

Operation Mother Bird

New Mexico
Supercomputing Challenge
Final Report
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Team 125
School of Dreams Academy

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1 Executive Summary

How effective would our defense system, RPG-BP, be against an enemy attack using an Apache or Chinook military helicopter? With this entire year to develop this project, it started as a physics based project.

We first planned on using Maya, a software system that would simulate our project. To “build” our defense system, we looked at military missile and bomb magazines and looked at the two different helicopters to see how we were going to develop our RPG-BP system. We originally started looking at Maya tutorials on-line to develop our skills. As time went by, we realized that this original idea would not work. We thought of using StarlogoTNG, but we got to caught up with the look, and not the actual point we were trying to make.

We came to an agreement on our program. We used a C++ program called Microsoft.DOTFX. This program showed the statistics of the project, not so much the physics aspect that we originally wanted. As the two of us went to Evaluations, the judges made some great critiques. They wanted to see a more physics based project and were a little confused on our project statement. We took this into consideration. We also had originally wanted our project more physics based as well, but time was limited.

We analyzed our final program and our system wasn't that effective against enemy RPGs, but we thought about applying a physics based program to supplement our old program to see how well it would do. We are using a program on StarlogoTNG to supplement our old program.

2 Helicopters vs. RPGs

Innocent Air Force personnel lost their lives during war time, because there was no defense system to protect them from RPG attacks. We were inspired to do this project, because in 2006, military helicopters were attacked in the Hindu Kush Mountains by a planned RPG attack from the Taliban. If a defense mechanism were to be designed to block or explode RPGs, then hundreds of lives would be saved.

3 Methodology

Our original method was to use Maya software system to simulate our solution. We first started to design our mechanism by illustrating out our ideas in a journal. When we got our basic idea, we wanted to look at what missiles, bombs, and RPG's that were already in the market. We used *Air Combat Command* to research products. We found one missile that had both Laser-Guided and Sound-Guided systems, and one with a Heat-Guided system. Then we decided to make a combination of the two, so we could make something familiar but new. Our team started to see what type of RPG we would be using; we decided to use the RPG-69 that was used during the Vietnam War, as well as, today. Next, our team started to view Maya tutorials on-line, but soon realized that this method would not benefit us; because it was to complex for our team.

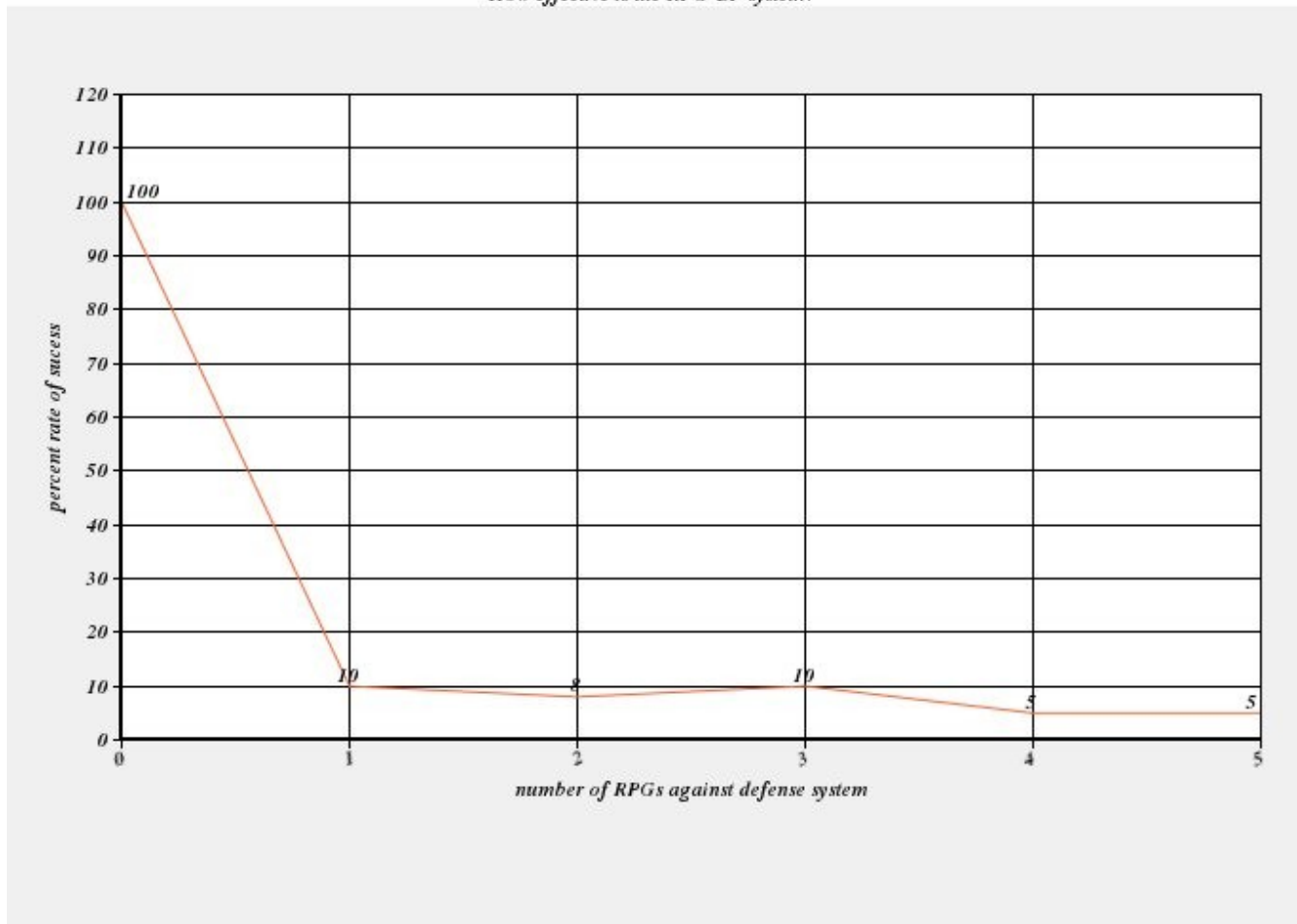
Microsoft.DOTFX was our next choice. This is a C++ program that only showed the statistics and probability of the RPG-BP system, but no way to show the physics of the project. The results proved that our system was only five to ten percent accurate., but we decided to use StarlogoTNG to supplement the program and to compare the results.

StarlogoTNG was our last, but proved to be our best option. It shows the physics that our team and the judges had wanted. It illustrates the original idea of our project. We still apply our system only to a more simple program that works effectively.

4 Results

The results we recorded were from our Microsoft.DOTFX program.

How effective is the RPG-BP system?



The data above illustrates how successful the RPG-BP would be percent wise, but not actual impact.

We used this data to “see” what was wrong; the judges had pointed out that our system would work better being more physics based, than statistical. Although we used this to our advantage, by using both programs to develop a true supercomputing system, using both physics and statistics. Unfortunately, we do not have enough data for the StarlogoTNG program to test it fully.

5 Solutions

The results show that our first program(Microsoft.DOTFX) did not fulfill our goal, but in creating our new program(StarlogoTNG) we discovered that this could be most beneficial to the program. In the Microsoft.DOTFX program our solution, after it didn't meet our goal, was to create a supplement program. This supplement program was the StarlogoTNG one. At first, we just thought it to be supplementary, but soon realized that they were parallel processing, which makes it one-of-a-kind using both statistics and physics. If in the future we can create a real physical defense system using these factors, we could have the most technological military defense against enemy attacks.

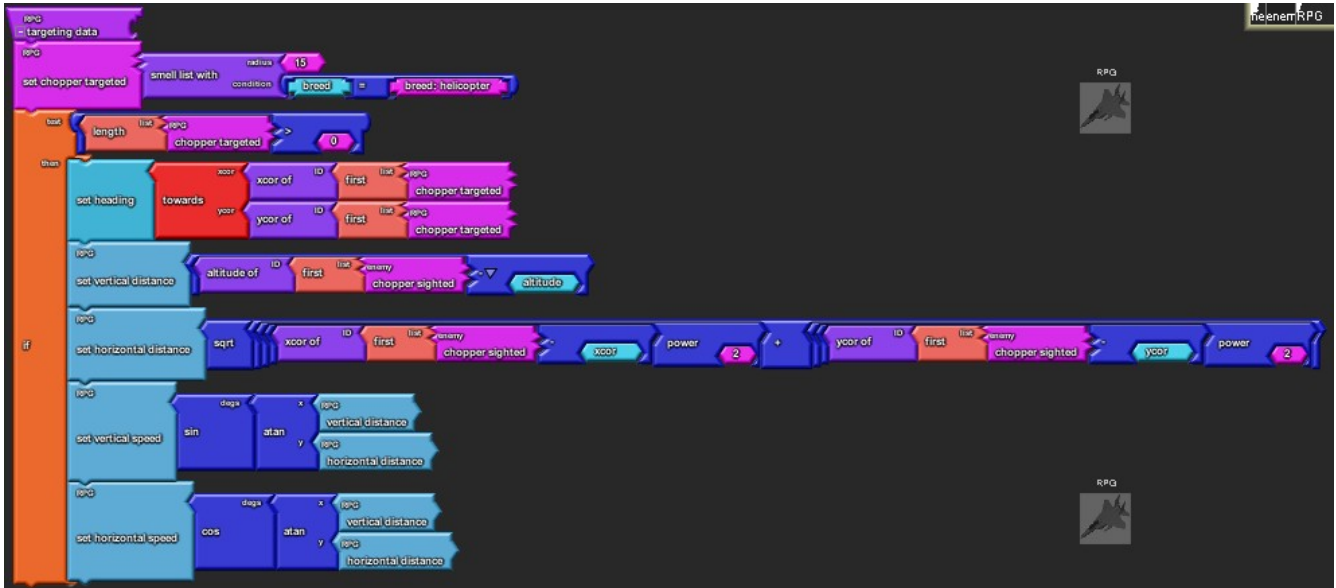
6 Computer program

Here is a sample of our program from each section:

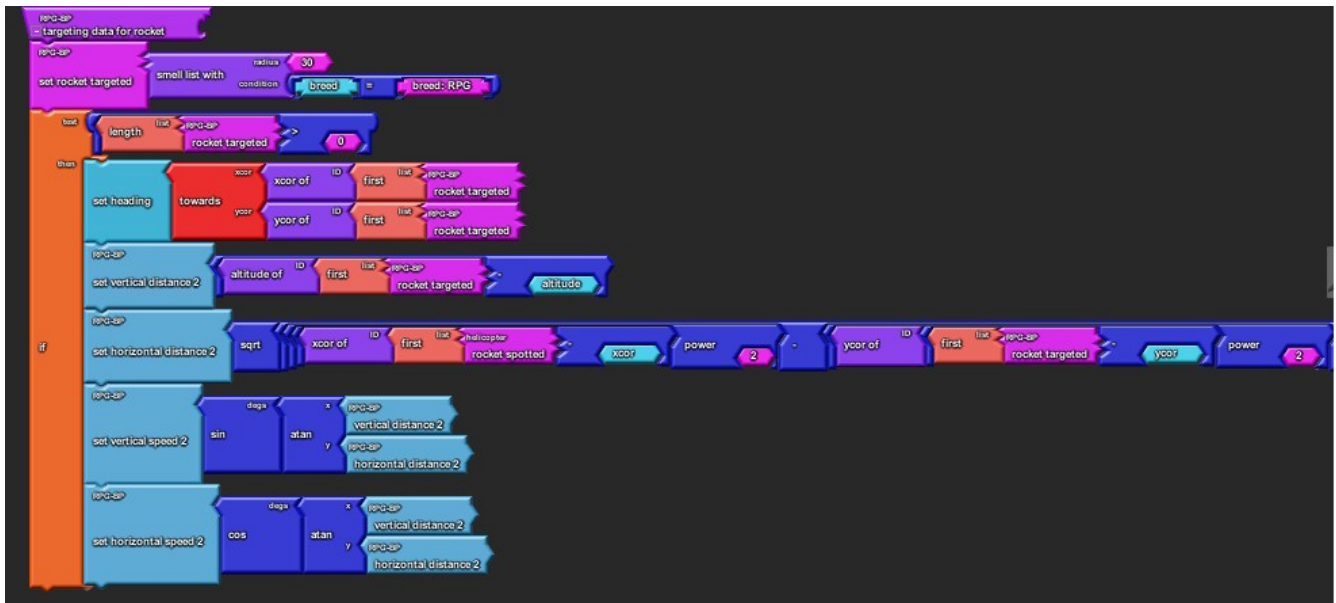
Helicopter:



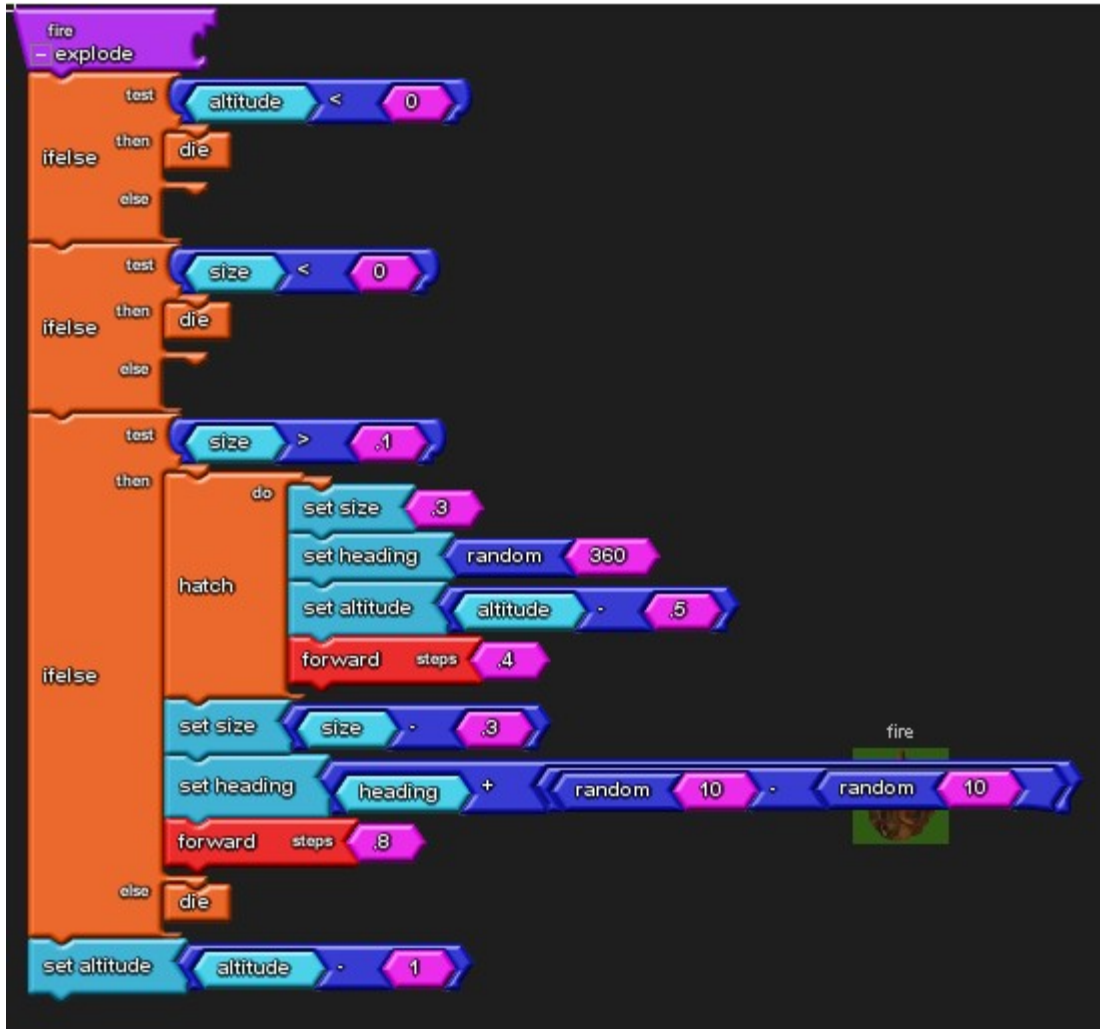
RPG:



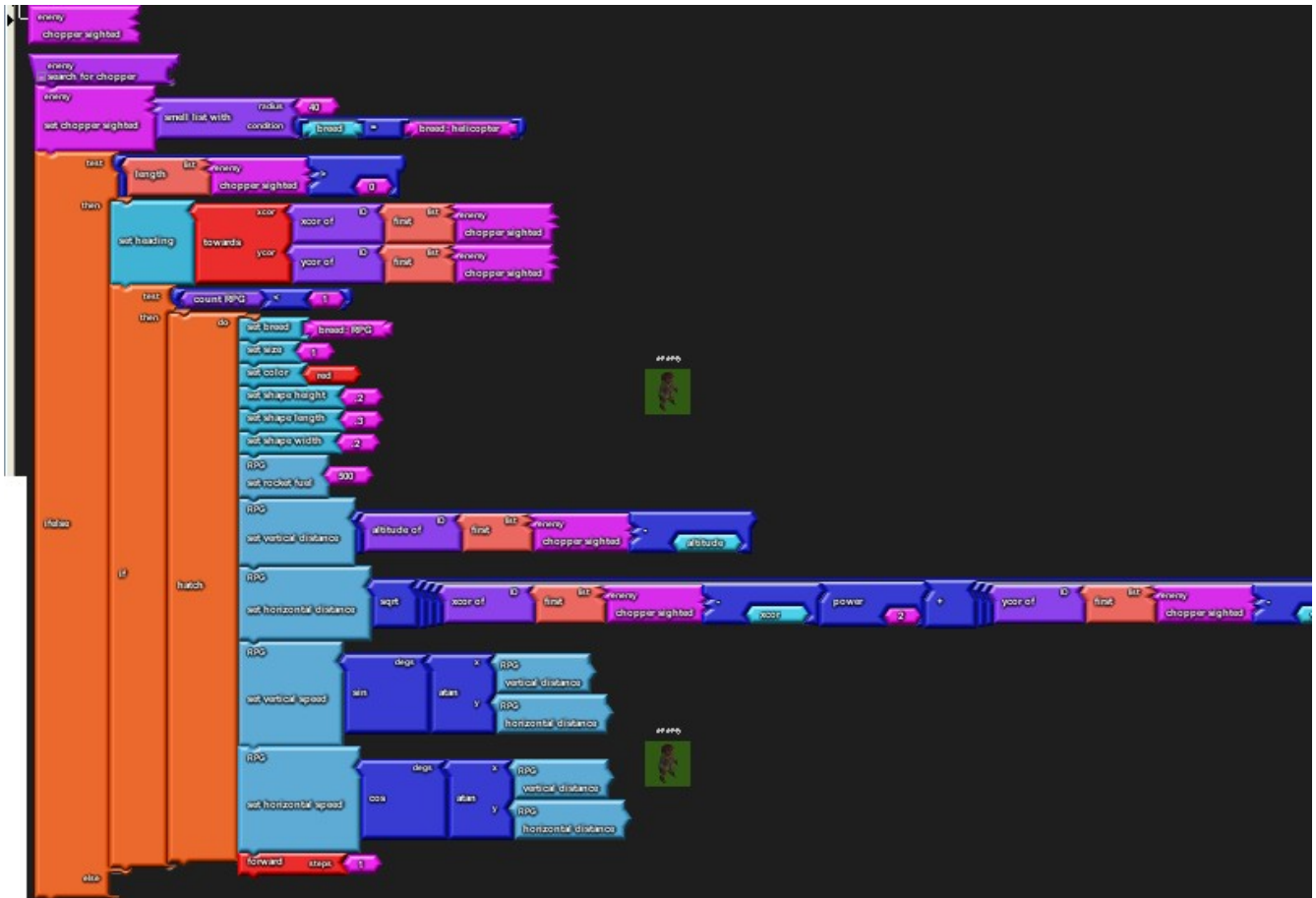
RPG-BP:



Fire(explosion):



Enemy:



7 Most significant original achievement of our project

At a career day at the University of New Mexico, a team member met a military contractor at one of the booths. They started discussing our team's project in detail. The contractor was immediately interested when a defense system for RPGs was mentioned. He talked to the team member about submitting further information in three months. He said that our system could easily be worth a minimum of fifty-thousand dollars!

8 Acknowledgments

We want to thank our teacher/mentors Creighton Edington and Elizabeth Spenly (student at NMTT), also our parents for their support and pushing us to finish and not give up:

Dear Mr. Edington,

Thank you for your constant support and encouragement. Thank you for always asking if we needed help, even if we didn't want it. For your ideas to help better our project, and become well developed problem solvers and thank you for being there the entire year. We greatly appreciate it.

Sincerely,

Danielle Garcia and Kyle Wheeler

Dear Elizabeth Spenly,

Thank you for your support and help. Even though you came later on to help, it really benefited us. Your being tough with us, helping us to see that this is serious. We appreciate for all that you did, you did a lot for us. Thank you!

Sincerely,

Danielle Garcia and Kyle Wheeler

Dear Parents,

Your constant support and encouragement through this entire year has been phenomenal. Pushing us to finish and not give up was difficult, but worth it. Without you, we would have never got to where we are. Giving us rides to meeting times, working with us to stay on track and give us organization advise have all been a huge help. We can not express our gratitude enough, Thank you so much.

Sincerely,

Danielle Garcia and Kyle Wheeler

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