Virtualization of a Turing Machine Weekly Report: 2-14-2021

Outlined in this document details the work and progress toward the making of the Virtualization of a Turing Machine Project for the week of 2-14-2021.

During the week, James Merenda gave a brief introduction to Brett George on using Git/Github. It was a bit of a rocky start since James mostly forgot how to set up a git environment from scratch, but eventually the two of them worked it out. There was also a discussion held on how to model the markup language. The language in its most basic form is as follows.

```
input = "0101";
blank = " ";
start = start;
accept = accept;
-start 0,1 [r,accept];
-accept;
```

Based around this syntax, Brett George went to work on the compiler. He first made a non-modular version of the compiler that reads text from the editor. The compiler scans and parses tokens into a machine object for other parts of the program to reference. Then throughout the week, Brett George overhauled the layout of the compiler to be more modularized. In addition to these features, he added some basic error codes related to parsing. More error codes will eventually be added by Jisue Lee, but these are added for now. If a machine is entered correctly and completely, it will be displayed in the console.

Progress on animating the Turing machine continued throughout the week as James Merenda worked on the turing machine demo webpage. As said in the last report, the page can be accessed via https://jamesmerenda.github.io/calu-turing-machine/www/machineanimationsdemo.html and includes . During this week, he implemented a smooth transition that makes the tape look like an

"infinite" loop. This is for presentation purposes only. Functionally, the machine will have a set tape size for user input and machine interaction. Aside from the transitions themselves, a controller for the speed of each transition was added as well. It is controlled by a slider which can output a transition time of between 0.1s and 0.7s. The speed by default is 0.4s.

Some problems the team faced during the week include the following. Nothing to note at this time.

Plans for next week include the following. Brett George will add comments to JavaScript code related to the compiler and continue to optimize the compiler. He will also add additional fail states to the compiler as well as work on implementing a method of uploading text to the editor. James Merenda will implement Brett George's machine object information into the Turing machine animation and stylize the interface to match the style of the website.