“Lucian Blaga” University of Sibiu
Faculty of Sciences

Fourth International Students Conference on Informatics

„IMAGINATION, CREATIVITY, DESIGN, DEVELOPMENT”

Program & Abstracts

SIBIU, ROMANIA
May 15-17, 2014

Motto:

"There are no limits, only your imagination"

TOPICS

- Algorithms and data structures
- Graph theory and applications
- Formal languages and compilers
- Cryptography
- Modelling and simulation
- Computer programming
- Computer vision
- Computer graphics
- Game design
- Data mining
- Distributed computing
- Artificial Intelligence
- Service oriented applications
- Networking
- Grid computing
- Mobile operating systems
- Scientific computing
- Software engineering
- Bioinformatics
- Robotics
- Computer Architecture
- Evolutionary Computing
- Multimedia Systems
- Internet Communication and Technologies
- Web Applications

Organizer**: *„Lucian Blaga" University of Sibiu***
Faculty of Sciences
Department of Mathematics and Informatics
Informatics Team

Co-organizer**: *IQUEST Romania***

OBJECTIVES

The conference is addressed to bachelor and master level students. Conference aim is to bring together students from different universities from all over the world to discuss and present their researches on informatics and related fields (like computational algebra, numerical calculus, bioinformatics, etc) and their original results. The presentation should include also an informatics application. Pure theoretical results are accepted only if they introduce new concepts.

SCIENTIFIC COMMITTEE

- Prof. PhD. Grigore Albeanu - University of Bucharest, Romania
- Prof. PhD. Florian Boian - "Babes-Bolyai" University of Cluj-Napoca, Romania
- Prof. PhD. Alina Barbulescu - Ovidius University of Constanta, Romania
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- Prof. PhD. Klaus Bruno Schebesch, "Vasile Goldis" University, Arad, Romania
- Prof. PhD. Dana Simian - "Lucian Blaga" University of Sibiu, Romania
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- Prof. PhD. Mihai Talmaciu - University of Bacau, Romania
- Prof. PhD. Milan Tuba - Megatrend University of Belgrade, Serbia
- Prof. PhD. Dan Eugen Ulmet - University of Applied Sciences Esslingen, Germany
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- Assoc. Prof. PhD. Vasile Aurel Căus - University of Oradea, Romania
- Assoc. Prof. PhD. Ioana Chiorean - "Babes-Bolyai" University of Cluj-Napoca, Romania
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- Assoc. Prof. PhD. Adrian Florea - "Lucian Blaga" University of Sibiu, Romania
- Assoc. Prof. PhD. Petrica Pop - North University of Baia Mare, Romania
- Lecturer PhD. Mihaela Ciortea - "1 December 1918" University of Alba Iulia, Romania
- Lecturer PhD. Ralf Fabian - "Lucian Blaga" University of Sibiu, Romania
- Lecturer PhD. Daniel Hunyadi - "Lucian Blaga" University of Sibiu, Romania
- Lecturer PhD. Gabriela Moise - Petroleum-Gas University of Ploiesti, Romania
- Lecturer PhD. Corina Rotar - "1 December 1918" University of Alba Iulia, Romania
- Lecturer PhD. Florin Stoica - "Lucian Blaga" University of Sibiu, Romania
- Lecturer PhD. Anca Vasilescu - Transilvania University of Brasov, Romania

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- Assist. Laura Stoica - "Lucian Blaga" University of Sibiu, Romania
- Gheorghe Doda – Laboratory Assistant, "Lucian Blaga" University of Sibiu, Romania

CHAIRMAN OF THE CONFERENCE Prof. PhD. Dana Simian

SECRETARY

- Lect. Ralf Fabian
- Assist. Laura Stoica

STUDENTS COMMITEE

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- Robert Gusteriteanu - "Lucian Blaga" University of Sibiu, Romania
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- Cosmin Marian - "Lucian Blaga" University of Sibiu, Romania
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- Laurențiu Motoonu - "Lucian Blaga" University of Sibiu, Romania
- Stefania Sorina Vladu - "Lucian Blaga" University of Sibiu, Romania

Co-organizer: IQUEST ***IQUEST Romania***

Organized with support of Romanian Ministry of National Education

SPONSORS

EBS Romania – Expectations Beyond Software

ROPARDO

Global Solutions for Development

Top Tech

PAN FOOD

P R O G R A M

THURSDAY, May 15, 2014
Aula Magna,
Sibiu, Lucian Blaga st., No. 2A

8^{30} – 9^{30} Registration

9^{30} – 10^{00} Opening ceremony within the frame of the global event "***Anniversary international students conference. Research and education for a knowledge based society***"

10^{00} – 10^{45} Workshop: ***"What's Next for Online Advertising? - Present and Future Trends in Online"***; Speaker and mediator Adriana Puchianu - Senior Account Manager Google, Romania

10^{45} – 11^{00} Coffee break

Faculty of Sciences,
Sibiu, Dr. I. Rațiu st., No. 5-7
1st Floor, Room A18

11^{30} - 11^{45} Opening ceremony - ICDD conference at its 4th edition – Prof. Dana Simian, conference chair

11^{45} - 12^{15} EBS Romania – Company presentation with focus on students programs
Speaker: Raluca Bănilă

12^{30} - 14^{00} Lunch – University canteen

14^{00} – 16^{30} Papers presentation

16^{30} – 16^{50} Coffee break

16^{50} – 18^{50} Papers presentation

20^{00} – Dinner – University canteen

FRIDAY, May 16, 2014
Faculty of Sciences,
Sibiu, Dr. I. Rațiu st., No. 5-7
1st Floor, Room A18

$9^{00} – 9^{15}$ IT companies focus on students – ROPARDO presentation. Speaker: Gabriela Candea

$9^{15} – 11^{15}$ Papers presentation

$11^{15} – 11^{30}$ Coffee break

$11^{30} – 12^{30}$ Papers presentation

$12^{30} – 14^{00}$ Lunch – University canteen

$14^{00} – 16^{00}$ Papers presentation

IQUEST Office,
5 Nicolaus Olahus Street, Sibiu

$17^{30} – 18^{00}$ Welcome coffee

$18^{00} – 18^{30}$ IT companies focus on students – IQUEST presentation. Speaker: Valentin Ogrean

$18^{30} – 19^{00}$ Official closing ceremony

$19^{00} – 21^{00}$ Official conference dinner

SATURDAY, May 17, 2014

10^{00} Social program (Visiting ASTRA Museum, historic center, other museums)

PAPERS PRESENTATION

THURSDAY, May 15, 2014
Faculty of Sciences,
Sibiu, Dr. I. Rațiu st., No. 5-7
1st Floor, Room A18

$14^{00} – 16^{30}$ ***Chairman: Prof. PhD. Dana Simian***

1. Nebojsa T. Peric, Radmila Sekulic, Milos Jordanski**,** *Real-time edge detection for video capture,* University of Belgrade, Belgrad, Serbia, Teacher Coordinator: Milan Tuba.
2. Milos Jordanski, Nebojsa T. Peric, Radmila Sekulic, *Measuring the Similarity of Images Compressed Using JPEG Algorithm*, University of Belgrade, Belgrad, Serbia, Teacher Coordinator: Milan Tuba.
3. Petrescu Octavian Florin, *Web Content Management System using ASP .NET, C#,SQL Server and Windows Azure*, University of Pitesti , Piteşti, Romania, Teacher Coordinator: Maria Miroiu.
4. Eva Tuba, *Unlimited register machine simulator,* University of Belgrade, Belgrad, Serbia, Teacher Coordinator: Milan Tuba.
5. Florea Andrei George, Marica Constantin Ionuț, Liță Alexandru Marian, Dragomir Ionuț, *Plagiarism detector – Document Processing*, Petroleum-Gas University of Ploiesti, Ploieşti, Romania, Teacher Coordinator : Constantinescu Zoran, Nicoară Simona, Moise Gabriela.
6. Andrei Călbăjos, Bărbos Adrian, Kim Velker, *Student+ - an Android Application*, Tehnical University Cluj-Napoca, Cluj-Napoca, Romania, Teacher Coordinator: Dr.Camelia-M. Pintea.
7. Robert Săndică, Petrică Bota, *Kinect game,* "Lucian Blaga" University of Sibiu, Sibiu, Romania, Teacher Coordinator: Prof. PhD. Dana Simian.

8. Radmila Sekulic, Nebojsa T.Peric, Milos Jordanski, *Real-time shape recognition using contours and Hough transform*,University of Belgrade, Belgrad, Serbia, Teacher Coordinator: Milan Tuba.
9. Barbu Paul – Gheorghe, *Implementing a modular, extensible, yet small and cross-platform HTTP daemon,* "Lucian Blaga" University of Sibiu, Sibiu, Romania,Teacher Coordinator: Adrian Florea.
10. Maria Sokolova, *The logistics management a transportation system «point of departure – point of destination» in real time regime,* Vladimir State University, Rusia,Teacher Coordinator: Prof.dr.Vladimir Chernov

16^{50} – 18^{50} *Chairman: Prof. PhD. Milan Tuba*

1. Cosmin Constantin Calin , Diana Maria Duca, *Drive Me-A easy way to orientation*, "Lucian Blaga" University of Sibiu, Sibiu, Romania, Teacher Coordinator: Dana Simian, Daniel Hunyadi.
2. Istvan Beniamin Pallo, *Alarm modules, a necessity for industrial software*, "Lucian Blaga" University of Sibiu,Sibiu,Romania, Teacher Coordinator: Dana Simian.
3. Emanuel Silivă□an, *Tursib4iPhone Public transport in Sibiu made easy*, "Lucian Blaga" University of Sibiu, Sibiu, Romania, Teacher Coordinator: Delilah Florea, Adrian Florea.
4. Gyunesh Shefkedov, *J2XML Metro Converter*, Teacher Coordinator: Senior Assistant Valentin Velikov
5. Daniela Ilie, Ionut Hodina, Lucian Oprea, *QuickThink* , "Lucian Blaga" University of Sibiu, Sibiu, Romania,Teacher Coordinator: Daniel Hunyadi.
6. Victor Gheorghe Rusu, *Workflow management using QR codes*, "Lucian Blaga" University of Sibiu, Sibiu, Romania, Coordinator: Ralf Fabian
7. Mykhailo Dorokhov, Mariia Honcharova, *Improving word learning experience using spaced repetition technique implemented in Windows Phone 8 application,* Simon Kuznets Kharkiv National University of Economics, Kharkiv, Ukraine, Teachers Coordinators: Iryna Ushakova, Snezhana Lembik.

FRIDAY, May 16, 2014
Faculty of Sciences,
Sibiu, Dr. I. Rațiu st., No. 5-7
1st Floor, Room A18

9^{15} – 11^{15} ***Chairman: Prof. PhD. Milan Tuba***

1. Cristian-Ionel Aldulea, Teodora-Vanessa Gligor, Delia-Elena Iuga, *Shop4j*, Transylvania University of Brasov, Braşov, Romania, Teacher Coordinator: Silviu Razvan Dumitrescu.
2. Iulia Ştirb, *Comparison between the Optimization Techniques of Image Filters Used to Improve Optical Character Recognition*, "Politehnica" University of Timisoara, Timişoara, Romania, Teacher Coordinator: Horia Ciocârlie.
3. Iulia Ştirb, *Highlight Image Filter Produces Outstanding Results in Optical Character Recognition*, "Politehnica" University of Timisoara, Timişoara, Romania, Teacher Coordinator: Horia Ciocârlie.
4. Georgi Chavdarov, *PCTVPlay – advanced media player*, University of Ruse, Ruse, Bulgaria, Teacher Coordinator: Assoc. Prof., PhD Katalina Grigorova.
5. Atanas Anastasov, *Genealogy Web Based System*, University of Rousse, Ruse, Bulgaria, Teacher Coordinator: Galina Atanasova.
6. Octavian-George Cimpu, *The Future of Augument Reality*, Transylvania University of Brasov, Braşov, Romania, Teacher / Coordinator: Anca Vasilescu.
7. Dagmawi Zegeye, *On Investigating Promoter Areas for Regulatory Motifs in the Solanum Lycopersicum Genome*, The College Of Wooster, United States of America, Teacher Coordinator: Sofia Visa, Esther Van der Knaap.
8. Bogdan Mihai Fieraru, Vasile – Sebastian Vidrea, Sorina – Gabriela Irimie, My Virtual Trainer An application to get you fit in no time, Transylvania University of Brasov, Braşov, Romania ,Teacher Coordinator: Anca Vasilescu.

11^{30} – 12^{30} *Chairman: Lecturer PhD. Florin Stoica*

1. Marius-Alin Ţăpordei, *3D Modelling of a Restaurant,* University of Craiova, Faculty of Mathematics and Informatics, Craiova, Romania, Teacher Coordinator: Dana Dănciulescu.
2. Vlad Ionescu, Vlad Murzea, Emanuel Giurgiu, *Android Application for Just in Time Services*, Transylvania University of Brasov, Brasov, Romania, Teacher Coordinator: Anca Vasilescu
3. Bogdan Cimpoesu, Radu Cigmaian, *Concepts and technical solutions for building scalable cloud applications*, "Politehnica" University of Timisoara, Timisoara, Romania, Teacher Coordinator: prof. univ. dr. ing. Mircea Vladutiu.
4. Vasil Tsolov, *Real-time palm detection and animation,* Technical University of Sofia, Sofia, Bulgaria, Teacher Coordinator: Milena Lazarova.

14^{30} - 15^{30} *Chairman: Prof. PhD. Dana Simian*

1. Kristina Petkova,Lyudmila Dimitrova, *Probabilistic model for quantitative risk assessment of traffic accidents in Bulgaria,* Technical University of Sofia, Sofia, Bulgaria.
2. Kristina Petkova, *Screen Resolution Invariant Pattern Matching*, Technical University of Sofia, Sofia, Bulgaria, Teacher Coordinator: Assoc. Prof. PhD Milena Lazarova,Consulting Expert: Assoc. Prof PhD Hristo Aladjov.
3. Narine Manasyan, *Theoretical Bases of Building a Decision Support System (Dss) for Developing Regional Innovation Program*, Vladimir State University, Vladimir, Rusia, Teacher Coordinator: Vladimir Chernov.
4. Gerhard Konnerth, *Computing Functions on Android,* "Lucian Blaga" University of Sibiu, Sibiu, Romania, Teacher Coordinator: Delilah Florea, Adrian Florea.

WORKSHOPS

THURSDAY, May 15, 2014
Aula Magna,
Sibiu, Lucian Blaga st., No. 2A

10^{00} – 10^{45} Workshop: ***"What's Next for Online Advertising? - Present and Future Trends in Online"***; Speaker and mediator Adriana Puchianu - Senior Account Manager Google , Romania

Students: Emil Alexe, Eugen Bobeş, Alexandra Ghiocel, Viorel Zamfirescu, Motonu Laurentiu, Robert Meder, Andra Moisei, Viorel, Toma Marius - "Lucian Blaga" University of Sibiu, Sibiu, Romania ULB Sibiu

Faculty of Sciences,
Sibiu, Dr. I. Rațiu st., No. 5-7
1st Floor, Room A18

11^{40} - 12^{20} Workshop: ***"EBS Romania Company focus on students programs"***

Speaker: Raluca Bănilă

Students: Weber Jessica, Cojan Paula, Potop Andreea, Maria Lazar, Stefania Sorina Vladu, Viorica Cioară - "Lucian Blaga" University of Sibiu, Sibiu, Romania

FRIDAY, May 16, 2014
IQUEST Office,
5 Nicolaus Olahus Street, Sibiu

18^{00} - 18^{30} Workshop: ***"IQUEST Company focus on students programs"***

Speaker – Valentin Ogrean

*Students:*Tecsa Simona, Ion Ureche, Gusteriteanu Robert, Motonu Laurentiu Viorica Cioară - "Lucian Blaga" University of Sibiu, Sibiu, Romania

ABSTRACTS

Shop4j

Cristian-Ionel ALDULEA, Teodora-Vanessa GLIGOR, Delia-Elena IUGA
Coordinator: Silviu Razvan DUMITRESCU

Our project is an online store that enables administrators to configure and organize their online business dynamically, and allows customers an easy way to navigate and purchase products. Therefore, the administrator can define the desired categories, add or remove products, sizes for products and can manage discounts. Costumers can change personal data, security data, recover their password, send orders, view history of orders, return orders, add and remove products from the cart. To provide ideas to our clients, our project implements a recommendation system which provides the most suitable products with the customer profile.

Genealogy Web Based System

Atanas ANASTASOV
Coordinator: Galina ATANASOVA

This paper presents a Genealogy Web Based System. This application allows its users to maintain the information of his/her family and the tracing of its lineages and history. There are researched some applications in this subject and their features are summarized. It is described the approach for Genealogy Web Based System creation.

Implementing a modular, extensible, yet small and cross-platform HTTP daemon

Paul – Gheorghe BARBU
Coordinator: Adrian FLOREA

HTTP daemons have become a fundamental part of the web as we know it. This paper presents from a high-level perspective how a HTTP daemon works and how one can be implemented in order to serve static _les and even dynamic content. The HTTP daemon presented here is implemented in such a way that it allows programmers to extend it's functionality and, due to the small size and modularity of the components, even to modify it's inner mechanisms. In aid of that goal the Qt1

framework is used, combined with the C++ programming language in order to keep the daemon's resource usage at a minimumand to maintain portability.

Student+ - an Android Application

Andrei CĂLBĂJOS, Adrian BĂRBOS, Kim VELKER
Coordinator: Camelia T. PINTEA

The current paper illustrates a new Android application designed for student groups. Student+ is the name of the newly introduced application. The specific components and the way to use it are explained. Significant images are showing the user-friendly interface. The application could be further enlarged including specific applications for companies.

Drive Me-A easy way to orientation

Cosmin Constantin CĂLIN , Diana Maria DUCA

The aim of this paper is to presentate an original Windows8 app, designed to support the tourists to find the road to tourist attractions, restaurants, shops and exchange offices in a new city. With a simple click you can see the distance and the road map to a selected destination.

PCTVPlay – advanced media player

Georgi CHAVDAROV
Coordinator: Katalina GRIGOROVA

Millions of people worldwide are using the PC as a way for watching movies. Millions of people use their computers as a TV, but they have to control them like a computer. But now it's time for a revolution - media player, driven by remote control from a distance, with the ability to visualize the internet TV channels, movies and play music. The presented application PCTVPlay helps the users to control their computers without getting up from their place.

Concepts and technical solutions for building scalable cloud applications

Bogdan CIMPOESU, Radu CIGMAIAN
Coordinator: Mircea VLADUTIU

The web is becoming a predominant platform for developing rapid software solutions. Currently there are multiple solutions available for building network applications. When starting from scratch questions like "what should I use?", "how can I scale my application?", "how can I get the performance avoiding high costs?" and others pop up. Finding answers to all this questions is time consuming and hard to get.

The Future of Augument Reality

Octavian-George CIMPU
Coordinator: Anca VASILESCU

Purpose – This article aims to introduce the reader in the astonishing world of augument reality. It presents general information on augument reality, a market research and the possibilities of development in that direction. The goal is to present a new concept about 'reality', the result consisting of an element that the eye can see but the hand cannot touch.
Research limitations/implications – The reliability of the research presented below is however limited, as the augument reality itself is an evolving technology in the phase of market introduction. Documentation is rare and vague, so is the community, and the good hardware is hard to get.
The definition and characteristics of augument reality are still uncertain. Still, if you think out of the box, you will see beyond the concept of augument reality and get an image on its potential. If we take a look at the big companies on the market, we will notice a huge growth in this area. Combining the needs of our society with new innovative ideas, the possibilities are unimaginable.

Improving word learning experience using spaced repetition technique implemented in Windows Phone 8 application

Mykhailo DOROKHOV, Mariia HONCHAROVA
Coordinators: Iryna USHAKOVA, Snezhana LEMBIK

How do we learn a foreign language? There are usually two parts – grammar and vocabulary. Many grammar manuals provide well-structured information and useful grammar references. Although, training vocabulary skills is still a time-consuming process. When there is a need to learn a new set of words by heart, it is usually a challenge for a student who starts leaning a new language.
That is why those who learn a foreign language often seek for a new and efficient way to do it. And as usual, if consumer needs something, it appears. Nowadays, several services exist as a web application or as a mobile application to help learners to memorize words. Wordsteps.com provides web-service and mobile application, in which you can choose a package of words of certain theme. However, if you have a need to learn your own list of words, the application has no support for this scenario. Memrise is an android application with similar functionality has defined word dictionaries but has a lack of flexibility.
Unlike previous applications, Wordile is Windows 8 modern-style application, which supports possibility to create your own word packages and train them. This is great for those students, who learn a language with teachers giving them texts to learn thus, there is a need to learn by heart with

the vocabulary in the text. Nevertheless, the disadvantage is that Wordile has only one type of training that is just typing the word without even translating it.
What if one could take the most useful features from all of existing application and embody tham into one?
So, it should be with the features as follows:
- Creating and managing your own wordbook, where user shall have the possibility to add words or delete them if necessary, and always have beautiful, well-organized list of the words right in the application;
- Various tests based on the words from the wordbook.
Set of words in each test is selected according to spaced repetition technique. The idea is that every word has its own level of strength (how well it is known). To get a word into user's long-term memory, firstly a word should appear frequently, and when user more or less familiarizes him/herself with it, the application starts to ask the word with descending frequency. And this is how words cannot "go in one ear and out the other", but will stay in the memory for the long period of time, and be always fresh in one's mind.
Another issue was complete lack of tools or applications in which all the distinctive features of French language were been taken into account. For almost all the students who learn French there are two main difficulties. First necessity is to learn by heart genders of all the nouns in order to put the right article in front of a word, and the second is to know both variants of adjectives. Thus, for French learners it is important not just to memorize the words, but to memorize two (or sometimes three) forms of adjectives.
That is why the task was to set up creation of the application with all features described for the French language learners. Windows 8 was chosen as the most promising platform to distribute the application, C#/XAML as the most convenient and reliable technology for Windows 8 modern application development.

My Virtual Trainer
An application to get you fit in no time

Bogdan – Mihai FIERARU, Vasile – Sebastian VIDREA, Sorina – Gabriela IRIMIE
Coordinator: Anca VASILESCU

Abstract: This is an application developed for Android smarphones using Java programming language. It is designed for people who want to start to train in a gym and it's puropose is to generate a training considering the user's profile or allow him to customize his own. This application also provides the option to track user's progress and an overall view of all the exercices organised by muscle groups.

Plagiarism detector – Document Processing

Andrei George FLOREA, Constantin Ionuț MARICA, Alexandru Marian LIȚĂ, Ionuț DRAGOMIR
Coordinators : Zoran CONSTANTINESCU, Simona NICOARĂ, Gabriela MOISE

In the academic world, the most common type of fraud is plagiarism, which means copying certain parts (paragraphs, pictures, …) belonging to other authors into your own document and not declaring (or correctly declaring) the author.
The application was built entirely by students belonging to the T.I.M.F department, under the supervision of the teachers from the Computer science section.
The purpose of the application is to provide an accessible, on-line method of checking various documents in an attempt to deconspire the above mentioned type of fraud.
This article describes the architecture and basic functioning of Plagiarism detector, and focuses on document processing.

QuickThink

Daniela ILIE, Ionut HODINA, Lucian OPREA
Coordinator: Daniel HUNYADI

Do you think that mobile devices will be in short time the center of what means high level technology and the best way to use it daily? We think it's an obvious answer of 'yes'.
Technology will be more and more present in our life and people will assimilate it as 'must-use' or 'must-have' to make easier and safer our life. With these said, entertainment can't be left behind.
When we speak about making an app it is not important anymore the mobile platform chosen. The real utility and simplicity to use we think it's the main reason for starting developing. There are a lot of apps that facilitate fetching and sharing information, but the ordinary user should be concerned by the level of thinking involved when using these. There is a big difference between having a car with sensors for collisions, parking assistant and a full self-driving one.
Our application represents a small game that provokes your quick thinking and shows you how fast your brain reacts at an easy question. We are students, we like to race each other so, for us, this game is catchy and challenging.

Android Application for Just in Time Services

Vlad IONESCU, Vlad MURZEA, Emanuel GIURGIU
Coordinator: Anca VASILESCU

How many times did it happen to you to go to a hairstylist, for instance , and couden't find a free space? That's why my collegues and I tought we can find a solution for this problem. We made a Android Application and a Web Site where the user inserts a date , a hour and what is he looking for and the App gives back a list of all the places, in that domain, that are free at that timestamp. How doese it work? We created a database on the internet and the App takes its data from there. All the shops that use the aplication will be able to manage the appoiments in real time. With the help of

this App no one will have to stay at unfinishible lines. For this Android Aplication and web site we used : wordpress platform , eclipse, PHP, Adobe Photoshop.

Measuring the Similarity of Images Compressed Using JPEG Algorithm

Milos JORDANSKI, Nebojsa T. PERIC, Radmila SEKULIC
Coordinator: Milan TUBA

The purpose of this paper is to present the similarity of images compressed using JPEG image compression algorithm. The measure of image similarity is very important for image compression algorithm. JPEG is commonly used method of lossy compression for digital images. The degree of compression can be adjusted, allowing a selectable compromise between image quality and size. JPEG uses a discrete cosine transform on blocks of 8*8 pixels transforming spatial domain into the frequency domain. The main lossy operation in the whole process is done by neglecting less important frequency coefficients. Which coefficients are less important is determined by quantization matrices. Matrices can be adjusted for different types of images. The similarity of the original and compressed image depending of different quantization matrices are described. Software system for the evaluation of the quality of compressed JPEG images is developed with corresponding graphical user interface.

Computing Functions on Android

Gerhard KONNERTH
Coordinator: Delilah FLOREA, Adrian FLOREA

"Algebra Helper" is an application developed for the operating system Android, used by mobile devices. It is applicable in the scientific area through the following mathematical functions: Calculation of a complex mathematical expression containing no variables, simplifying mathematical equations containing one or more variables up to a certain stage and definition of personalized mathematical funct ions.

Theoretical Bases Of Building A Decision Support System (Dss) For Developing Regional Innovation Program

Narine MANASYAN
Coordinator: Vladimir CHERNOV

In the transforming economic environment the prevalence of the class of ill – structured problems, among them also the development of an innovation program, demands introduction of

DSS in the decision making process which shall maximally meet the problem being solved, as the modern computer technologies perform not only computing operations, but also structuring etc.

Alarm modules, a necessity for industrial software

Istvan Beniamin PALLO
Coordinator: Dana SIMIAN

The aim of this paper is to emphasize the importance of alarm modules and to present the design and implementation of such a module embedded in GeoTrekker[1] software. GeoTrekker is a SC Daflog SRL software solution used for drilling installations.
The alarm modules are used for monitoring complex systems and must be able to notice using visual; audio or other kind of signals the appearance of an unwanted event. The alarm modules are necessary in the case of systems dependent of many parameters which must be kept in a given interval. The simultaneous monitoring of all parameters cannot be made efficiently and rigorous by human operators. The values of parameters can be vital not only for the functioning of system itself but also for the safety of operators and of the environment in which the system is located
The task of GeoTrekker software is to trace about 145 of drill parameters in each second of time. Monitoring so many parameters with such time frequency and acting properly in each situation is impossible to be made only by human operator.

Screen Resolution Invariant Pattern Matching

Kristina Petkova
Coordinator: Milena Lazarova
Consulting Expert: Hristo Aladjov

Pattern matching is a common problem in navigation through window-based software. An operation is required each time a button, link or slider should be located in the user interface. For example, the mouse has to be positioned over the item, then clicking, dragging or dropping should be executed. The navigation process could further be automated in order for software to be able to navigate for the user. Automatic navigation in the user interface is very convenient when defining scripts for regularly executed routines. Software systems do not provide possibility for a person to find the desired navigation elements without interaction. This paper proposes a simple but still efficient algorithm for automatic navigation in a software system user interface. The automatic navigation is based on a predefined target template of the user interface layout that is used for pattern matching and positioning over required navigation element. The suggested approach is implemented as a software solution that does not use external software libraries and thus is easily portable and platform

[1] GeoTrekker is property of SC Daflog SRL. Code used with permission.

independent. It is also optimized to find a fast solution to the pattern matching problem and to provide flexible and efficient automatic navigation.

Probabilistic model for quantitative risk assessment of traffic accidents in Bulgaria

Kristina PETKOVA
Lyudmila DIMITROVA

Bayesian Networks (BNs) are well suited tool for uncertain knowledge representation. In the present work a BN model for risk assessment of traffic accident in Bulgaria is proposed. AgenaRisk software was used to evaluate the model parameters. Statistical data is used for traffic accidents in our contry. Usage of our model for quantity risk assessment is demonstrated in various situations.

Web Content Management System using ASP .NET, C#, SQL Server and Windows Azure

Octavian Florin PETRESCU
Coordinator: Maria MIROIU

This project is a Web Content Management System (WCMS) developed on ASP .Net Platform using C# programming language. The project was realized in a desire to implement a platform for creating web pages that is easy to use even for users without knowledge in the domain. Projects that belong to the same range are Umbraco, Sitefinity, Kentico etc. The project consists of several parts: Business, DomainModel, DAL, enums and WCMS, and to store the content of the pages is used a Microsoft SQL database. This platform differs from other WCMS sites by using user controls and the control DynamicControlsPlaceHolder. This creates a hierarchy of persistent assets contained in a page, that don't need to be recreated after postback. Another difference is the fact that it is hosted using the Windows Azure.

Real-time edge detection for video capture

Nebojsa T. PERIC, Radmila SEKULIC, Milos JORDANSKI
Coordinator: Milan TUBA

In this paper we will introduce a way how to detect edges in real-time for video capture. Edge detection is a fundamental part of many algorithms, both in image processing and in video processing. Therefore it is important that the algorithm is efficient and fast to carry out. Efficiency is of particular importance when processing is performed on live coverage of an event where we need

to make some conclusions. One example that motivated us is live coverage of a football match when we need to decide if the ball has crossed the line or if we need to track player movement or calculate some statistics like ball possession and other. In this paper we will describe edge detection methods for image processing and how will we use it for video capture. Also we shall present a fast working solution for this problem.

Kinect game

Robert SĂNDICĂ, Petrică BOTA.
Coordinator: Dana SIMIAN

Motion Ball is an interactive, 2D, Kinect game with the purpose of making people exercise while having fun. The game sparks your interest with its simplicity and keeps you entertained with its competitive nature.
Motion Ball is programmed in Visual Studio 2013 on the XNA 4.0 framework. It implements libraries offered by the .Net framework with motion trackers conveyed by the Kinect sensor in order to usher a new experience.
Though it is presented on a simple format as of now, we strive to implement new features and possibly even 3D characters in the near future.

Real-time shape recognition using contours and Hough transform

Radmila SEKULIC, Nebojsa T. PERIC, Milos JORDANSKI
Coordinator: Milan TUBA

In this paper an approach to detecting two-dimensional shapes is proposed. Firstly, different types of edge operator detectors which minimize both noise errors between the input and the filtered output are derived. Secondly, an investigation into how an error propagates in relation to shape geometry. This enables to predict localization and detection of contour tracking in video. In many cases, boundary shape information, such as rectangular shapes of vehicles, seems to play crucial roll. This paper proposes shape recognition method where circle, rectangle and triangle object in the image will be recognizable.

J2XML Metro Converter

Gyunesh SHEFKEDOV
Coordinator: Valentin VELIKOV

We live in a world where life without a computer would be impossible. But real architects of this modern world – software developers need more and more flexibility in software development

process. The presented metro application J2XML (converter) helps developers to convert java code to xml and vice versa in windows 8/8.1.

Tursib4iPhone
Public transport in Sibiu made easy

Emanuel SILIVĂŞAN
Coordinator: Delilah FLOREA, Adrian FLOREA

The fast paced evolution of technology and the need of the public to use devices that ease and enhance the way of life was the reason for developing this application. Thanks to the continuous size reduction of mobile devices and the increase in their performance, applications are becoming an asset in the life of each individual. Designing applications which make living in a city more convenient, which lighten traffic conditions, reduce pollution and that improve tourism are very important for the hustle and bustle of large cities. In the city of Sibiu, public transport is outdated but it is still used by all ages. Nowadays the younger citizens and tourists have a smartphone and an application that monitors the bus timetable offline and information of passing buses nearby would be very useful for planning and maybe for avoiding crowded transport and congested traffic.

The logistics management a transportation system «point of departure – point of destination» in real time regime

Maria SOKOLOVA
Coordinator: Prof.dr.Vladimir CHERNOV

The paper illustrates the using of Neural Fuzzy Inference Systems for solving a particular problem and describes possible solutions of the problem in the program MATLAB. The problem is defined and the steps to solve the problem are detailed. The paper shows the impact of experimental data on the quality of the results.

The fuzzy linguistic variables and the some images of the program MATLAB are shown and explained. The obtained results of using ANFIS to solve the problem are analyzed.

Comparison between the Optimization Techniques of the Image Filters Used to Improve Optical Character Recognition

Iulia ŞTIRB
Coordinator: Horia CIOCÂRLIE

Image filtering is changing the appearance of the image by altering the shades and colors of the pixels. Increasing the contrast as well as adding a variety of texture, tones and special effects to images are some of the results of applying image filters in order to improve the OCR (Optical Character Recognition) rate of success. Still the main purpose is reducing the noise of the image. Within Silicon and Software System Limited (S3Group) Company from Dublin, Ireland, the usage of the image filters the were described in this paper would be to improve a subsequent OCR which is part of the process of testing set-top boxes by swapping between settings that are displayed on the menu of the output video of the set-top box under test.

This paper presents Contrast, Sharpen, Blur, Invert, Color and Highlight, the new image filter that I have developed and gather the particularities of each of this filters. Next, the focus is on the optimization techniques and on the analysis of which better suits to be applied to each of this filters in order to make them perform faster. The optimization that produces the best improvement in terms of execution time for all filters above is done using a byte array to store the components i.e. Alpha, Red, Green, Blue of each pixel. Two other optimizations will be described, one using C# predefined ColorMatrix class for improving Contrast filter even more and the other by computing just once the filter weight for all pixels in the interior of the image in the case of Sharpen and Blur filters.

Highlight Image Filter Produces Outstanding Results in Optical Character Recognition

Iulia ŞTIRB
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Image filtering is changing the appearance of the image by altering the shades and colours of the pixels. Increasing the contrast as well as adding a variety of texture, tones and special effects to images are some of the results of applying filters. Still the main purpose is reducing the noise of the image. Within Silicon & Software Systems Limited (S3Group) Company, image filters improve the process of testing set-top boxes by using optical recognition of the current settings that are displayed on the output video of the set-top box under test. The important role played by image filters in improving a subsequent OCR (Optical Character Recognition) processing on images was the reason I created two new efficient filters that will be presented in this paper.
The first filter that is named Smart Contrast, increases the contrast of the image in a way depending on the value of each component (Red, Green and Blue) of each pixel in the image.
The second filter, called Highlight, produces outstanding results when it comes to perform an OCR on the filtered image. As it is carried out, the implementation differs from all other known filters, while the visual effect on the filtered image can be described as a combination between the way contrast is increased as said before with other two visual effect: sharpening and highlighting the edges. Precisely, this way of combining the resulting visual effect makes the filter so powerful in improving OCR on images which contain text.

Real-time palm detection and animation

Vasil TSOLOV
Coordinator: Milena LAZAROVA

The paper is aimed at real-time hand palm detection and tracking. The process of palm detection is described and implemented as an algorithm based on background subtraction, skin detection, finding the biggest skin contour and points of interest on it. The palm detected is then used for real-time gesture driven animation of the human hand. The developed solution can be utilized in video games as well as other applications that can take advantage of such augmented reality gesture-based human computer interaction.

Unlimited register machine simulator

Eva TUBA
Coordinator: Milan TUBA

One of the fundamental questions that the theory of computation deals with is whether a particular problem is algorithmically solvable or not. The theory of computation also examines the resources needed for solving the problem. For researching these questions mathematical abstractions of machines for computations were developed. This paper covers one of the aforementioned models, unlimited register machine, URM. It presents simulation of the device giving the user full control over the registers and command lines and allowing him to watch problem solving in real time while choosing the speed of commands execution. Few of the algorithms for URM programs are presented.

3D Modelling of a Restaurant

Marius-Alin ȚĂPORDEI
Coordinator: Dana DĂNCIULESCU

This paper is about to describe the 3D Modelling Design technology of a restaurant. You will see how can be created a 3D Model starting from an AutoCAD plan, using 3Ds Max. The final changes are made with Photoshop.

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On Investigating Promoter Areas for Regulatory Motifs in the Solanum Lycopersicum Genome

Dagmawi ZEGEYE
Coordinator: Sofia VISA, Esther VAN DER KNAAP

Promoters are very important for gene expression, but at the same time are difficult to identify in particular because they can occur anywhere up to 3,000 nucleotides upstream of a gene. Here we computationally investigate potential promoters in the 1,000 and 3,000 bases promoter regions of 79 tomato fruit genes of interest. The potential promoters found in the 1,000 bases region are also found in the 3,000 bases region albeit rather diluted. However, we find that most of the potential promoters found in the 3,000 bases region are not present in the 1,000 bases region.

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