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Algorithm Analyzer with Animation's

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Abstract

Algorithm analysis is a most important part of algorithm design and to understand the algorithm.

The idea is to explain the working of different algorithm's in simple way to every one, because understanding the complex algorithm's can be very complicated or not easy. The research we conducted includes thorough study on algorithm's such as sorting, Big O, N-Queen problem visualization, tree, graphs. The working of algorithm will be explained in visual (animated) format, which need's taking parameter's from the user in form of pseudo code and plain text.

INTRODUCTION

Algorithms are vital components in Computer/ IT industry. It is used in every domain such as Web Technology, Artificial Intelligence, Machine Learning, Data Science, Application development etc, it is

an very basic as well as very important component of development field.However, algorithm visualization and animation has not fulfilled the hopes, and it is still not used too much in CS courses. One can even find articles with titles like "We work so hard and they don't use it" (basset Levy and Ben-Ari, 2007), complaining about low acceptance of algorithm animation. Tools by teachers. The number of articles, reports, and visualization tools sensibly declined in the second decade of the new millennium.

An algorithm animation is usually implemented by running the algorithm slowly or in steps, and simply modifying the visual representation of the data in the screen. A person who knows and understands the algorithm in question can see how the algorithm progresses, but a novice user just see visual objects moving and changing their shapes and colors, but finding out why the movie runs in that way is usually too difficult.

The solution that we offer is to visualize (not as much) what the algorithm is doing, but why it is working in the way it is working. In other words, our aim is to visualize an abstract algorithmic idea that is behind a particular computing method. We admit that the statement is rather vague. Moreover, we are not able to give any general methodology of visualizing abstract algorithmic ideas (and we guess that no such methodology exists). Nevertheless, certain examples are given in an attempt to illustrate the approach.To locate step-by-step directions in your car's handbook, you conduct research, or do you use instinct to find someone who knows how to do it? In short, my instinct tells me that I am a visual learner and hence more suited to acquire topics by watching them than by reading about them. In this case, I found that seeing the data move to its rightful spot as the result of an algorithm is much easier to follow than looking at the source code and trying to figure out where the data was supposed to go.

METHODOLOGY

Architectural Design

1.   welcome screen

2.   Dashboard to already visualized algorithm and visualize new algorithm

   a)   Sorting algorithm

   b)   Path finding algorithm

   c)   Users own algorithm

3.   Animation or output screen.

4.   Feedback page.

5.   Contact Us page.
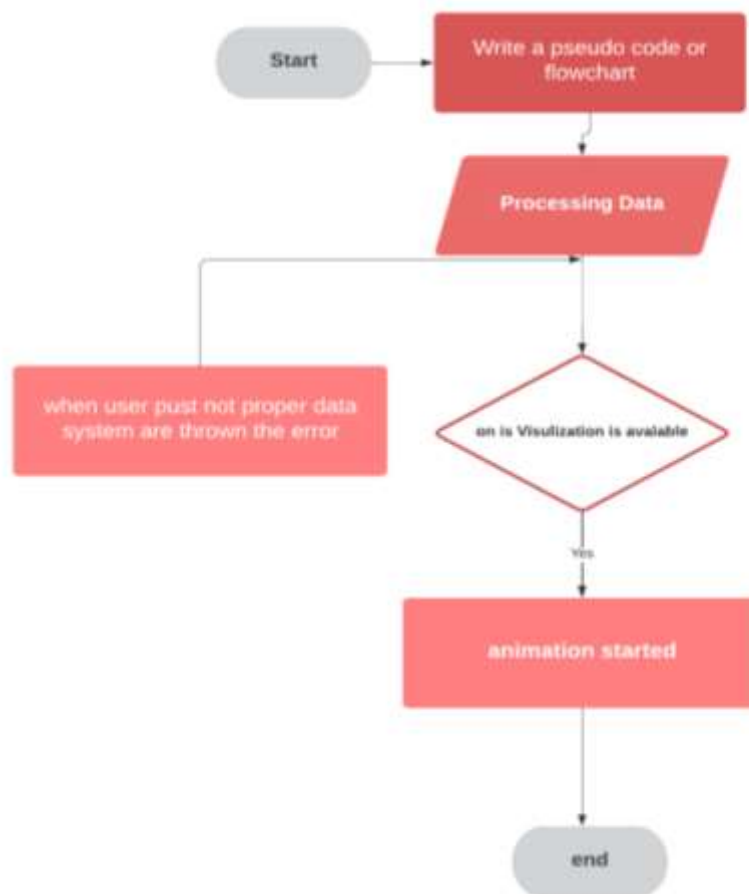
As mentioned above, we already have an existing application with existing functionality of basic algorithm visualization of both path-finding and sorting algorithms, mazes and patterns and displaying time complexity [1]. Now, to make the visualizations all the more realistic and easier to comprehend we decided to include a few additional features in our application. The additional features to be included are as follows:

1. User Own Writes algorithm with form of pseudo code or flowchart:

We have observed that in most of the standard books for algorithms, the working of algorithms is shown with reference to data structure and algorithms. In order to ensure a gradual shift from books or classroom technique to e-learning, we can introduce this feature in our application and then in advanced levels we can introduce the existing, more efficient form of algorithm visualization for the students.

Working of the feature:

1.   User gives the algorithm as input with form of pseudo code or flowchart.

2.   User need to gives the proper explanation of algorithm.

3.   System are understand and process for next result.

4.   System presents the visualization of user writes algorithm with animated format.

In Than application we will use to understand basic to advance algorithm in easily. We implemented the algorithm visualizer project to visualize any algorithm using basic animation technics with react js.
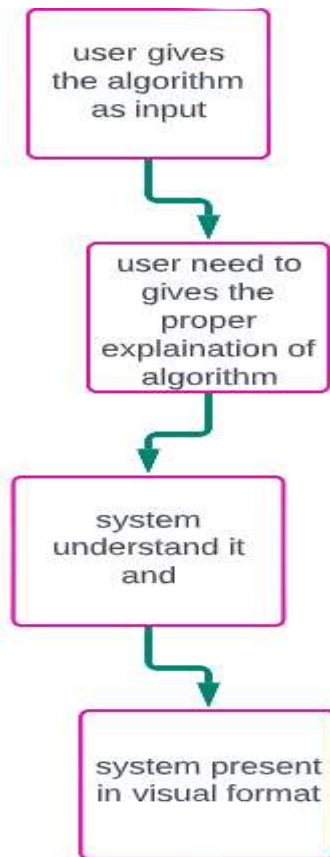
RESULTS AND DISCUSSION

- We conducted a survey to find out if there is any considerable impact in the people willing to choose the Algorithm Visualizer application with the proposed features. To our delight we found 10% increase in the overall survey result, that is, now 70% people are willing to refer to algorithm visualizer application with improved features for understanding algorithms as compared to 60% of last time.

- It has been found by researchers and scholars that when people try to memorize something in the form of a storyline or relating that aspect with daily lives then they are more likely to retain it for long period of time. Thus, the additional features will make the students retail the concepts for long and guide them to becoming specialists in this domain.

- Moreover, relating the concepts learns in course curriculum's to real life examples will develop a research perspective in students and knowing the actual working of anything around them will turn out to be their habit, thus, contributing to their knowledge.

- This improved application would enable the teachers to explain difficult topics with ease thus, helping them get off the burden. Also, the teachers themselves can come up with innovative ways of visualizations that can help improve the application's performance from time to time

CONCLUSION

we identify some issues by experiencing them ourselves in the present learning strategies in use and we tried to help better the scenario for aspiring students in this domain through or progressive web application. When we ourselves were learning the subject of algorithms in our curriculum, we found it a bit difficult to relate and understand the practical implementation of the algorithms owing to the difficulty in communication of the concepts from the teachers to the students. We found that there were no proper means that the teachers could adopt to portray their ideas in a better and easy manner in front of the students. So, we built an application which could help in the following ways: -

- It has been found that it becomes easier for humans to retain the concepts when learns through visuals than just textual or speech explanations.

- Application is extremely user friendly so people of any age can engage and start learning new things right away. The application would also include various fun filled activities like visualization through mazes and patterns.

- This application will also include a parameter of time complexity which will be displayed after the particular sorting algorithm has completed its execution for better comparison.

- Almost all the famous and important algorithms will be present in the application for visualization with both path-finding and sorting algorithms present in same application, thus making it a one stop destination for the students of this domain

- With the inclusion of the proposed features, the algorithm would not only help in better visualization and retention of concepts by students, but also, enable the students have a gradual and smooth transition from school level to college level of education, thus, enhancing their knowledge and productivity.

ACKNOWLEDGEMENT

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