Design and Performance Evaluation of Hybrid Wired-Wireless Network on Chip Interconnect Architectures

Priyanka Mitra, Bhavna Sharma, Vinay Kumar Chandna
and Vijay Singh Rathore

Abstract The increasing number of cores in multicores systems-on-chip requires efficient communication infrastructure to satisfy energy and bandwidth requirements of gigascale processors. Hybrid wireless network on chip suffers from the issue of congestion due to availability of single wireless communication within subnet. Thus, the proposed architecture Global Link Architecture (GLA) provides solution by using wireless links and global links. Such architectures improve network throughput and reduce latency by using intelligent routers that balance traffic load. Low cost and efficient deadlock-free deterministic routing schemes GAWIXY for GLA has been proposed to handle congestion of a network and to improve network performance of hybrid wireless network on chip. The proposed architecture has been compared with hybrid wireless network on chip architecture to show its improved performance.

Keywords Architecture · Congestion · Deadlock · Deterministic · Gigascale

1 Introduction

The communication subsystem called network on chip (NoC) [1] has been introduced that provides the network for complex MPSoCs, but the traditional NoC architecture designs suffer from the bottleneck of high power and transmission delays with the increased number of cores due to the use of metallic interconnects between cores.

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Improved Google Page Rank Algorithm

Abhishek Dixit, Vijay Singh Rathore and Anchal Sehgal

Abstract This paper is based on a Search Engine ranking algorithm. It proposes the technique for improving the page rank algorithm. The work focuses on the change in page rank algorithm, which helps in reducing the time complexity. We have calculated the normalized page rank by using the median value as it reduces the calculation work and time complexity. The comparison has been done between both the algorithms, i.e., old PR algorithm and the new proposed PR algorithm. This work also focuses on the research to increase the rank of the website. Various hybrid approaches are used to increase the rank of the website.

1 Introduction

This paper describes the algorithm and its application of Search Engine called Google and Optimization methods for a website and analyzes its effectiveness in the perspective of the search engine results [1]. It covers the various categories of techniques, keywords, old and new page rank calculation technique, algorithm, comparison, and its implementation [2]. Due to the swift growth of the Internet and the rapid increase in the number of websites available, it has become a tough task to search for best-existing sites for the searcher. According to a recent study, there are about 3 million new websites launched over the Internet per month [3]. Another study had proven that "the percentage of first visit to a website which comes from

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Impact of Try A-Gain—An Online Game App for Society

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Apoorva Agrawal, Ayush Khandelwal, Aman Vijay,
Divyang Bhargava and Aniket Dixit

Abstract In a period where antagonism is found in abundance and suicide rate is expanding at a disturbing rate, such positive applications are precisely what the world needs. Try A-Gain game app is designed to counter those games which are spreading negativity, such as Blue Whale Challenge suicidal game which is known to claim many lives across the globe. The Try A-Gain Game app appears like a lovely method for being appreciative for the life we have and benefit as much as possible from it. This game comes with a set of tasks that will instead have a positive effect on the player's life and helps player to bring him/her closer to self, family, friends, and nation.

Keywords Try A-Gain · Game app · Positivity game app

1 Introduction

The Try A-Gain App is an easily accessible task-based online game, diametrically opposite to the games spreading negativity across the globe such as Blue Whale Challenge game—linked to many deaths [1–3]. The game is developed with an attempt to bring happiness in the users' daily life while encouraging positivity toward life through generous acts using Internet.

It is an incredibly fun game that helps players in living every minute with a positive outlook, staying motivated, being happy, and making others happy. This game app

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Detection of Anomalous Value in Data Mining

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Abstract

In the database of numeric values, outliers are the points which are different from other values or inconsistent with the rest of the data. They can be novel, abnormal, unusual or noisy information. Outliers are more attention-grabbing than the high proportion data. The challenges of outlier detection arise with the increasing complexity, mass and variety of datasets. The problem is how to manage outliers in a dataset, and how to evaluate the outliers. This paper describes an advancement of approach which uses outlier detection as a pre-processing step to detect the outlier and then applies rectangle fit algorithm, hence to analyze the effects of the outliers on the analysis of dataset.

Keywords: Data mining, Anomalous Values, Attribute, rectangle fit algorithm, Quartiles.

1 Introduction

An anomalous value in database is solitary of the principle problems featured in data analysis and in the prediction. The belongings of these anomalous values are highly reflected on the final results. Our chief goal is to achieve the final result without error in the consolidated form, which is use to take decisions. There are various forms of anomalous values in the database, among those; outlier values case is one of the harder cases to recover.

In this study, a method of outlier detection is introduced and discussed which provides an approach to treat anomalous values. This step treats the anomalous block of values from a real- world imbalanced database.

To illustrate, some real application case for outlier detection are portray underneath.

Sentiment Analysis of Live Tweets After Elections

Palak Baid and Neelam Chaplot

Abstract Election plays an essential role in choosing the leader and deciding the future of the country for next few years. The proliferation of micro-blogging messages or tweets around the elections can be used to predict the sentiments of a person. Using text analysis different opinions and emotions can be identified and that concept is known as Sentiment Analysis or Opinion Mining. As the UP elections were completed and a lot of tweets were available in the research, live tweets were collected for five days during the elections. After collecting the tweets various operations were performed on the tweets and then analysis was done on the tweets to identify the sentiments of the people after election. The tweets were collected specifically related Mr. Yogi Adityanathth.

Keywords Sentiment analysis · Opinion mining · Tweets · R
YogiAditynath · U.P. election · Machine learning · Artificial intelligence

1 Introduction

Sentiment analysis, also known as Opinion Mining has attracted an augmented captivation. It is an arduous challenge for technologies involving language to achieve valid and logical results. There exist varieties of tasks which classify the data written in a natural language spontaneously into a positive or negative feeling, opinion, emotion or subjectivity which may sometimes be so complicated that even different human annotators are sometimes not willing to agree on the category to be assigned to the text. Personal interpretation by any individual may have discrepancies which may depend upon cultural factors and also upon an individual's experience. Also in short texts if not written properly, the task to interpret that text

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A Pioneering Encryption Technique for Images

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Abstract Security is the process that protects facts from accidental attacks. Now we are vastly depending on the Internet. We are conveying lot of facts via network. However, in numerous cases there is very less assurance for security. In many examples like military, industries, universities, medical fields, etc., conveying lot of images through communication channel. Protection is greatly required in countless fields in the present days. In our projected exertion, we are using CEILIDH method for encrypting and decrypting images. CEILIDH is a communal key cryptography scheme. It uses asymmetric input, in which both the dispatcher and beneficiary will be using secretive key and both of them know the communal key. For giving out communal key secretly, a honey encryption practice is used in our paper.

Keywords CEILIDH · Honey encryption · Communal key · Asymmetric

1 Introduction

In the contemporary world, we are habitually dependent on the Internet. We are transmitting lot of information through Internet. Sometimes we are sending much protected information. Examples like military, industries, universities, etc., have highly secure information. As Internet uses increases, hackers are also increased. Now it is the time for us to concentrate much on security. Many algorithms and concepts were introduced to secure information.

In our paper, we too focus on the security of images. As protection, for image is very much necessary in many fields. In our paper, we are using CEILIDH method for encrypting and decrypting images. As CEILIDH uses asymmetric key both the

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Novel Security Enhancement Technique for OCDMA and SAC OCDMA Against Eavesdropping Using Multi-diagonal Code and Gating Scheme

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Abstract Optical networks play a vital role in meeting demands like high data rates, high speed, and reliability in terms of security of user data. An enhanced security mechanism has been proposed to protect optical code division multiple access networks (OCDMA) against eavesdropping. In this paper, we have presented a novel technique for SAC (Spectral Amplitude Coding) OCDMA systems for enhancing data security and to exploit the capacity of an optical system. The novelty in our approach is that we have done layering of simple matrix-based Multi-Diagonal codes with low cost and less complex optical Ex-OR gates. We have incorporated data security using Multi-Diagonal (MD) code which can be simply constructed using matrix manipulation. In addition, network is protected from eavesdroppers by introducing optical Ex-oring between coded data with random key sequences. Combination of MD code with optical gate structure maintains data security to a very high extent compared to only codes used in optical system. The system design is simulated on OptiSystem-15 and Simulation work estimates the performance of proposed system in terms of bit error rate and Q factor with and without eavesdropping.

Keywords OCDMA · SAC OCDMA · Multi-diagonal code · Optical gate · Key sequence · Eavesdropping

1 Introduction

Optical Code Division Multiple Access (OCDMA) system is being used for the transmission of data using unipolar codes which provides Multiple Access Interference cancellation as well as reduction of various noises. In OCDMA, system coded data

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Supercontinuum Generation at 3100 nm in Dispersion-Engineered As$_{38.8}$Se$_{61.2}$-Based Chalcogenide Photonic Crystal Fibers

Shruti Kalra, Sandeep Vyas, Edris Faizabadi, Manish Tiwari and Ghanshyam Singh

Abstract The presented paper numerically investigates the mid-infrared supercontinuum generation of 3800 nm broad spectra spanning from 2000 to 5800 nm with nonlinear As$_{38.8}$Se$_{61.2}$ chalcogenide solid core photonic crystal fiber. The photonic crystal fiber is tailored to generate dispersion in anomalous region, resulting in zero-dispersion wavelengths. Pumping the engineered fiber with 1 kW power at 3100 nm near lower zero-dispersion wavelength a broad spectrum is observed.

Keywords Photonic crystal fiber (PCF) · Chromatic dispersion · Effective mode area (A$_{eff}$) · Nonlinear coefficient · Supercontinuum generation (SCG)

1 Introduction

The rapid growth in optical fiber since its advent has revolutionized the communications field and in addition significantly contributed to the other associated fields. Further, the rapid growth in technology has helped in translating the research, new

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