

Delaying The Burn
Mapping Fire Spread Through Cellular Automata

New Mexico
Super Computing Challenge
Final Report
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Executive Summary

Our project models fire spreading through multiple types of terrain using an array to model the basic combustibility of different objects. This way we may map out the way fire spreads so we can take steps to prevent it when the fire is happening. Using this project you can map what parts of the town or forest will combust easily so you can stop the fire before getting to those certain points.

To map a fire spreading through cellular automata we would need to use a graphical program that could do what we need it to do. StarLogo has been used in many cellular automata projects before so it would suit our needs. We would need to make a map that could be made and not randomly generated to make a specific town.

Our program is meant for being not too complicated but a lot of programs the easier they get the less efficient they are. Therefore if our program is hard to use we apologize but hopefully it will work. The program after entering the variables to build the town will run the fire

and it will start to spread this may be fast or slow it all depends on the scenario.

Introduction

Fire in general is a hazard and our program helps to prevent the damage cause by it an example is the fire that happened in Socorro that burnt down several of our shops. It wasn't a very big fire and it was stopped before it could spread but what if it had. Socorro is a very small town to start with a huge fire could devastate us. If we have the ability to prevent these types of things it will benefit large cities and smaller towns.

Description

Through this report we've already explained the purpose of our project so I won't bore you with it again. The code is made for working well not for being easy to use so it may have many lines in it or be a little complicated but it was built to be effective. So if there are any complaints on complexity simply look at the efficiency of the code and not the easiness.

Results

Our program does not get the results we wanted it to for there are some minor glitches. We have not yet targeted what is wrong with our program only that it doesn't work we are working on the code as best we can. We are hoping that we will have a running code at the expo or next year if need be.

Conclusion

In conclusion our program should soon be able to map a town or forest and predict a spreading fire. We hope this program will be accurate and may be actually used by firefighters in the future. This program has a long way to go before it is ready to be used in the field though.

Resources

<http://cormas.cirad.fr/en/applica/fireautomata.htm>

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<http://www.cosis.net/abstracts/EGU06/01850/EGU06-J-01850.pdf?PHPSESSID=de5a92fd776f44cb0a11ea8978229ad5>

European Geosciences Union 2006

http://csep.hpcc.nectec.or.th/anscse/paperAbstract/811104202636_abs-Tawornmas.pdf

ANSCSE6 2002

<http://www.reed.edu/~tomand/math121/lab2/>