The IADIS European Conference on Data Mining 2011 took place in Rome, Italy, 24-26 July, 2011. This conference was part of the Multi Conference on Computer Science and Information Systems 2011 (MCCSIS), 20 - 26 July 2011, which had a total of 1402 submissions.

The IADIS European Conference on Data Mining (ECDM'11) aimed to gather researchers and application developers from a wide range of data mining related areas such as statistics, computational intelligence, pattern recognition, databases and visualization. ECDM'11 had the goal to advance the state of the art in data mining field and its various real world applications. It provided opportunities for technical collaboration among data mining and machine learning researchers around the globe.

The IADIS European Conference on Data Mining 2011 received 102 submissions from more than 24 countries. Each submission had been anonymously reviewed by an average of four independent reviewers, to ensure that the final accepted submissions were of a high standard. Consequently only 16 full papers were published which meant an acceptance rate below 16%. A few more papers were accepted as short papers, reflection papers and posters. The best paper authors were invited to publish an extended version of their paper in the IADIS International Journal on Computer Science and Information Systems (ISSN: 1646-3692) and also in other selected journals, including journals from Inderscience.

The submissions were accepted under the following areas of interest:

**Core Data Mining Topics**
- Parallel and distributed data mining algorithms
- Data streams mining
- Graph mining
- Spatial data mining
- Text video, multimedia data mining
- Web mining
- Pre-processing techniques
- Visualization
- Security and information hiding in data mining

**Data Mining Applications**
- Databases
- Bioinformatics
- Biometrics
- Image analysis
- Financial modeling
- Forecasting
- Classification
- Clustering
- Social Networks
- Educational data mining

Besides the presentation of full papers, short papers, reflection papers and posters, the conference also included one keynote presentation from a internationally distinguished researcher, Professor Domenico Talia, University of Calabria & ICAR-CNR, Italy.


Overall the Conference offered an opportunity to all their participants to discuss with success the most significant aspects regarding the theme Data Mining. It served as a forum that gathered researchers, practitioners, students and anyone that was working or studying in the field of the Data Mining.
Keynote Presentation:

K.1 – KNOWLEDGE DISCOVERY APPLICATIONS AS DISTRIBUTED WORKFLOWS OF SERVICES by Professor Domenico Talia, University of Calabria & ICAR-CNR, Italy

Abstract:

According to the service oriented architecture (SOA) model, data mining tasks and knowledge discovery processes can be implemented and delivered as services in Grid and Cloud computing infrastructures. Through a service-oriented approach we can define integrated services for supporting distributed scientific data analysis tasks in HPC systems, Grids, and Clouds. Those services can address all the tasks that must be considered in knowledge discovery processes from data selection and transport, to data analysis, knowledge model representation and visualization. We are working along this direction by providing service-oriented architectures and services for distributed knowledge discovery. This collection of data mining services composes an Open Service Framework for Distributed Knowledge Discovery. This framework allows developers to design distributed KDD processes as a composition of services that are available over high performance computers and large scale distributed infrastructures. This talk presents parallel and distributed models for knowledge discovery and describe a strategy and some associated software systems through which design open distributed knowledge discovery services.

Best Papers:

- THE ADVANTAGE OF CAREFUL IMPUTATION SOURCES IN SPARSE DATA-ENVIRONMENT OF RECOMMENDER SYSTEMS: GENERATING IMPROVED SVD-BASED RECOMMENDATIONS by Mustansar Ali Ghazanfar and Adam Prugel-Bennett, University of Southampton, United Kingdom

Abstract:

Recommender systems apply machine learning techniques for filtering unseen information and can predict whether a user would like a given item. The main types of recommender systems namely collaborative filtering and content-based filtering suffer from scalability and data sparsity problems resulting in poor quality recommendations and reduced coverage. There has been some work in literature to increase the scalability by reducing the dimensions of the recommender system dataset using singular value decomposition (SVD), however, due to sparsity it results in inaccurate recommendations. In this paper, we show how a careful selection of an imputation source in singular value decomposition based recommender system can provide potential benefits ranging from cost saving, to performance enhancement. Proposed missing value imputation methods have the ability to exploit any underlying data correlation structures and hence have been proven to exhibit much superior accuracy and performance as compared to traditional missing value imputation strategy—item average of the user-item rating matrix—that has been the preferred approach in the literature to resolve this problem. Furthermore, we proposed a hybrid recommender system using collaborative filtering applied over the reduced dataset. By extensive experimental results, we show that our approach outperforms traditional one in terms of mean absolute error, receiver operating characteristic sensitivity, precision, recall, and F1 measure.

- APPLICATIONS OF DATA MINING TO POSTOPERATIVE PAIN MANAGEMENT by Yuh-Jyh Hu, Rong-Hong Jan, Kuochen Wang and Yu-Chee Tseng, National Chiao Tung University, Taiwan and Tien-Hsiung Ku and Shu-Fen Yang, Changhua Christian Hospital, Taiwan

Abstract:

Appropriate postoperative pain management contributes to earlier mobilization, shorter hospitalization, and reduced cost. Undertreatment of pain may impede short-term recovery, and may even have a detrimental long-term effect on health. Despite the advancement in postoperative pain management, pain relief and patient satisfaction still does not meet some patients’ requirement. By applying data mining techniques,
this study aimed to identify the predictive factors for anesthetic dosage and PCA (Patient Controlled Analgesia) demands. With the assistance of Changhua Christian Hospital, we collected 1655 PCA patient records. We analyzed patient PCA usage profiles. We concentrated on two prediction tasks in this study: (a) postoperative analgesic consumption, and (2) PCA setting readjustment.

Committees:

Program Chair: Ajith P. Abraham, School of Computer Science, Chung-Ang University, South Korea

Conference Co-Chairs:
- Piet Kommers, University of Twente, The Netherlands
- Pedro Isaías, Universidade Aberta (Portuguese Open University), Portugal

Committee Members:

- Abdel-Badeeh M. Salem, Ain Shams University, Egypt
- Akihiro Inokuchi, Osaka University, Japan
- Alessandra Raffaeta, Universita Ca Foscari Di Venezia, Italy
- Alexandros Nanopoulos, University Of Hildesheim, Germany
- Alfredo Cuzzocrea, University of Calabria, Italy
- Amalia Foka, University of Patras, Greece
- Andrea Romei, University Of Pisa, Italy
- Andreas König, TU Kaiserslautern, Germany
- Annalisa Appice, Università Degli Studi Di Bari, Italy
- Arnab Bhattacharya, Indian Institute of Technology, Kanpur, India
- Artchil Maysuradze, Moscow State University, Russia
- Carson K. Leung, The University of Manitoba, Canada
- Chengyou Wang, National University Of Defense Technology, China
- Christos Makris, University Of Patras, Greece
- Corrado Loglisci, University Of Bari, Italy
- Daniel Kudenko, University Of York, United Kingdom
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- Dimitrios Katsaros, University Of Thessaly, Greece
- Dingding Wang, Florida International University, USA
- Dino Ienco, Università Di Torino,, Italy
- Dora Souliou, National Technical University Of Athens, Greece
- Edward Hung, Hong Kong Polytechnic University, Hong Kong
- Evangelos Theodoridis, University Of Patras, Greece
- Fotis Lazarinis, Technological Educational Institute, Greece
- Francesco Folino, University Of Calabria, Italy
- George Pallis, University Of Cyprus, Cyprus
- George Tambouratzis, Institute For Language And Speech Processing, Greece
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- Justin Dauwels, Massachusetts Institute of Technology, USA
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- Laura Spinsanti, EPFL, Switzerland
- Lei Chang, EMC, China
- Liang Chen, Amazon.com, USA