Testing of Swedish Execution Time Analysis Tool (SWEET)

Bal krishna Nyaupane
School of Innovation, Design and Engineering
Mälardalen University
Västerås, Sweden

Jan Gustafsson
School of Innovation, Design and Engineering
Mälardalen University
Västerås, Sweden

ABSTRACT
The main purpose of analysis of timing behavior of real time systems is to verify that the system meets its timing requirements. One important part of this analysis is to find the worst case execution time (WCET) of the software in the system. SWEET (Swedish Execution Time Analysis Tool) is a tool, developed at IDT in Västerås that calculates the WCET by static analysis. The calculated WCET must be safe, i.e., it must never underestimate the real WCET. This testing mainly focuses on verifying two requirements for SWEET. Firstly, we have created large programs (larger than 14 KLOC) to find the limits of the program size that can be handled by SWEET and observed the result and the analysis time for these programs. Secondly, we have created a number of useful examples to test special features of SWEET and to show how SWEET is capable to analyze different types of C programs.

A Comparative Study of Job Scheduling Algorithms in Cloud Computing

Narayan K.C.
Advanced College of Engineering and Management
Kupondole, Lalitpur, Nepal
narayanck@gmail.com

ABSTRACT
Cloud computing is a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications It is a kind of Internet-based computing that provides shared processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources which can be rapidly provisioned and released with minimal management effort. It is a new concept and based on the facts that reuse the resources of IT and its capabilities. This paper gives the brief introduction of cloud computing and also discusses the various issues in scheduling process in cloud computing and also proposes an optimal scheduling algorithm that could minimize the cost and completion time of a task. As we know that, Cloud computing is a technology where the user can pay only for the needed resources. Cloud computing is an attraction for many user as it offers access to computing resources form anywhere and anytime as they need.

Keywords: *Cloud computing, CloudSim, Data Center, IaaS, PaaS, SaaS, Scheduling, Round Robin, Genetic Algorithms*

Emerging Framework for Regulation of Over-The-Top (OTT) Services in SATRC Countries

Er. Bijay Kumar Roy
Technical Department, Nepal Telecommunications Authority (NTA)
Kamaladi, Kathmandu, Nepal
rbijay@gmail.com

ABSTRACT
The separation of application and network layers has enabled Over-The-Top (OTT) Service Providers to deliver their service directly to end users. OTT service refers application and services which are accessible over the internet e.g. Viber, Skype, WhatsApp, GoogleTalk, Facebook, Instagram, Netflix etc. OTT providers are said to be the "free riders" on the internet access network established by Mobile Network Operators (MNOs) or Telecommunications Service Providers (TSPs) or Internet Service Providers (ISPs) even though the TSPs or ISPs are paid for the transport of the data in the form of a flat rate or volume based charge by the users. OTT Service Providers are creating commercial as well as technical challenges to TSPs/MNOs/ISPs by providing services often free of charge and in direct competition to the TSPs/MNOs/ISPs services, thus eroding some of their most important revenue sources e.g. International Telephony and SMS services etc. South Asian Telecommunications Regulators' Council (SATRC) member states, which comprise SAARC countries along with the Islamic Republic of Iran, are facing challenges of regulating OTT services. This exploratory research proposes three strategies or approaches viz. Hands-free, Opportunistic and Collaborative strategy to deal with the OTT challenges. The member states may decide and implement which is appropriate in particular telecom market protecting the national interest.

Keywords: *OTT Sevices, SATRC, Viber, OTT Impact, OTT Challenges,TSP, ISP, MNO*

Extraction and Analysis of Retinal components using Morphological Operation

Pratik Shrestha
Department of Electronics and Computer Engineering
Advanced College of Engineering and Management
Kupondole, Lalitpur, Nepal
pratikstha440@gmail.com

ABSTRACT
This paper presents the way of extracting the retinal components using morphological operation. The major retinal components include Blood vessel and Optical Disc. The main significance of extraction of these components is to use it in biometric authentication system. Besides that, it can also be used in retinal disease diagnostics. In this paper firstly the image is desaturated, then it is enhanced. For the Blood vessel detection, Canny edge detection method is used with suitable parameters and later dilation is done. Similarly, for the Optical disc, binary threshold technique along with image dilation with suitable factor is used to segment the region of interest (ROI). For the analysis of obtained result, a desired image is drawn

using a Adobe Photoshop and then the obtained image is compared with desired image along with every pixel and matched pixel accuracy is calculated. Peak Signal To Noise (PSNR) value and Mean Square Error (MSE) is also calculated for both blood vessel and optical disc. Error in centroid of optical disc is also calculated between obtained centroid and desired centroid. In this paper, the whole experiment is conducted over 10 retinal fundus images.

GENETIC ALGORITHM FOR IMPROVING CLASS TIMETABLE

Ram P. Sapkota
Department of Electronics and Computer Engineering
Advanced College of Engineering and Management, Kupondole, Lalitpur, Nepal
ramsapkota3721@gmail.com

ABSTRACT
Timetable involves scheduling different set of resources by avoiding the conflict. Manual way of timetabling is more time consuming and laborious task. The paper describe about the solution of class timetable scheduling by implementing Genetic Algorithm, which comprises of various operations like chromosome representation, population generation, selection, crossover and mutation. Timetable is generated by satisfying all the hard constraints and soft constraints as much as possible, in which events are arranged into a number of timeslots such that conflicts in using the given set of resources are avoided. Finally the optimized timetable is obtained on the basis of fitness value compared.

Keywords: *Timetable, Genetic Algorithm, Chromosome, Fitness Function, Selection, Crossover, Mutation, Generation.*

A REVIEW ON OPEN SOURCE SOLUTION FOR CLOUD COMPUTING

Gajendra Sharma
Department of Computer Science & Engineering
Kathmandu University, Dhulikhel

Amrita Rai
Department of Computer Science & Engineering
Kathmandu University, Dhulikhel
amrita.rai@student.ku.edu.np

ABSTRACT
Cloud Computing is the latest evolution of internet based computing which assures to provide more flexibility, less expense, and more efficiency in IT services to end users. It is believed that governments, businesses and researchers all can benefit from the adoption of cloud computing services. The aim of this paper is to study four main open source cloud computing platforms available in the market. This paper also highlights their features and limitations which will definitely help service providers and enterprises for selecting best open source cloud computing solutions for their organization according to their needs.

Keywords: *Cloud computing, Open source, Information technology, Organization*

HUMAN AND WILDLIFE CONFLICT PREDICTION OF CHITWAN NATIONAL PARK USING DATA MINING

Samir Pokharel
Department of Electronics and Computer,
Pashchimanchal Campus, Pokhara, Nepal
samir.pokhrel02@gmail.com

Kshitij Wagle
Department of Electronics and Computer,
Pashchimanchal Campus, Pokhara, Nepal
kshitij.wagle@gmail.com

ABSTRACT
Human and Wildlife Conflict (HWC) has negative impact on socio-economic and cultural life. Knowledge discovery from past data records of human and wildlife conflict is vital in area near to the National Parks and Conservational Areas, which is quite challenging. In this paper, we predicted the maximum conflicted months and areas in Chitwan National Park. This is carried out using K Mode Clustering Algorithm with the help of data collected between 2064 and 2072 from Chitwan National Park, Nepal. K Mode Algorithm has been applied because of categorical data which select the attributes on information gain basis and delivers better result. This paper examines species-specific catastrophes, including buffer zones along with months or seasons of maximum attack which will be helpful to enhance preventive measures around park.

Keywords: *HWC, K-modes algorithm, Buffer zone, Categorical data*

Similarity analysis of images in Secret Fragment visible mosaic for Steganography – a study

S. Poudyal
Masters in Computer System and
Knowledge Engineering, Central Campus,
Pulchowk, Lalitpur
shambhabi.poudyal@gmail.com

S. P. Panday2
Masters in Computer System and
Knowledge Engineering, Central Campus,
Pulchowk, Lalitpur
sanjeeb77@hotmail.com

ABSTRACT
Steganography is the science of hiding secret messages into cover media so that no one can realize the existence of the secret data. Image mosaicing is a technique which enables to combine together many small images into one large image, from which, more information can be collected easily. "Similarity analysis of images in Secret Fragment visible mosaic for Steganography – a study" is basically focused on the necessity of the use of similarity analysis techniques for images when used for secret-fragment-visible mosaic for secured transfer of information containing images. A number of experiments have been performed using visibly similar and dissimilar images to analyze the importance of the use of similarity analysis techniques. The result obtained shows the necessity of similarity analysis techniques to identify the target image most similar to the secret image so that the error between the mosaiced image and the target image is as least as possible.

Keywords: *Secret-fragment-visible mosaic, Similarity analysis techniques, Steganography*

STUDY ON EFFECT OF SINTERING TIME ON THE BEHAVIOR OF (Ba PHASE TRANSITION 0.998La0.002) TiO3 CERAMICS

N. Shrestha
Department of Science and Humanities,
Advanced College of Engineering and
Management, Kupondole, Lalitpur, Nepal

B. P. Pokharel
Department of Science and Humanities,
Institute of Engineering,
Pulchowk, Lalitpur, Nepal

ABSTRACT
The purpose of the study is to find the effect of sintering time on the phase transition behavior of the Lanthanum doped Barium Titanate Ceramics. The (Ba0.998La0.002)TiO3 (BLT2) powders were synthesized using a dry route involving solid state thermo-chemical reaction in a mixture of BaCo3, La2O3, and TiO2. The powders were calcined at temperature 1100oC and are compacted to pellets using hydraulic press. The samples then were sintered at temperature 1300oC for 1hr, 3hr and 5hr to achieve above 96% of theoretical density. The structure of samples as obtained by XRD is tetragonal and the lattice parameter "a" was found to be decreasing with the increase of sintering time. During the heating mode at frequency 10KHz the transition temperature from ferroelectric to paraelectric phase for BLT2 was found to be 136oC, 134oC and 132oC sintered for 1hr, 3hr and 5hr respectively. And during cooling at 10KHz the transition temperature decreases which gives the thermal hysteresis of 3oC and 2oC for BLT2 sintered for 3hr and 5hr respectively. This shows that the ferroelectric transition is first order. Also the Curie temperature obtained from Curie-Wiess behavior for BLT2 sintered for 3hr and 5hr are 105oC and 98oC respectively which are lower than the transition temperature, confirming that the transition is first order.

Keywords: *Barium titanate, Lanthanum, Dielectric properties, Perovskite.*

Wireless Power Transfer System for Portable Electronic Devices

Ajay Kumar Sah
Department of Electronics & Communication Engineering
PU School of Engineering & Technology,
Biratnagar, Nepal
ajayshah2005@yahoo.com

ABSTRACT
Wireless power transmission is useful in cases where instantaneous or continuous energy transfer is needed, but interconnecting wires are inconvenient, hazardous, or impossible. In this paper, a simple design method of a wireless power transfer system for portable electronic devices using 13.56 MHz ISM band is proposed. The proposed wireless power transfer system consists of rectifier, oscillator, power amplifier, power coil, load coil and two intermediate coils as transmitter antenna and receiver antenna inserted between power coil and load coil.

Keywords: Wireless Power Transfer, Resonant coupling, Oscillator, Intermediate coils, Power transfer efficiency.

SUPER COMPUTING USING CLUSTER NETWORK (HYPE-II)

Santosh Pandey, Ram Sharan Chaulagain, Prakash Gyawali
069/BCT, Advanced College of Engineering and Management,
Kupondole, Lalitpur, Nepal
Email Address:
Santosh.pandey2222@gmail.com
rameskool@hotmail.com
hsageyolk@gmail.com

Abstract

"Super Computing Using Cluster Network" is a vision to achieve super computation speed through the network of simple commercial computers easily available in the market. The amount of data is increasing at a rapid rate and the need to compute these data at faster rate is also high. It deals with the speed and accuracy that is at high demand in sectors that handle large amount of data at a time or for large and complex computation and simulation tasks. With the help of this system the need of high performance at low cost and easy availability has been dealt with. The System is based on self-made distributed architecture without the use of any special libraries. The architecture performs the tasks of job division, handles task queue and result queue, schedules the tasks and supervises the worker nodes. The salient features of our architecture are plug and play software framework, dynamic worker addition and fault tolerance in case of Node failure. These features make our system one to be sought for in any company handling large amount of data that needs to be processed at fast rate.

VANET Analysis for Different Propagation Model on Real Traffic Scenario Using SUMO and NS3

K.K. Jha1 1 Metrological Forecasting Division, Department of Hydrology & Metrology, Ministry of Population and Environment, Nepal Email Address: krishna.k.jhaa@gmail.com

Abstract:

Vehicular ad hoc network (VANET) is a promising Intelligent Transportation System (ITS) technology, which enables vehicles to communicate with each other and roadside station, where nodes involve themselves as servers and/or clients to exchange and share information. VANET have some unique characteristics like high dynamic topology, frequent disconnections and restricted topology. The study of this study field is still simulation based, because of infeasible to use real vehicle in large scenario. The radio propagation model used in wireless has significant role on the performance of VANET. This paper studies performance of different radio propagation model like TwoRayGround, Rayleigh and Nakagami with 802.11p MAC protocol on VANET. The real traffic scenario mobility file has been generated using SUMO and the network simulation has been performed using NS-3. Packet delivery ratio and Throughput are used as parameter of the performance evaluation. Nakagami radio propagation model performs better than other two aforementioned methods.