Our-Wicked-Problem

Assignment 4
Sarthak Turkhia
Ernie Yeung

Problem 5: Avoiding another world war

Our formulation intended to capture the state of the current world and the division of influence and power by countries. We formulated this problem to satisfy the need to maintain world peace and avoid conflicts between two countries. We used resources and facts like GDP, possession of nuclear weapons, military size, Membership in the UN and NATO, and a world influence ranking to create statistics and computable values. We choose these resources because we believed that these resources determine the relationship between two countries.

The complete data set of all the 195 member countries of the UN was very large, making it difficult to work with. In order to complete the task in the given time we choose to work with a sample size of 16 countries.

The countries we choose were based on two key factors: Military Size and World Influence. The countries in our sample size are: ["China", "Egypt", "France", "India", "Indonesia", "Iran", "Myanmar", "North Korea", "Pakistan", "Russia", "South Korea", "Thailand", "Turkey", "United Kingdom", "United States", "Vietnam"]

There were other limitations and simplification in our formulation. We reduced the relationship between two countries to a single number however, in the real world the relationship between two countries is much more complex. We also used a constant growth rate for GDP and military size of each country, ignoring the fact that the growth can be very inconsistent.

Our operators were quite fundamental and were simplification of actions in the real world. Our operators allowed countries to gain nuclear weapons, gain troops from an ally, form a treaty with a conflicting country, set a trade agreement or find spies from another

country. These operators in turn altered the relationship number or they altered the country specific attribute, which then altered the relationship number.

In our formulation, the higher the relationship numbers the worse the relationship between the two countries. 0 represents a perfect harmony between two countries. I believe we were quite successful in capturing the fundamental idea of the wicked problem. As we ran our formulation we learned that it is virtually impossible to reach 0, which is the case in the real world. No matter how good the relationship between two countries is, it can never be considered perfect. Utopia in the real world is only a fantasy. However there were many areas that made this formulation unsuccessful. The fact that we considered only a few variables and did not account for the data exceptions (North Korea) was where this formulation failed.

Retrospective:

In our formulation we divided the work equally. Ernie Yeung was responsible for the State class, the operators and creating an initial state. Both the team members worked together to create the data and decide the parameters that will be needed in the initial state. Sarthak Turkhia created the country class that takes attributes for each country object as parameters. He was also responsible for computing the relationship index between two country objects and he wrote the report of the formulation.

Sarthak:

This was perhaps the most interesting assignment so far. Using a real-world problem in our formulation made the whole assignment very appealing to me. I learned that any problem could be formulated if you break it down and represent it appropriately. The hours of research that went into just acquiring the data was the most surprising aspect of the whole process. After considering all the data and sorting the relevant portions our formulation started to take a form. I learned that

formulating a problem is the last step and that before you start thinking about formulation you need to first define initial states and operators.

Ernie:

This was definitely one of a more abstract and thought-provoking assignments that we've had. I initially thought that a wicked problem would just be an incredibly thick and messy problem, but after formulating one for this assignment, I now see why wicked problems are called wicked. The hardest part in my opinion would be deciding the operators, as the possibilities are practically endless.

Citation:

Wikipedia: Web
Link United Nations Members
Link Historical Alliances
Link Nuclear Weapons statistics
Link GDP statistics

US News: Web
Link List of influential countries