Test approach for chosen attributes

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January 28, 2023

1 Accuracy

1.1 Validation Testing

In the test I use the Great Fire of London as the reference to the validation tests. This data are include the location, size, and intensity of the fire wind direction for the different time steps. Then input the London Fire data into the software and run the prediction. This will generate predictions for how the fires would have spread based on the input data. Next, I can compare the result with the actual real-world data.

1.2 Unit Testing

Unit testing can be used to enhance the precision of the simulation. By testing individual functions within the simulation software, unit tests can ensure that each output is reasonable. For instance, when it comes to the matrix of burning time, all the elements must be positive, and this can be verified by unit testing.

1.3 Sensitivity Testing

Sensitivity Testing, by varying each parameter and noting the effect on the output, it is possible to understand how sensitive the system is to changes in each parameter. The results may show that certain parameters have little effect on the outcome, or that their effect varies smoothly over a range of values. If there is a significant or discontinuous effect, it may be necessary to make separate predictions for different ranges of values.

2 Speed & Performance

2.1 Performance Testing

In this test I define the criteria to be the amount of data that the software can handle.Next, I will provide the fire spread prediction software with test data sets where each data set have different size (Number of cells/blocks in the map) and a random generate other parameters. During the test I will try to identify any potential bottlenecks or issues that may impact its performance.

3 Usability

3.1 User-Based Testing

In this test, users need complete specific tasks using the software, such as inputting data, running simulations, and interpreting the output. Observe the users as they complete the tasks, and gather feedback on any issues they encounter, such as difficulty understanding the output, inputting the right data, or navigating the interface.