer when building the APP, we only forces on the code, however in order to build a reliable APP the legal implication and sustainability should also be considered. In this essay I will talk about the legal liability, intellectual property, data privacy and the sustainability for X5GON mobile app.

Legal liability

One of the differences between X5GON and other online learning platform is that it forces on accessing open education resources across all OER platform, but it could lead to the copy right issue. When we send the request to the backend of X5GON for open education resource, we are given the OER content in URL form, then we fetch the data in the front-end from the given URL then we display the content with the person or organization who uploads the content on the app. However, since a lot of platforms have copyrights for their open education resource, it's certain that by only displaying the person or organization who uploads the video is not enough, the reference to the content or the permission from the owner of the content may also be required. Besides, different region has different laws for copyrights, in fact X5GON development team is forces on making the platform a cross language, cross culture, cross language platform. For those reasons I believe not only us but also the X5GON development should put an eye on the copyright issue.

Another issue would be the reliability of the resource, currently most of our open education resource is from MIT Open Course however, in the future when the backend is fetching the data from a open platform such as YouTube, the reliability of the content should be brought into consideration since people may upload fake learning materials or include inappropriate content inside the open education resource. For example, the open education resource includes racism example in it, to avoid this you have to view all the open education resource, you may say that there is a way to detect the inappropriate audio content, then what if the content is a picture?

Last but not least, the culture issue. The purpose for X5GON is to build a cross culture, cross language, cross country learning platform. This is a fantastic idea; however different country has different culture. In fact, simply build a platform that can access all the open education source on all online education platform may cause a lot of problems. There are lots of controversial historical events, for example, Chinese and Japanese holds different views on Second World War, what if the content of this open education resource offend others culture, we have to consider this in the development process as well.

Data Privacy

The data privacy is an important part for an app. Our client required user authentication being implemented in the app, so we have to consider the data privacy. When doing the login, we consider encoding the payload (password and username) by JWT, however since the backend does not support this at this stage, we didn't actually implement it but leave as a milestone in the

future. We also enable user to bookmark specific open education resource and allow them to view the history, in order to prevent the attacker to get the control of our user's account, we use CSRF token in our request which is being generated in the process of login and being stored in the server. When a subsequent request is received that requires validation, the server-side application should verify that the request includes a token which matches the value that was stored in the user's session. [PortSwigger]

Sustainability Statement

With regards to the performance of our mobile app, we utilized extensive caching and predicting techniques so that we can minimize the lag and increase the responsiveness. First of all, we choose to use swift to develop of IOS app, because Swift provides various speed advantages during development. Swift would run a complex sort algorithm 3.9 times faster than a same implementation in Python. Compare with the Object-C, swift is also faster, the time for running the same algorithm in Object-C is 2.8 times faster than in Python.[Kinjal Dua] Another part is that we implemented preload for the video. We preloaded 20 seconds for each video when they are being displayed as a thumbnail. Besides, we also optimize the performance by doing optimization in the UI, in the UI design we used lots of table view, which need to scroll quickly, otherwise user will notice the lag. By reducing the number of subviews and uses Row Height, Section Foot Height and other parameters to set the constant instead of asking the delegate also improves the performance.[Marcelo Fabri]

Conclusion

In this essay, I've discussed the Legal Liability, data privacy and sustainability for our main project this year which is a mobile app of X5GON. I have only discussed those parts from the cross platform prospective. But X5GON is more than a platform with all open education source it also uses AI to maximize user's learning experience, the reason I didn't discuss from this prospective because our project didn't cover a lot about this part. I will cover the AI part if my team decides to help improve the backend of X5GON.

Reference:
[1]PortSwigger 2020   CSRF Tokens Reference from: https://portswigger.net/web-security/csrf/tokens Access Date: 21/03/2020
[2] Kinjal Dua   8 Advantages of Using Swift for iOS Development   Reference from: https://clearbridgemobile.com/8-advantages-choosing-swift-objective-c-ios/   Access   Date: 21/03/2020
[3] Marcelo Fabri   25 IOS App Performance Tips & Tricks   Referenced from: https://www.raywenderlich.com/2752-25-ios-app-performance-tips-tricks#tableviews Access date: 21/03/2020

Table of Effort

Timeframe	Task / Feature Description	Contributor	Reviewer
11 Jan	Build Video Player Infrastructure	Patrick	Patrick
14 Jan	Provide different main pages, including trending, subscribed contents.	Patrick / Felix	Patrick
15 Jan	Play or pause an OER video	Patrick	Patrick
15 Jan	View a specific OER and its details when users press it	Patrick	Patrick
15 Jan	Suggest relevant OERs and show them below the OER that is currently on display	Patrick	Patrick
15 Jan	Add Thumbnail generation for OER videos	Patrick	Patrick
15 Jan	Rate an OER by pressing the like and dislike button	Patrick	Patrick
16 Jan	Show the person or organization who uploads the OER material	Patrick	Patrick
21 Jan	Preload the video shown on the lists for responsiveness.	Patrick	Patrick
24 Jan	Milestone 1	Patrick / Felix	Patrick / Felix
1 Feb	Full screen (focus) mode to view OERs	Patrick	Patrick
2 Feb	Search X5GON OER collections for keywords	Patrick	Patrick
2 Feb	View all types of OER	Patrick	Patrick
16 Feb	Login and logout of their accounts.	Patrick	Felix
19 Feb	Adapt to new Content API and support both X5GON and X5Learn APIs	Patrick	Felix

24 Feb	Add notes to the OER when they are on display	Patrick / Felix	Patrick
26 Feb	View Video Segments and Summary generated by X5Learn Algorithm	Patrick	Patrick
1 Mar	View browsing history	Patrick	Patrick
1 Mar	Record and store users' browsing history anonymously.	Patrick	Patrick
2 Mar	Introduce Documentation Tool	Patrick	Felix
12 Mar	Add Continuous Integration with Travis	Patrick	Felix
15 Mar	Add Documentation for all functions in application	Felix	Patrick
TBD 22 Mar	Bookmark a specific OER	Patrick	TBD
TBD 24 Mar	Adapt to New Notes API of X5Learn		TBD
TBD 25 Mar	Deploy the application on different platforms, e.g. iPhone, iPad and check for porting issues		TBD