

## **Virtualization of a Turing Machine Weekly Report: 4-4-2021**

Outlined in this document details the work and progress toward the making of the Virtualization of a Turing Machine Project for the week of 4-4-2021.

Throughout the week, the team continued to fine tune and finalize features in the project as the deadline looms in the distance. This includes adding an auxiliary tape below the main tape to allow for language transducers to be implemented per request of Dr. Chen. Some backend optimization was also introduced when scanning tokens and referencing certain elements in the website. There was also progress made with the user manual during the week.

Jisue Lee continued to optimize the error handling system for the machine. This includes converting previous error codes into more detailed error messages. Eventually, there will be line numbers to reference where the error occurred. Jisue also pushed their optimizations for the compiler. The optimizations reduced redundancies with Regex statements and eliminated unnecessary string splicing due to said redundant Regex statements. Jisue also worked on the state diagram generation from before, but did not make as much headway as they wanted.

James Merenda continued to optimize website assets in previous JavaScript code and implement the beginning steps for allowing language transducers in the website. The JavaScript code optimized was how cells were referenced during initial startup. Instead of hard-coding each cell by hand, the process was compressed into a single line - making the code better in terms of readability. The auxiliary tape located below is a start to allow language transducer functionality. James also made some headway in the user's manual throughout the week. This includes the Project Overview, Problem, Solution, and Intended/Secondary Audience sections.

Brett George continued to optimize and implement new features to the compiler. These optimizations include fixing oversights related to how the machine processes transitions and

other small fixes. Brett also continued to work on applying a solution to editing transitions while in the middle of processing.

Some problems the team faced during the week include the following. There was some deliberation whether it is worth it to continue to develop a solution for generating a state diagram based on transitions written by the user. Due to the complexity of what to consider during generation, it may require more time than the team can allocate.

Plans for next week include the following. Continue to optimize the website's look and feel. Continue to optimize error messages and implement line number references. Continue to implement a solution to add transitions without recompiling during transitions. Continue to develop the auxiliary tape for functionality in the machine. Continue to work on the user manual.