

Axolotl project

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Figure 1: The viewer without length tool

ABSTRACT

This project combines the functionality of the Length Tool provided by Cornerstone tools library and the Viewer provided by the OpenSeaDragon library. The length tool allows the user to find the length of a given image in pixels while the OpenSeaDragon Viewer allows the user to zoom in and out of an image.

KEYWORDS

Zoom, Measure, Length, Visualization

ACM Reference Format:

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1 INTRODUCTION

This project's goal to combine the functionality of the length tool and the viewer tool allows for the user to find the size of various models. These models can range from very small biological cells to larger organisms. The ability to have a consistent measure of size is important in the medical imaging field. My contribution is combining these two functionalities together.

2 RELATED WORK

OpenSeaDragon [2] Cornerstone [1].

3 METHOD

In order to combine the two tools together, there were 3 approaches:

- (1) Implementation into OpenSeaDragon Viewer
- (2) Implementation into OpenSeaDragon plugin
- (3) Overlay Length tool over OpenSeaDragon Viewer

3.1 Implementation

The final implementation that I used was to overlay the Length tool canvas over the OpenSeaDragon Viewer canvas and make the Length canvas semi-opaque to see the Viewer behind it.

```
<canvas id="topCanvas"></canvas>
```

```
<div id="viewer"></div>  
I set the CSS properties for topCanvas:  
#topCanvas{  
    background-color: transparent;  
    width: 100%;  
    height: 100%;  
    z-index: 100;  
    position: absolute;  
    opacity: 50%;  
}
```

3.2 Milestones

3.2.1 *Milestone 1.* Brainstorming possible approaches to combining the two tools

3.2.2 *Milestone 2.* Attempting Method 1 and seeing that implementation would be more difficult

3.2.3 *Milestone 3.* Attempting Method 2 and seeing the same difficulties of Method 1

3.2.4 *Milestone 4.* Attempting Method 3 and seeing better outcomes

3.3 Challenges

Describe the challenges you faced.

- Challenge 1: Trying to initiate the Length tool in the Viewer constructor
- Challenge 2: Overlaying the Length tool over the Viewer canvas
- Challenge 3: Seeing the Viewer canvas after overlaying the Length tool canvas
- Challenge 4: Navigating an existing large code base

4 RESULTS

The final result of the project is the ability for the user to measure the length of an image using the length tool and the OpenSeaDragon Viewer canvas.

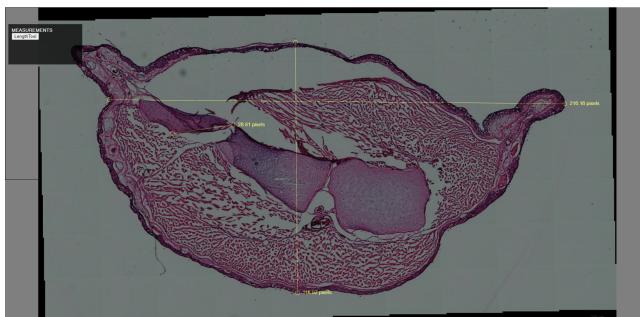


Figure 2: Viewer with length tool

5 CONCLUSIONS

The final result of the project is the length tool [1] overlaid over the OpenSeaDragon [2] Viewer canvas. This allows for the user to toggle on the length tool and get measurements. The user can then toggle off the length tool to return back to the zooming functionality of the Viewer tool.

There were many challenges along the way such as figuring out which approach to implement and navigating through such a large amount of pre-written code. The project was somewhat successful and there is some functionality that was working but the final result was not as intended from the beginning.

REFERENCES

- [1] CornerstoneJS. 2021. Cornerstone. <https://github.com/cornerstonejs/cornerstone> (2021).
- [2] OpenSeaDragon. 2022. OpenSeaDragon. (2022).