Internet Archive | IAUX

Google Summer of Code 2019

Project Proposal - Building website component prototypes on IAUX

About Me

Personal Information

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University Information

University	Indian Institute of Technology, Roorkee
Major	Electrical Engineering
Current Year	2nd year (2021 expected graduation)
Degree	Bachelor of Technology (B.Tech)

Personal Background

I am a sophomore currently enrolled in Electrical engineering at IIT Roorkee. I have developed a passion for programming and web development in my freshman year and since then, most of my time goes into reading and writing software and contributing to open-source - looking over repositories of the products I use or come across, trying to contribute back to the organisations whose services have been an asset to me. This even includes the web applications that my university undergraduates use. These services are developed and maintained by an open-source organisation IMGIITRoorkee, of which I am a member. I have contributed and built web applications like SHP, FacApp as part of it.

I have the experience of working closely with a team as I am an active member of Information Management Group at IIT Roorkee, a bunch of enthusiasts who manage the institute main website, internet and intranet activities of the university.

I have been an active part of the **Internet Archive** community. I try solving issues on GitHub to get a better understanding of the codebase and the workflow of the organization. In this journey, I learn quite a lot about the projects under the organization. I feel great in interacting with the community. This boosts my confidence and motivates me towards contributing to open-source.

This is the first time I am contributing to an open-source project on such a substantial scale.

Development Skills

- Fluent in Python, Javascript and C/C++
- Proficient in frontend libraries like React and Redux
- Worked with databases like MySQL and Postgres
- Worked on developing RESTful APIs
- Experience in Django and Flask
- Experience in working with Bootstrap and Semantic UI CSS
- Working knowledge of PHP, jQuery, Less, Jest
- Experienced with Docker
- Proficient with Git
- Worked on design tools like Figma and Adobe Illustrator

Projects

Student Home Page (SHP)

- **SHP** is an internal application for the students of IIT Roorkee. It serves as the student profile application for all the (8k+ active) students of IIT Roorkee.
- The app is completely generalised, meaning the entire front end is generated from a JSON object and can be moulded easily to suit the needs of a different university.
- Every Student gets his profile page visible on the iitr.ac.in domain by a self-chosen handle.
- It serves to collect all necessary data that a student requires to show on his home page.
- For the backend, Django and Django REST was used. For the frontend, React was used and styling was done using Semantic UI.

Faculty Profile (FacApp)

- **FacApp** is similar to SHP but it is restricted only to faculty members of IIT Roorkee.
- It collects more of professional data, like a faculty member's education and achievements.
- Like SHP, FacApp is also fully generalised and flexible to modifications for other universities.
- The page generated is visible on the IIT Roorkee website as a faculty member's main page.

Music-Stream-App

- **Stream** is a web app to stream music on a PC, while one can control the song using other PCs connected in a network.
- It is a React-Django application with webpack used as the module bundler for JavaScript code.
- For real-time communication between the Stream and other users, WebSocket connections are make using Django channels.
- The application code can be found here.

College Radio (Wavify)

- **Wavify** is an upgraded version of the Music-Stream-App. It has improved features like support for multiple independent channels like jazz, pop, rock.
- This application was developed in the 48 hours hackathon, *Syntax Error* organized by a campus tech group.
- The code can be found here: backend, frontend.

Motivation

Google Summer of Code is a nice platform to get acquainted with the open-source community and their skilful mentors. It gives professional work experience in a student's university years where one collaboratively builds a product for the welfare of the society. In this process, both the individual and the community improves and grows. The prospect of developing software actually capable of making a difference means a lot to me and I would love to give back to the community in some way.

I had used services of **Internet Archive** before. This includes the media from archive.org, books borrowed from openlibrary.org and going to past using the Wayback Machine. Earlier I had no idea that Internet Archive is the organization behind all these. I first got to know about Internet Archive as an open-source organization when I saw the past years' selected organizations. The projects under Internet Archive had a familiar technology stack. I decided to contribute to it as a starting point in open-source. Since then I have been contributing to the Internet Archive and my journey so far has been a great one. Every feedback on my PRs (to Open Library or IAUX) and on the slack community channel fills me with motivation. I am fortunate to have met this vibrant community of so many motivated developers and creators. My contributions to **Internet Archive** can be seen here.

The **IAUX** project revolves around the idea of building a platform for prototyping and building components for the Archive.org. I chose this project because it is very well aligned with my interests and also correlates to what I have worked on in the past. From the past two years, I have been working on projects involving React on the frontend. I also have experience in storybooks for prototyping the components. I am working hard to enhance my knowledge of *accessibility* standards. I have also worked with UI/UX design tools like *Figma* and *Adobe Illustrator* in my past. Also, I have a sound knowledge of testing React Applications using *Jest*. Having worked on so many React based projects, I think I have boosted my debugging skills as well.

Other than a deep knowledge of the technology stack, I am a contributor to Open Library and have a real experience of its components and Design Pattern Library. In the majority of my projects, I have worked with Semantic UI which itself is a popular component library. Thus this fortunate concurrency of the project requirements with my interests and experiences motivates me to spend my summer working on this project.

Pre-GSoC involvement

I have been an active contributor to open-source projects in the past, prior to GSoC. My contributions have helped me gain experience in understanding the flow of any pre-written code at a rapid pace and enabled me to edit and add new features. Contribution to the projects which affects a large community is something which gives an endless source of encouragement to me. Some of my contributions to open-source have been enumerated below:

Contributions to **Open Library | Internet Archive**

I've made a few pull requests to Open Library and gotten most of them merged. I've mostly worked towards improving UI, fixing js/jQuery bugs, and documentation of the project to get an idea of the codebase. Also while exploring Open Library, I reported the bugs or features requests in the form of issues. All of my contributions can be viewed here. Experience gained in contributing to Open Library made me more confident towards IAUX Project. Here is a list of my contributions towards Open Library:

- **PR: #1867 (merged):** Update occurrences of .live() method in /templates and /plugins
- **PR: #1931 (merged):** Correct faulty CSS in edit form and make it completely responsive
- **PR: #1940 (merged):** Always enable librarian mode and remove unused code
- **PR: #1941 (merged):** Fix collapsing of read and return button
- **PR: #1942 (merged):** Fix position of Y-Axis label and make graph responsive on the mobile device
- **PR: #1947 (merged):** Add a linting rule for consistent string quotes
- **PR: #1973 (merged):** Fix CSS in cover image modal
- **PR: #1980 (merged):** Fixes js problem of multiple form upload.
- **PR: #1981 (merged)**: Add separate issue template for bug report and feature request
- **PR: #1993 (merged)**: Make facebook and twitter card preview uniform by using only open graph meta tags
- **PR: #1996 (merged)**: Fix bug with occurring on creating a new list.

- **Issue: #1949:** Clean UI: Make the table in loan page look neater
- **Issue: #1970:** Create a new list button not working
- **Issue: #1971:** UI issue in cover image and author image upload modal
- **Issue: #1972:** Multiple UI issues on editions page
- **Issue: #1974:** Separate issue template for bug report and feature request

Contributions to **IAUX | Internet Archive**

Soon as I got to know about IAUX project, I started contributing to it. In the initial phase, my contributions mainly focused on making the project installation more simple and bug-free for the community.
I've made a few pull requests to the project and some of them got merged. Others are in phase improvement and review. Here is a list of my contributions to the project so far:

- **PR: #18 (merged):** Add separate issue template for bug report and feature request
- **PR: #20 (merged):** Add pull request template
- **PR: #22 (merged):** Fix Linux installation issue due to fsevents dependency
- **PR: #23 (open):** Correct test:generate-output command in package.json
- **PR: #51 (open):** Migrate to Babel 7
- **PR: #66 (open):** Fix commands for running ia-prototypes

- **Issues: #16, #21, #41, #42, #43, #53, #65, #68**

- **Documentation:** Helped in documenting the components of Archive.org to the design template library wiki of IAUX.

Contributions to **IMGIITRoorkee**

IMG maintains the official intranet portal, the homepage and the entire technological backbone of IIT Roorkee. Apart from IIT Roorkee related work, IMG targets the developer community of the world by its remarkable project Omniport under the open-source organisation IMGIITRoorkee. Omniport seek to create one true portal for any and every educational institute in the world, catering all its needs. I spent my autumn semester of the second year working on the two of its major applications, SHP and FacApp.

Student Home Page (SHP): SHP is the most generalised student profile app for any institute. I worked on building the application from scratch. See more

Faculty Profile (FacApp): FacApp is the most generalised faculty profile app for any institute. I worked on building the application from scratch. See more

Omniport backend**:** The Django backend of the one true portal for any and every educational institute. Working on SHP and FacApp was possible due to this project. Some of my contributions to this project are listed below.

- **PR: #37 (merged):** Add missing camel case parser in drf.py

- **Issue: #42:** Add a validator on Period Mixin itself, raising validation error if the dates overlap.

Project Introduction

Mentors: Brenton Cheng, Isa Herico-Velasco

Archive.org is a non-profit library of millions of different kinds of media. For GSoC, I would like to invest my summer contributing to the new frontend development platform, **IAUX**. Instead of choosing specific components I decided to choose views and cover all components of that view. In my opinion, this is better as this will maintain uniformity. Also, the design of a component is affected by the components present in its vicinity so this way would come in handy when changing the design of a component.

I explored the present components of archive.org and investigated some useful online resources (see section Research). Based on that and on the list of projects ideas suggested by the mentors, I have chosen to work on **Write review view, Item details view** and **Forum view**. I will work on the components of these views in conjunction with Internet Archive engineers during the GSoC period.

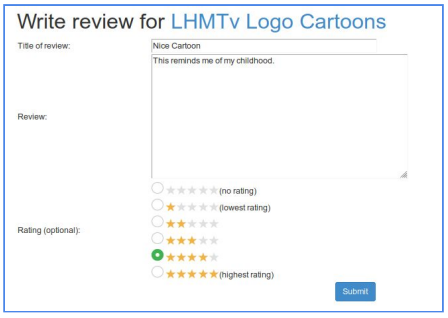
Detailed Description

I have listed the components for each of my chosen view and the changes I propose for those components.

Write review view

This view contains the form for leaving a review on an item.
URL: https://archive.org/write-review.php?identifier=<item-name>

1. Write review form component



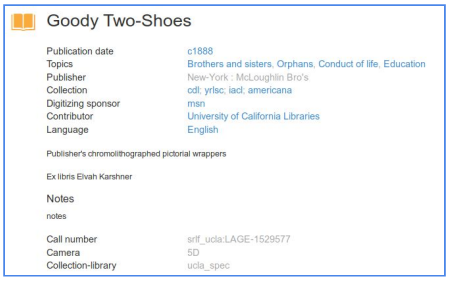
Proposal:
Redesign the component by building reusable form fields components that can be used by other components as well.
Create a stand-alone rating form field (Issue #53).
Implement delete review feature.

Item detail view

URL: https://archive.org/details/<item-name>

This view contains several components detailing the item.

1. Item metadata table



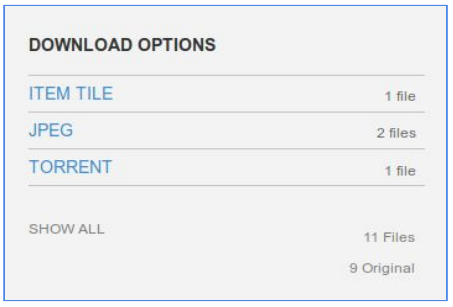
Proposal:

Redesign the component, improve data display (UI improvements)

Implement a toggle button. Only important details will be visible on normal view and other details will be shown on clicking a view more/less toggle button.

Discuss whether there is a need to create a generic, flexible table component that changes design depending upon props passed to it.

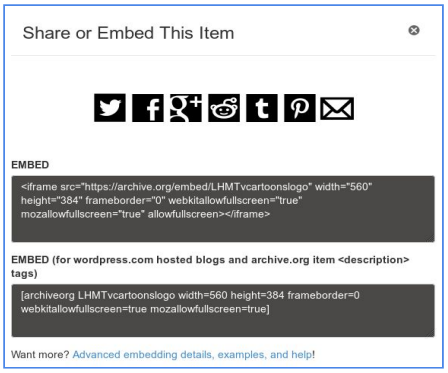
2. Download options component



Proposal:

Minor UI improvements eg: border, text-decoration

3. Share to social media Modal



Proposal:

Redesign the component (UI improvements)

Provide coloured icons matching to site's original icon colour

Provide a copy button for copying the iframe embed code

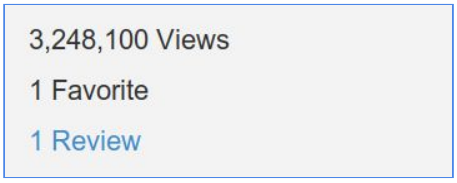
Add Open Graph meta tags for sharing-card on twitter and facebook

4. Favourite/Unfavourite Modal

Proposal:

I believe there is no need for a modal to come on adding an item to favourites.
Replace the modal by creating a generic toast component.

5. Cards (Item collection list, Item stats summary, Item uploader info)



Proposal:

Create a generic card component that could be used for all these components
UI improvements in the generic card

4. Reviews list component

Proposal:

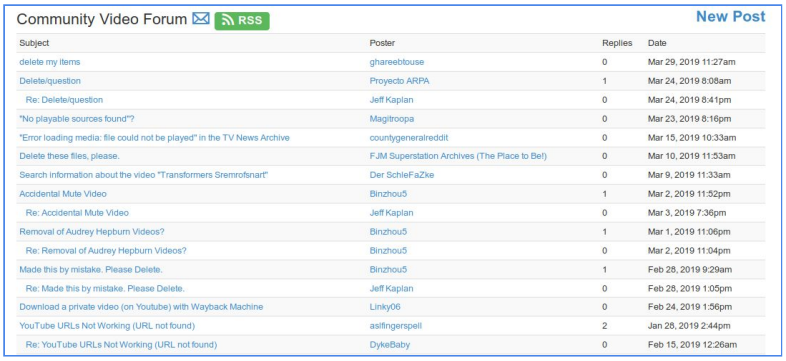
Completely redesign the component
Implement a javascript function that will take a reference date will return approximate time, eg- 4 weeks ago, 2 days ago
Discuss with mentors about providing the form review field in this view only

Forum view

This view contains a list of forum posts, link to new post form and link to each thread.

Eg URL: https://archive.org/details/opensource&tab=forum

1. List of posts

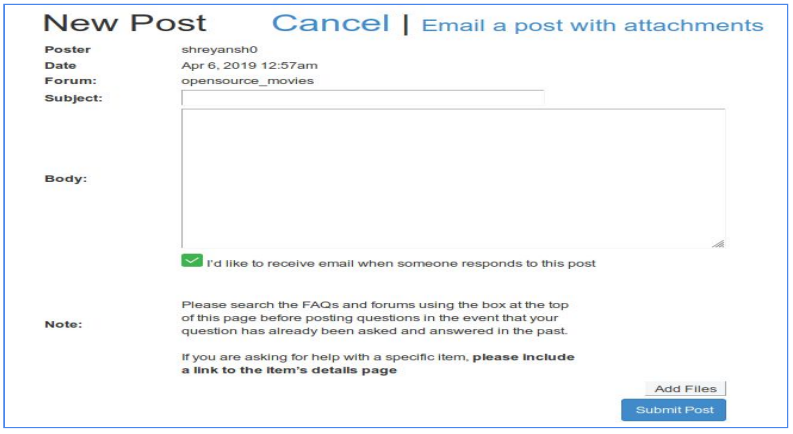


Proposal:

Redesign the component with feedback from the mentors

Create a hierarchy for posts replies

2. New post form



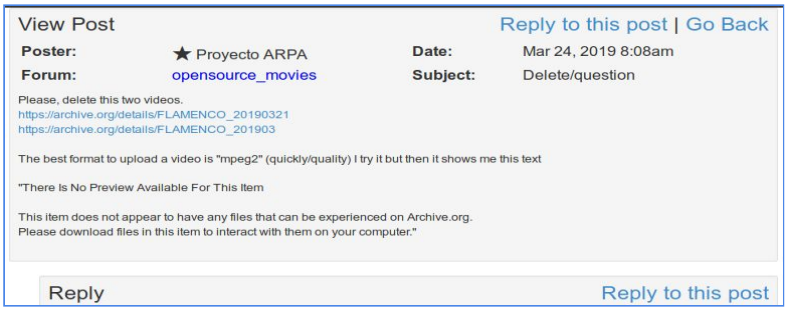
Proposal:

Redesign the component (wide scope of UI improvement)

Create reusable form field components for the checkbox

Use the form field components created earlier for other text fields

3. Thread component showing all replies



Proposal:

Redesign the complete component including the post and replies component

Implement share link feature on post and comments

Link author's name with author's profile page

Deliverables

I have listed the components for each of my chosen view and the changes I propose for those components. Apart from the changes proposed above, I would follow a common process for all the components. The process steps are listed below.

- Building components (listed in Project Description) for Archive.org that:
  - are consistent across the website and other components
  - are flexible *for enabling variation*
  - reduce the barrier of entry in frontend development

- Prototyping using the *Storybook* tool.
  Storybooks are testing grounds for components where one can adjust parameters passed to the components and see their state in real-time. Storybooks make prototyping components much easier because now instead of imagining what the component would look like and how it would behave, developers can just experiment and determine these details. I aim to prototype all chosen components on storybook along with their add-ons. All the stories will cover all the different states of that component which will make it very easy for other developers test and further improvise.

- Writing tests using *Jest.*
  Jest works very well integrated with *Storybook* and *React* applications. I aim to increase code coverage of the component library using tests written on as many as possible components.

- Building components following a11y, i18n and l10n standards.
  Since Archive.org has a wide spectrum of users, I aim to build components that are accessible to a large extent and, internationalised and localised to a minimal extent.

- Documentation
  Along with completing my deliverables, I would also like to document my changes in design templates. This would be beneficial for the developers and designers when they need to get an instant reference. Also, I will be happy if I can document other parts of the project as well.

Research

A list of web services and documents that I studied in the course of planning the project implementation:

Formula One
This is the design library used in Omniport, based on Semantic UI's React-based version.

Semantic UI (React)
One of my favourite design systems provides clean components with ample documentation.

Ant design
Provides one of the largest collection of components that I have seen so far.
Other than these non-opinionated frameworks, we also many more from the likes of Google, Salesforce and Twitter. In short, there is an abundance of design systems but we need our own because of Archive.org's distinctively unique visual style.

WCAG standards
I am trying to increase my knowledge of accessibility standards. I aim to complete most of the relevant part in the Community Bonding Period.

Storybook - React official
The largest collection of stories I found on the internet. Contains a wide range of stories of components, from simple Button to UI components.

Project Impact and Goals

For developers and designers:

Currently, **IAUX** has just begun its open-source journey. At the end of my project, I aim to take the project to a state where:

- components from Archive.org can be successfully prototyped and tested.
- new developers can easily join and contribute.
- the components build are flexible enough to be used in other React based platform of Internet Archive.
- new components and ideas for the Archive.org are nurtured.

For Archive.org users:

Archive.org is built for helping its users. The benefits for the users that could come out from my project includes:

- a polished UI for Item details view.
- a refined an improved item review process.
- improved forum views and new post views

*For the **Internet Archive** community:*

Community benefits are most important for open-source organisations. I would work in the benefits of the community by:

- being transparent with the developers.
- being available for assisting the community in all possible ways.
- giving utmost importance to user feedback. I will be always ready to improve or change my project plans in the direction which bests favours the users and the community.

Measuring the impact

I think my project's success can be measured by measuring the extent of interaction of Archive.org and **IAUX**. The more the components developed on IAUX are put in use, the more will be the success of my project. Also, community feedback for the project outcome could serve as a handy way to measure the impact. Some other ways include measuring the traffic and user interaction on the views I work on. This also includes an increase in the reviews for items on Archive.org and an increase in discussions on the Forum pages. At the time writing, archive.org had a global Alexa rank of 242. So in total, I also aim to contribute to, at least a part, towards the improvement in Alexa rank of Archive.org.

Proposed Timeline

This is the timeline I will stick to when working on project IAUX during GSoC.

Pre-GSoC period | Community Bonding Period

Interact with the mentors of the project and set up feedback loops.
Continue to refine the plans for the project in consultation with the mentors.
Read more about WCAG standards to have a greater knowledge of them.
Get involved with the community which, after all, is what this period is for.

Phase 1: Beginning - Write review form, Edit view components

Week 1-2 | May 27 - June 10

Setup the **infrastructure** for the project.
Setup the project tracking tooling such as Trello or GitHub projects.
Start working on **Write review form** component.
Implement all the proposed features like generic form fields, delete review feature, etc.
Complete **Write review form** component by write tests and stories for it.

Week 3-4 | June 11 - June 24

Start working on the components of **Edit item view** and discuss all features to be implemented.
Start by refining **Item metadata** table and **Download options** component.
Develop a simple **Toast** component for displaying notifications and other non-critical messages.
Complete these components by writing tests and stories for them.
Document the changes done and add the completed components to the design template library.

Phase 2: Card, Modal, Review Components

Week 5-6 | June 25 - July 8

Design mockups for the **Card component** and the improved **Reviews display** component.
Develop the **Card** component that also encompasses segment, container and divider.
This generic card component will take care of the I**tem collection list**, **Item stats summary**, **Item uploader info** components.
Develop the improved **Review display** component with feature discussion with the mentors.
Write tests and stories of all completed components.

Week 7-8 | July 9 - July 22

Design mockups for the new **Modal** component for sharing items to social media.
Develop the modal component and add Open Graph meta tags for social media sharing cards.
Add props **Modal** component for handling several variations such as confirmation, alert and notification.
Write stories with Knobs add-on to allow variation of the props passed dynamically.
Write tests for the Modal component.
Refactor the code quality for the code written so far.

Phase 3: Forum Page components

Week 9-10 | July 23 - August 5

Design mockups for the components on **Forum Page**. This includes the **List of Posts** and **New Post** form.
Develop the New Post form component using the generic form field components created earlier.
Discuss the features to be implemented for the individual Thread component.
Start implementing the features for the Thread component including a separate component for replies with all new UI.

Week 11-12 | August 6 - August 19

Complete all components related to the **Forum Page**.
Write tests and stories for components completed.
Write proper documentation the features implemented so far, including a detailed description all the props that can be passed to each component.

Week 12-13 | August 20 - August 26

Buffer period to catch up on any pending work, else:
Make bug fixes and code quality refactorings.
Add any small features that might've been overlooked.
Documenting the project and testing again.
Add easter eggs as a special give to the community.

Post GSoC period | finishing touches

Continue to work on the project, finishing items that have been put on an if condition in the last two weeks.
Improve the codebase in aspects that will only come to light when integrations are getting merged.

Distant future | long-term commitment

In the distant future, I would love to work with the **Internet Archive** and the **IAUX** project as they build services which truly help large scale community. Internet Archive has a highly active and promoting community. I would love to work more projects if I can.

Me and IAUX

Why me?

Google summer of code seeks students who are ambitious to contribute to open-source. I believe that I am befitting to this situation. There are 3 main reasons which impel my ideology.

- I am entirely comfortable with the technology stack for the project. Apart from the requirements specified for the project, I also have knowledge and experience on other technical skills which I learnt in the project done by me in the past. These may come handy along the course of my work in the project.

- Since the time I started contributing to open-source, my interest in it has been growing continuously. Every pull request, every commit fills me with a feeling mix of happiness and self-confidence. Most important is knowing that the projects I contribute to are used by a global audience. Perhaps, this is one of the biggest source of contentment for any developer and so to me as well.

- I believe in community interests and will be ever ready to do my best for the community. I understand the importance of community in open-source. I will always respect the community and will maintain a healthy relationship with it.

Apart from these, I aim to leave a high impact on the **Internet Archive** community. I aspire to make **IAUX** the perfect platform for prototyping and testing components for Archive.org. Having the majority of the components prototyped, IAUX will serve as a component library for other projects of Internet Archive as well. The *stories written for the components* using the *Storybook* tool would provide ease to the developers and designers that was never before. I also intend to write quality code (in the form *React components or Web components*, *Jest tests* and *stories* in the *Storybook*) that would serve as an example for coming developers to the project.

You can also see my development skills and past projects. Also, see the sections Project and Project Impact to know more about my project idea and its impact.

Why IAUX?

As I mentioned in my section motivation, working on **Internet Archive** projects gives me a chance to learn something new every day. I have always been interested to contribute to projects that can leave an impact and the project on **IAUX** best suits for it. The project would also give me a chance to leave the impact which I aspire for. Moreover, the community and mentors are great so I am assured that during GSoC, working on this project will be the best learning time of my life.

Availability

My vacations start on 5th May 2019 and end on 11th July 2019. The official GSoC period is from 6th May 2019 to 26th August 2019. I can easily devote **50-55 hours per week** until my college reopens and **45-50 hours per week** after that. I am highly productive on weekends and intend to complete most of my work before my college reopens.

Other than this project, I have no other commitments during the vacations in the summer. I shall keep my status posted to all the community members on a weekly basis and maintain transparency in this project. Moreover, most of my work hours largely coincide with the mentor's work hours. So this way it would be very comfortable for both us to communicate and this will speed up the code review workflow.

After GSoC

Are you interested in working with Internet Archive after GSoC ends?

Yes. I'm interested as I always was. I have been contributing to **Internet Archive** for over three months now and I've really loved the experience. I got familiar with the community and I believe I have learned a lot interacting with the prospective mentors. I feel this kind of mentorship is necessary and has contributed to my growth. I will be an active member of the community and keep contributing. My motivation would always be that I had been able to contribute to something big and widely in use. This gives me a lot of satisfaction. I would also love to develop my mentorship skills so that I can give back to this community by nurturing the future generations of contributors.

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