OPTIMIZING LOADING PERFORMANCE ON THE SINGLE PAGE APPLICATIONS (SPA) USING PREDICTIVE FETCHING WITH A NOVEL COMPUTATIONAL INTELLIGENCE APPROACH

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<u>Abstract</u>

Websites usually load all the needed resource data either by pre-fetching or pre-loading and this could lead the websites to take a loading time from milliseconds to seconds depending on the size of the resources of the website. Major concerns in these two techniques are blindly loading entire resources at the load time and which might not even be used by the end-user or the browser at all and if the user does not navigate to a preloaded page in the background it's also a waste of bandwidth and not an optimized solution. Even though using the above two approaches will not completely solve the hypothesis in this research. Hence, a novel approach is suggested; which will predict and only fetch what is needed for the end-user to load the next page thereby it will not load all the unnecessary resources from the server to the browser and will increase the response time of a website while saving a huge cost for both website users and to the owners. With the above hypothesis following research is intended to use computational intelligence to predict the website's possible next page and load the relevant data to the browser with a higher level of accuracy.

Machine learning and advanced software engineering solutions are some key areas in the field of research. Therefore, in order to achieve the above-proposed goal, the system is enhanced with the following modules; Sample SPA website, Sample backend which is connected to the website and Prediction engine to predict the next possible page to visit. With a combined solution of the above three components, this research hypothesis is achieved.

Consequently, with the help of this solution, website navigation is optimized very well to suit the websites by using their navigation data collected in the server.

Subject Descriptors:

1. Predictive Fetching
2. Machine Learning
3. Navigation Optimization

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