

SIGMM RECORDS

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SIGMM Records

Volume 5, Issue 4, December 2013 (ISSN 1947-4598)

Editorial

Dear Member of the SIGMM Community, welcome to the last issue of the SIGMM Records in 2013.

The editors of the Records have taken to a classical reporting approach, and you can read here the first of series of interviews. In this issue, Cynthia Liem is interview by Mathias Lux, and explains about the Phenix project.

We have received a report from the first international competition on game-based learning applications, and also our regular column reporting from the 106th MPEG meeting that was held in Geneva. Our open source column presents libraries and tools for threading and visualizing a large video collection in this issue, a set of tools that will be useful for many in the community. Beyond that, you also read about two PhD thesis.

Among the announcements are several open positions, and a long list of calls for paper. The long list of calls is achieved by a policy change in SIGMM. After several years that have seen our two public mailing lists, sigmm@pi4.informatik.tu-mannheim.de and mm-interest@acm.org, flooded by calls for papers, the board and online services editors have decided to change the posting policy. Both lists are now closed for public submissions of calls for paper and participation. Instead, calls must be submitted through the SIGMM Records web page, and will be distributed on the mailing list in a weekly digest. We hope that the members of the SIG appreciate this service, and that those of us who have filtered emails for years feel that this is a more appropriate policy.

With those news, we invite you to read on in this issue of the Records.

The Editors

Stephan Kopf, Viktor Wendel, Lei Zhang, Pradeep Atrey, Christian Timmerer, Pablo Cesar, Mathias Lux, Carsten Griwodz

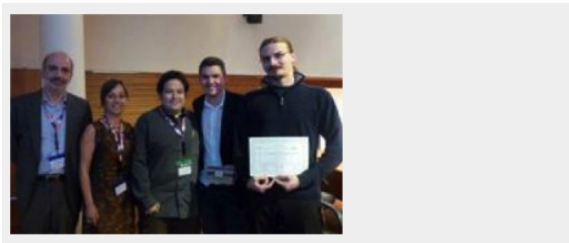
A report from the First International Competition on Game-Based Learning Applications

The European Conference on Game Based Learning is an academic conference that has been held annually in various European Universities since 2006. For the first time this year the Programme Committee, together with Segan (Serious Games Network, <https://www.facebook.com/groups/segan>) decided to launch a competition at the conference for the best educational game. The aims of the competition were:

- To provide an opportunity for educational game designers and creators to participate in the conference and demonstrate their game design and development skills in an international competition;
- To provide an opportunity for GBL creators to peer-assess and peer-evaluate their games;
- To provide ECGBL attendees with engaging and best-practice games that showcase exemplary applications of GBL .

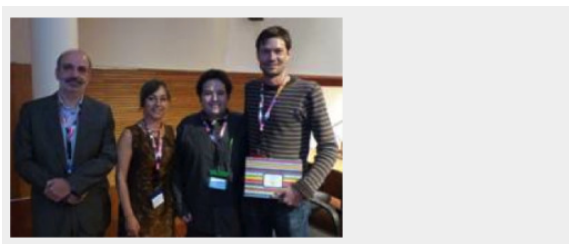
In the first instance prospective participants were asked to submit a 1000 word extended abstract giving an overview of the game itself, how it is positioned in terms of related work and what the unique education contribution is. We received 56 applications and these were reduced to 22 finalists who were invited to come to the conference to present their games. Four judges, in two teams assessed the games based on a comprehensive set of criteria including sections on learning outcomes, usability and soci-cultural aspects. A shortlist of 6 games were then revisited by all the judges during an open demonstration session at which conference participants were also welcome to participate. First, Second and Third place awards were given and two Highly Commended certificates were

presented. The top three games were quite different in terms of the target audience and the format.



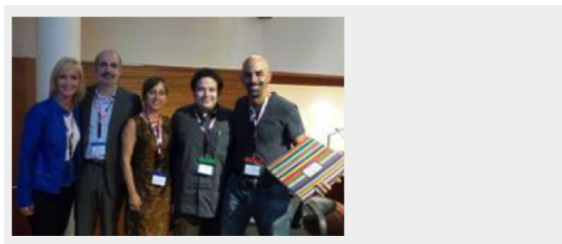
Third place

In third place was an app-based early learning game called Lipa Eggs developed by Ian Hook and Roman Hodek from Lipa Learning in the Czech Republic. This game was designed to help pre-school children with colour mixing and recognition and was delivered via a tablet. The gameplay takes the form of a graduated learning system which first allows children to develop the skills to play the game and then develops the learning process to encourage players to find new solutions. More information about the game can be found at <http://www.lipalearning.com/game/lipa-eggs>



Second place

In second place was a non-digital game called ChemNerd developed by Jakob Thomas Holm from Sterskov Efterskole (a secondary school in Denmark specializing in game-based learning). This game was designed to help teach the periodic table to secondary school students and was presented as a multi-level card game. The game utilizes competition and face to face interaction between students to teach them complicated chemical theory over six phases beginning with a memory challenge and ending with a practical experiment. A video illustrating the game can be seen at <http://youtu.be/XD6BPjYxlc>



Winners

The winner was a computer game called Mystery of Taiga River developed by Sasha Barab and Anna Arici from Arizona State University in the USA. The aim of the game was to teach ecological studies to secondary school students and was presented as a game-based immersive world where students become investigative reporters who had to investigate, learn and apply scientific concepts to solve applied problems in a virtual park and restore the health of the dying fish. A video of the game can be seen at http://gamesandimpact.org/taiga_river

Both competitors and conference participants said that they had enjoyed the opportunity of seeing applied educational game development from around the world and the intention is to make this an annual competition associated with the European Conference on Game-Based Learning (ECGBL). The conference in 2014 will be held in Berlin on 30-31 October and the call for games is now open. Details can be found here: <http://academic-conferences.org/ecgbl/ecgbl2014/ecgbl14-call-papers.htm>

An Interview with Cynthia Liem: The PHENICX Project

The PHENICX project is supported by the European Commission, FP7 (Seventh Framework Programme, STREP project, ICT-2011.8.2 ICT for access to cultural resources, grant agreement No 601166). The project is running for a year now and Cynthia Liem is involved since the initial planning and proposal writing. Currently, she is a work package leader in the project, and part of the overall project coordination team in the role of dissemination coordinator.

Partners in the project are Universitat Pompeu Fabra, Barcelona, ES; Delft University of Technology, NL; Johannes Kepler University Linz, AT; Austrian Research Institute for Artificial Intelligence, Vienna, AT; Video Dock BV, Amsterdam, NL; Royal Concertgebouw Orchestra, Amsterdam, NL; and Escola Superior de

Música de Catalunya, Barcelona, ES. More information on the project can be found at <http://phenicx.upf.edu>

Q: What is the goal and scope of the PHENICX project?

PHENICX is about music and concert experiences. We want to use multimedia technologies to enhance the experience of a concert and make it more interesting and accessible for broad audiences. In this, we mainly focus on classical music.

Basically, the project has two sides. First of all, there is a content analysis side, in which we analyze concert performance data in a broad sense. We do not only look at an audio stream, but also e.g. at videos, gesture information, and social commenting information from people who attended concerts. Besides multiple modalities, we also try to take into account multiple perspectives: think of multiple cameras and microphones registering an orchestra, but also of multiple types of people (a conductor, orchestra musicians, or just your personal friends) speaking about a concert. Finally, a concert really is a multilayered phenomenon, with lots of things going on at the same time in which one could be potentially interested. The particular notes being played from a score are part of a larger structural whole; and while 130 individuals may be playing at the same time in a symphony orchestra, they form sub-groups which all have a particular role in the musical narrative and instrumental mix.

On the other side, it's about the experience, about getting and keeping users from different consumer groups engaged. This is not just targeted at live attendance scenarios in the concert hall, but also for scenarios in which people attend concerts off-site through a live stream, or want to relive a concert on-demand after its performance. While for the content analysis part, we mostly focus on signal-oriented research topics, for this experience part we strongly look into topics such as recommendation, visualization and interaction. For example, how can you make the whole multilayered aspect of music more tangible? This can for example be done with automated score-following, through more simplified visualizations, but also by contrasting a particular performance against other existing performances of the same piece.

Our mission to broaden audiences for the classical music genre can be seen as a way of cultural heritage preservation using ICT. In the end, we really hope to see digital technology affecting culture consumption in a positive way. [As a concrete example, our partners Video Dock and the Royal Concertgebouw Orchestra already are working on a commercial tablet app called RCO Editions. The technologies we work on in PHENICX can really help in making the production of

the app more scalable, expanding its feature set, and optimizing its user experience.

Q: Are there special organizational challenges?

In the project there are seven partners, four of them being academic partners. The three non-academic partners are major players in different parts of the music stakeholder spectrum, but have less experience with academic projects – especially the Royal Concertgebouw Orchestra, which really is involved for the first time in a large academic technology project. So in communicating and working with each other, there is always some translation needed between partners with different background and project experience levels. This is a very interesting organizational challenge in which we always try to find an optimal balance between different stakeholders.

Another potential challenge is language. Especially in the first year, we have been running a lot of focus groups to validate use cases. But while we have grown completely accustomed to using English in our daily academic work, as soon as you wish to interact with realistic local potential users of your technology in all project partner countries, you can't take for granted these users have full expressive command of English (the younger generation typically does, but you don't want to only reach them). And music is a very attractive topic for general public dissemination, since it's a concrete part in many people's lives; but once again, to make full use of this opportunity, you may have to look beyond English. So we're having some dedicated organizational activities on that, working to also hold some studies and get some publicity material available in local languages.

Q: What is your personal relation to the project?

Well, I wrote a significant part of the proposal, so in that sense have a considerable relation to the project ... but, at least as importantly, my musician background creates a strong personal link to this project. Having degrees in computer science and classical piano performance, I'm really interested in the interface between these two: working with music and digital data, using data technologies to improve on what you can learn and do with music – and PHENICX definitely is about this. So I'm very actively trying to use this double background for the project. It is especially useful for communication and dissemination: I can talk to people at the more musical side, many of which do not have extensive technical backgrounds, but also to those at the more technical side, who do not always have an extensive music background.

Funnily enough, the project also affected views I had from my own musicianship. The Royal Concertgebouw

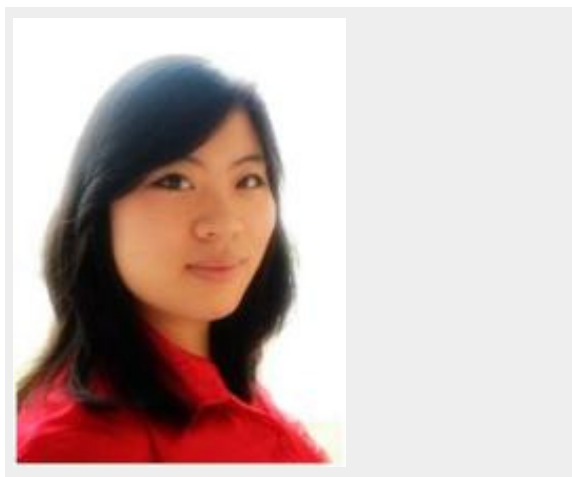
Orchestra is one of the most famous orchestras in the world. If you're a music student in Holland, you can be backstage and engage with people from many national orchestras, but only the lucky few will manage to get even in the neighborhood of this particular orchestra. Now I'm having this connecting role in the project between academics and music stakeholders, and the orchestra became a project partner, I suddenly find myself being in their office quite often. I would never have expected that!

Besides that, with our work on user requirements and focus groups, I really managed to be in contact with actual audience. In our focus groups, we asked people why they liked going to concert performances, and we frequently heard people responding they valued feeling isolated from external influences in the concert hall, to have themselves being swept away by the music. Probably because a concert hall is a bit of a working space for me, I had totally forgotten this escapism aspect of concert attendance. So here, the project really made me aware of my own professional biases and 'put me back on the ground'.

Q: Would you ever write an EU project proposal again?

Well, yes, I would, definitely with a consortium and project as inspiring as PHENICX. But I hope that next time I'll have a bit more time than the three weeks in which we raced to completing the PHENICX proposal.

Curriculum Vitae:



Cynthia Liem obtained her BSc and MSc degrees in Media and Knowledge Engineering (Computer Science) with honors at Delft University of Technology, The Netherlands, and currently is a PhD student at the Multimedia Information Retrieval Lab of the same university, working under the supervision of Prof. Alan Hanjalic. Besides, she holds Bachelor and Master of

Music degrees in classical piano performance from the Royal Conservatoire in The Hague. Her research interests are strongly motivated by her background in both engineering and music and concentrate around multimedia content analysis for the music information retrieval domain.

From this background, she has been very active in getting music on the multimedia research agenda, particularly at the ACM Multimedia Conference, where she first initiated and served as the main organizer of the ACM MIRUM workshop (2011, 2012). This led to her becoming a co-chair of a dedicated 'Music & Audio' area at ACM MM 2013, and currently the more broadened 'Music, Speech, and Audio Processing in Multimedia' area for ACM MM 2014. She also was a main initiator of the EU FP7 PHENICX project (2013 – 2016), in which she now serves as work package leader and dissemination coordinator.

She is the recipient of several international scholarships and awards, including the Lucent Global Science Scholarship in 2005, the Google Anita Borg Scholarship in 2008, the Google European Doctoral Fellowship in Multimedia in 2010 (which partially supports her PhD research work), and the UfD Best PhD Candidate Award at Delft University of Technology in 2012. Besides her ongoing academic and musical activities, Cynthia has interned at Bell Labs Europe Netherlands, Philips Research, Google UK and Google Research, Mountain View, USA.



The interviewer, **Mathias Lux**, is an Associate Professor at the Institute for Information Technology (ITEC) at Klagenfurt University, where he has been since 2006. He received his M.S. in Mathematics in 2004 and his Ph.D. in Telematics in 2006 from Graz University of Technology. Before joining Klagenfurt University, he

worked in industry on web-based applications, as a junior researcher at a research center for knowledge-based applications, and as research and teaching assistant at the Knowledge Management Institute (KMI) of Graz University of Technology. In research, he is working on user intentions in multimedia retrieval and production, visual information retrieval, and serious games. In his scientific career he has (co-) authored more than 60 scientific publications, has served in multiple program committees and as reviewer of international conferences, journals, and magazines, and has organized several scientific events. He is also well known for managing the development of the award-winning and popular open source tools Caliph & Emir and LIRE for visual information retrieval.

- Self-contained multiplexing structure
- Strict timing model
- Reference buffer model
- Flexible splicing of content
- Name based access of data
- AL-FEC (application layer forward error correction)
- Multiple Qualities of Service within one packet flow

MPEG Column: 106th MPEG Meeting

– original posts [here](#) and [here](#) by *Multimedia Communication blog* and *bitmovin techblog*, *Christian Timmerer*, *AAU/bitmovin*

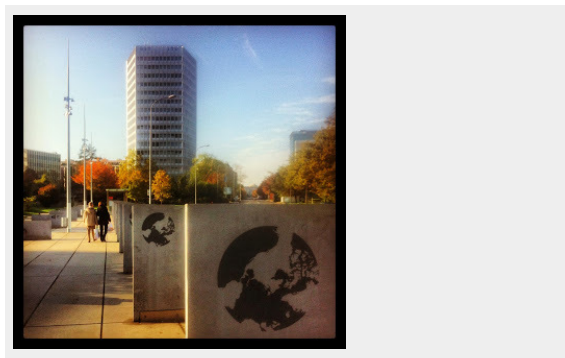


National Day Present by Austrian Airlines on my way to Geneva.

November, 2013, Geneva, Switzerland. Here comes a news report from the 106th MPEG in Geneva, Switzerland which was actually during the Austrian national day but Austrian Airlines had a nice present (see picture) for their guests.

The official press release can be found [here](#).

In this meeting, ISO/IEC 23008-1 (i.e., MPEG-H Part 1) **MPEG Media Transport (MMT) reached Final Draft International Standard (FDIS)**. Looking back when this project was started with the aim to supersede the widely adopted MPEG-2 Transport Stream (M2TS) — which receives the Technology & Engineering Emmy® Award in Jan'14 — and what we have now, the following features are supported within MMT:



ITU-T Tower Building, Geneva.

Interestingly, MMT supports the carriage of MPEG-DASH segments and MPD for uni-directional environments such as broadcasting.

MPEG-H now comprises three major technologies, part 1 is about transport (MMT; at FDIS stage), part 2 deals with video coding (HEVC; at FDIS stage), and part 3 will be about audio coding, specifically 3D audio coding (but it's still in its infancy for which technical responses have been evaluated only recently). Other parts of MPEG-H are currently related to these three parts.

In terms of research, it is important to determine the efficiency, overhead, and — in general — the use cases enabled by MMT. From a business point of view, it will be interesting to see whether MMT will actually supersede M2TS and how it will evolve compared or in relation to DASH.

On another topic, MPEG-7 visual reached an important milestone at this meeting. The Committee Draft (CD) for Part 13 (ISO/IEC 15938-13) has been approved and is entitled **Compact Descriptors for Visual Search (CDVS)**. This image description enables comparing and finding pictures that include similar content, e.g., when showing the same object from different viewpoints. CDVS mainly deals with images but MPEG also started work for compact descriptors for video search.

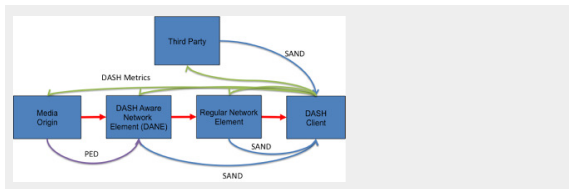
The CDVS standard truly helps to reduce the semantic gap. However, research in this domain is already well developed and it is unclear whether the research community will adopt CDVS, specifically because the

interest in MPEG-7 descriptors has decreased lately. On the other hand, such a standard will enable interoperability among vendors and services (e.g., Google Goggles) reducing the number of proprietary formats and, hopefully, APIs. However, the most important question is whether CDVS will be adopted by the industry (and research).

Finally, what about MPEG-DASH?

The 2nd edition of part 1 (MPD and segment formats) and the 1st edition of part 2 (conformance and reference software) have been finalized at the 105th MPEG meeting (FDIS). Additionally, we had a public/open workshop at that meeting which was about session management and control for DASH. This and other new topics are further developed within so-called core experiments for which I'd like to give a brief overview:

- **Server and Network assisted DASH Operation (SAND)** which is the immediate result of the workshop at the 105th MPEG meeting and introduces a DASH-Aware Media Element (DANE) as depicted in the Figure below. Parameters from this element — as well as others — may support the DASH client within its operations, i.e., downloading the “best” segments for its context. SAND parameters are typically coming from the network itself whereas Parameters for enhancing delivery by DANE (PED) are coming from the content author.



Baseline Architecture for Server and Network assisted DASH.

- **Spatial Relationship Description** is about delivering (tiled) ultra-high-resolution content towards heterogeneous clients while at the same time providing interactivity (e.g., zooming). Thus, not only the temporal but also spatial relationship of representations needs to be described.

Other CEs are related to *signaling intended source and display characteristics, controlling the DASH client behavior, and DASH client authentication and content access authorization*.

The outcome of these CEs is potentially interesting for future amendments. One CE closed at this meeting which was about including quality information within DASH, e.g., as part of an additional track within ISO/BMFF and an additional representation within the

MPD. Clients may access this quality information in advance to assist the adaptation logic in order to make informed decisions about which segment to download next.

Interested people may join the MPEG-DASH Ad-hoc Group (AhG; <http://lists.uni-klu.ac.at/mailman/listinfo/dash>) where these topics (and others) are discussed.

Finally, additional information/outcome from the last meeting is accessible via <http://mpeg.chiariglione.org/meetings/106> including documents publicly available (some may have an editing period).

VIREO-VH: Libraries and Tools for Threading and Visualizing a Large Video Collection

Introduction

“Video Hyperlinking” refers to the creation of links connecting videos that share near-duplicate segments. Like hyperlinks in HTML documents, the video links help user navigating videos of similar content, and facilitate the mining of iconic clips (or visual memes) spread among videos. Figure 1 shows some example of iconic clips, which can be leveraged for linking videos and the results are potentially useful for multimedia tasks such as video search, mining and analytics.

VIREO-VH [1] is an open source software developed by the VIREO research team. The software provides end-to-end support for the creation of hyperlinks, including libraries and tools for threading and visualizing videos in a large collection. The major software components are: near-duplicate keyframe retrieval, partial near-duplicate localization with time alignment, and galaxy visualization. These functionalities are mostly implemented based on state-of-the-art technologies, and each of them is developed as an independent tool taking into consideration flexibility, such that users can substitute any of the components with their own implementation. The earlier versions of the software are LIP-VIREO and SOTU, which have been downloaded more than 3,500 times. VIREO-VH has been internally used by VIREO since 2007, and evolved over the years based on the experiences of developing various multimedia applications, such as news events evolution analysis, novelty reranking, multimedia-based question-answering [2], cross media hyperlinking [3], and social video monitoring.

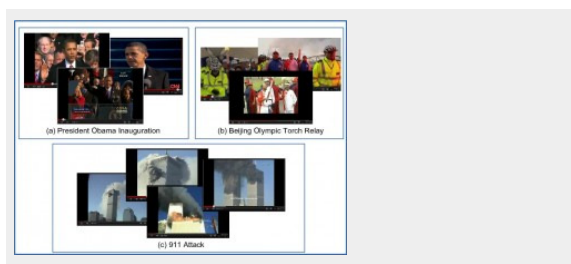


Figure 1: Examples of iconic clips.

NOTOC Functionality

The software components include video pre-processing, bag-of-words based inverted file indexing for scalable near-duplicate keyframe search, localization of partial near-duplicate segments [4], and galaxy visualization of a video collection, as shown in Figure 2. The open source includes over **400** methods with **22,000** lines of code.

The workflow of the open source is as follows. Given a collection of videos, the visual content will be indexed based on a bag-of-words (BoW) representation. Near-duplicate keyframes will be retrieved and then temporally aligned in a pairwise manner among videos. Segments of a video which are near-duplicate to other videos in the collection will then be hyperlinked with the start and end times of segments being explicitly logged. The end product is a galaxy browser, where the videos are visualized as a galaxy of clusters on a Web browser, with each cluster being a group of videos that are hyperlinked directly or indirectly through transitivity propagation. User friendly interaction is provided such that end user can zoom in and out, so they can glance or take a close inspection of the video relationship.



Figure 2: Overview of VIREO-VH software architecture.

Interface

VIREO-VH could be either used as an end-to-end system that outputs visual hyperlinks, with a video collection as input, or as independent functions for development of different applications.

For content owners interested in the content-wise analysis of a video collection, VIREO-VH can be used as an end-to-end system by simply inputting the location of a video collection and the output paths (Figure 3). The

resulting output can then be viewed with the provided interactive interface for showing the glimpse of video relationship in the collection.

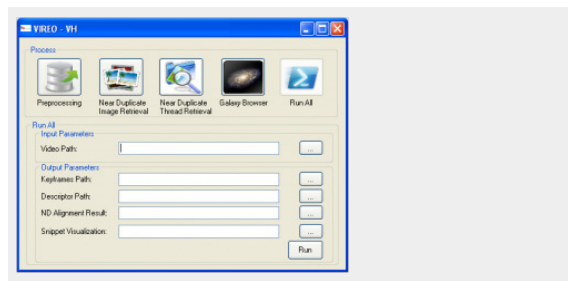


Figure 3: Interface for end-to-end processing of video collection.

VIREO-VH also provides libraries to grant researchers programmatic access. The libraries consist of various classes (e.g., Vocab, HE, Index, SearchEngine and CNetwork), providing different functions for vocabulary and Hamming signature training [5], keyframe indexing, near-duplicate keyframe searching and video alignment. Users can refer to the manual for details. Furthermore, the components of VIREO-VH are independently developed for providing flexibility, so users can substitute any of the components with their own implementation. This capability is particularly useful for benchmarking the users' own choice of algorithms. As an example, users can choose their own visual vocabulary and Hamming median, but use the open source for building index and retrieving near-duplicate keyframes. For example, the following few lines of code implements a typical image retrieval system:

```
#include "Vocab_Gen.h" #include "Index.h" #include
"HE.h" #include "SearchEngine.h" ... // train visual
vocabulary using descriptors in folder "dir_desc" //
here we choose to train a hierarchical vocabulary
with 1M leaf nodes (3 layers, 100 nodes / layer)
Vocab_Gen::genVoc("dir_desc", 100, 3); // load pre-
trained vocabulary from disk Vocab* voc = new
Vocab(100, 3, 128); voc->loadFromDisk("vk_words/"); //
Hamming Embedding training for the vocabulary
HE* he = new HE(32, 128, p_mat, 1000000,
12); he->train(voc, "matrix", 8); // index the
descriptors with inverted file Index::indexFiles(voc, he,
"dir_desc", ".feat", "out_dir", 8); // load index and
conduct online search for images in "query_desc"
SearchEngine* engine = new SearchEngine(voc,
he); engine->loadIndexes("out_dir"); engine-
>search_dir("query_desc", "result_file", 100); ...
```

Example

We use a video collection consisting of 220 videos (around 31 hours) as an example. The collection was

crawled from YouTube using the keyword “economic collapse”. Using our open source and default parameter settings, a total of 35 partial near-duplicate (ND) segments are located, resulting in 10 visual clusters (or snippets). Figure 4 shows two examples of the snippets. Based on our experiments, the precision of ND localization is as high as 0.95 and the recall is 0.66. Table 1 lists the running time for each step. The experiment was conducted on a PC with dual core 3.16 GHz CPU and 3 GB of RAM. In total, creating a galaxy view for 31.2 hours of videos (more than 4,000 keyframes) could be completed within 2.5 hours using our open source. More details can be found in [6].

Pre-processing	75 minutes
ND Retrieval	59 minutes
Partial ND localization	8 minutes
Galaxy Visualization	55 seconds

Table 1: The running time for processing 31.2 hours of videos.

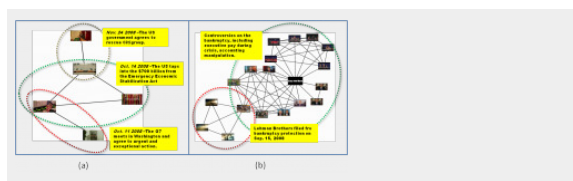


Figure 4: Examples of visual snippets mined from a collection of 220 videos. For ease of visualization, each cluster is tagged with a timeline description from Wikipedia using the techniques developed in [3].

NOTOC Acknowledgements

The open source software described in this article was fully supported by a grant from the Research Grants Council of the Hong Kong Special Administrative Region, China (CityU 119610).

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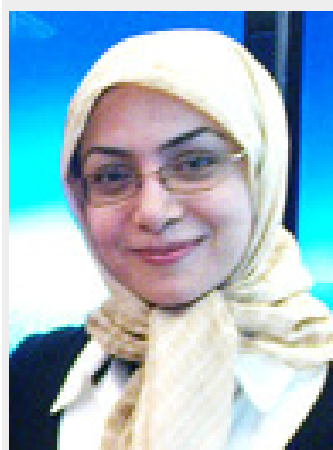
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PhD Thesis Summaries

Afsaneh Asaei

Model-based Sparse Component Analysis for Multiparty Distant Speech Recognition

Supervisor(s) and Committee member(s): Hervé Bourlard (supervisor)
URL: <https://publiidiap.idiap.ch/index.php/publications/show/2486>



This thesis takes place in the context of multi-microphone distant speech recognition in multiparty meetings. It addresses the fundamental problem of overlapping speech recognition in reverberant rooms. Motivated from the excellent human hearing performance on such problem, possibly resulting of sparsity of the auditory representation, our work aims at exploiting sparse component analysis in speech

recognition front-end to extract the components of the desired speaker from the competing interferences (other speakers) prior to recognition. More specifically, the speech recovery and recognition are achieved by sparse reconstruction of the (high-dimensional) spatio-spectral information embedded in the acoustic scene from (low-dimensional) compressive recordings provided by a few microphones. This approach exploits the natural parsimonious structure of the data pertained to the geometry of the problem as well as the information representation space.

Our contributions are articulated around four blocks. The structured sparse spatio-temporal representation of the concurrent sources is constituted along with the characterization of the compressive acoustic measurements. A framework to simultaneously identify the location of the sources and their spectral components is derived exploiting the model-based sparse recovery approach and, finally, the acoustic multipath and sparsity models are incorporated for effective multichannel signal acquisition relying on beamforming. This work is evaluated on real data recordings. The results provide compelling evidence of the effectiveness of structured sparsity models for multi-party speech recognition. It establishes a new perspective to the analysis of multichannel recordings as compressive acquisition and recovery of the information embedded in the acoustic scene.

Keywords: Model-based Sparse Component Analysis, Compressive Acoustic Measurements, Reverberant Enclosure, Structured Sparse Coding, Image Method, Distant Multiparty Speech Recognition, Overlapping Speech, Sparse Microphone Array, Multipath Sparse Beamforming

Idiap Research Institute

Mehdi Semsarzadeh

An H.264/AVC Receiver Aware Video Encoder for Adaptation Applications

Supervisor(s) and Committee member(s): Mahmoud-Reza Hashemi (Supervisor), Shervin Shirmohammadi (Advisor)
URL: <http://www.site.uottawa.ca/~shervin/theses/2013-MehdiSemsarzadeh.pdf>



With recent advances in computing and communication technologies, ubiquitous access to high quality multimedia content is a fact of our daily life. However, resource consumption is still a major concern, specially battery consumptions for mobile devices. Today, any user is able to produce and consume multimedia contents using a smartphone or a tablet. In many applications, a multimedia content has to be sent to a vast range of receivers with different characteristics. To do so, a simple and affordable method is to generate a single layer bitstream and to adapt it, through a set of middle nodes, to meet each receiver's characteristics and its resource limitations. In addition, with the advances in computing technologies, a consumer (decoder) of video content is potentially a producer (encoder) of this content in many occasions. As a result, constraints such as power consumption, computational power and memory limitations should be considered for most multimedia devices during the encoding phase, as well.

In this thesis, we start by highlighting the necessity of having a resource aware encoder. Then, this general problem is formulated in terms of an abstract method, customized and solved for the special cases of receiver aware encoder, receiver aware encoder for adaptation applications, and self resource aware encoder. In a receiver aware encoder, the resource limitations of the receiver side are taken into account during the encoding phase at the server side. This will ensure that the generated bitstream will satisfy the receiver's resource limitations during decoding. A receiver aware encoder for adaptation applications is an encoder which considers not only the receiver's resource limitations but also the characteristics of the adaptation node and its operation during the encoding phase. Hence, it generates a bitstream that meets the decoder's requirements even after adaptation. Finally, a self resource aware encoder refers to an encoder which is running on a device with limited resources, such as

a video encoder on a smartphone. Such an encoder is able to encode video while optimizing its operations according to the available resources.

Our proposed abstract model is extensible, since it can be used for various combinations of resource limitations. In addition, it follows a methodology for extracting the proper subset of encoding parameters. In order to show the efficiency of the proposed approach, a case study is implemented for the reference software of H.264/AVC codec, for each of the three mentioned scenarios. In these case studies, the computational complexity of decoder/encoder is considered as the limited resource. Finally, we also propose a methodology for estimating resource consumption. This methodology was used for the implementation and evaluation of the case studies of our first contribution. In this context, and in order to evaluate the performance of the proposed methodology, we have modeled and estimated the complexity of an H.264/AVC decoder and encoder. Simulations results show the applicability and the performance of our proposed abstract level resource aware encoder as well as the resource estimation methodology. Both of the proposed approaches in this thesis are generic and can be used for a wide range of applications. For instance, the proposed abstract level resource aware encoder can be customized, for any application which produces or consumes video content and has limited resources, in order to design a resource aware encoder. Similarly, for any application with a clearly specified algorithm and a distinctive resource consumption metric, a resource estimation model can be derived using the proposed resource estimation methodology.

While the thesis is in Farsi (Persian), the following papers from the thesis are in English:

- M. Semsarzadeh, A. Lotfi, M.R. Hashemi, and S. Shirmohammadi, "A Fine-Grain Distortion and Complexity Aware Parameter Tuning Model for the H.264/AVC Encoder", *Signal Processing: Image Communication*, Elsevier, Vol. 28, Issue 5, May 2013, pp. 441–457.
- M. Semsarzadeh, M. Jamali, M.R. Hashemi, and S. Shirmohammadi, "Complexity Modeling of the Motion Compensation Process of the H.264/AVC Video Coding Standard", *Proc. IEEE International Conference on Multimedia & Expo*, Melbourne, Australia, July 9-13 2012, pp. 925-930.

Multimedia Processing Laboratory, University of Tehran, and DISCOVER Lab, University of Ottawa
 URL: <http://www.discover.uottawa.ca/>

The Multimedia Processing Laboratory (MPL) at the University of Tehran hosts research projects in Multimedia Systems and Networking, specifically:

- Receiver aware video encoding and adaptation
- Scalable multi-view video coding

- Cloud media and Cloud gaming
- Dynamic mapping of multimedia applications on a cloud of MPSoCs
- Reconfigurable hardware architectures for multimedia processing
- Hardware implementation of multimedia applications.

Research at University of Ottawa's DISCOVER Lab is directed towards the enhancement of next generation human-human communication through advanced multimedia technology and virtual environments. Projects typically fall into the following categories:

- Networked Games and Collaborative Virtual Environments, including cloud gaming and mobile gaming
- Multimedia Systems and Applications, including 3D video, Ultra HD video, and mobile video
- 3D Physical Modelling and Animation
- Intelligent Sensor Networks and Ubiquitous Computing
- Haptics and Teleoperation
- Multimedia-Assisted Rehabilitation Engineering

Recently published

MMSJ Volume 19, Issue 6

Editor-in-Chief: Thomas Plagemann
 URL: <http://www.springer.de/>
 Published: November 2013

Special Issue on Social Recommendation and Delivery Systems for Video and TV Content

Guest Editors: George Lekakos, Teresa Chambel, Hendrik Knoche

- George Lekakos, Teresa Chambel, Hendrik Knoche: **Guest editorial for Special Issue on Social Recommendation and Delivery Systems for Video and TV Content**
- Kyoko Ariyasu, Hiroshi Fujisawa, Shyunji Sunasaki: **Twitter analysis algorithms for Intelligence Circulation System**
- Faustino Sanchez, Marta Barrilero, Federico Alvarez, Guillermo Cisneros: **User interest modeling for social TV-recommender systems based on audiovisual consumption**
- Heung-Nam Kim, Mark Bloess, Abdulmotaleb El Saddik: **Folkommender: a group recommender system based on a graph-based ranking algorithm**
- Shinjee Pyo, Eunhui Kim, Munchurl Kim: **Automatic and personalized recommendation of TV program contents using sequential pattern mining for smart TV user interaction**
- Filipa Peleja, Pedro Dias, Flávio Martins, João Magalhães: **A recommender system for the TV on the web: integrating unrated reviews and movie ratings**

- Eva Oliveira, Pedro Martins, Teresa Chambel:
Accessing movies based on emotional impact

TOMCCAP, Volume 10, Issue 1

Editor-in-Chief: Ralf Steinmetz
URL: <http://tomccap.acm.org/>
Published: December 2013
sponsored by ACM SIGMM

The Transactions on Multimedia Computing, Communication and Applications are the SIGMM's own Transactions. As a service to Records readers, we provide direct links to ACM Digital Library for the papers of the latest TOMCCAP issue.

- Zechao Li, Jing Liu, Meng Wang, Changsheng Xu, Hanqing Lu: **Enhancing news organization for convenient retrieval and browsing**
- Peter Knees, Markus Schedl: **A survey of music similarity and recommendation from music context data**
- Yi-Liang Zhao, Qiang Chen, Shuicheng Yan, Tat-Seng Chua, Daqing Zhang: **Detecting profilable and overlapping communities with user-generated multimedia contents in LBSNs**
- Gaurav Bhatnagar, Q. M. Jonathan Wu, Pradeep K. Atrey: **Secure randomized image watermarking based on singular value decomposition**
- Luntian Mou, Tiejun Huang, Yonghong Tian, Menglin Jiang, Wen Gao: **Content-based copy detection through multimodal feature representation and temporal pyramid matching**
- Xiangyu Chen, Yadong Mu, Hairong Liu, Shuicheng Yan, Yong Rui, Tat-Seng Chua: **Large-scale multilabel propagation based on efficient sparse graph construction**
- Michael E. Houle, Vincent Oria, Shin'ichi Satoh, Jichao Sun: **Annotation propagation in image databases using similarity graphs**
- Anupama Mallik, Hiranmay Ghosh, Santanu Chaudhury, Gaurav Harit: **MOWL: An ontology representation language for web-based multimedia applications**

Job Opportunities

Ph.D. position in multimedia security and privacy

Multimedia Signal Processing Group (MMSPG) of Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, offers a Ph.D. position from March 1st, 2014 or earlier.

Topic:

Privacy issues in multimedia systems and services are gaining increased importance in society at large. New tools and technologies are needed to protect privacy of individuals, while at the same time allowing them to take full advantage of existing and upcoming multimedia applications in a transparent way.

The retained Ph.D. candidate will have to design and implement solutions for protection of privacy in selected multimedia applications such as video surveillance and social networks. Furthermore, evaluation methodologies should be developed to assess the efficiency of such solutions when compared to the state of the art. These evaluation methodologies include subjective, objective, and crowd-sourcing based approaches.

Requirements:

Applicants should have experience in image/video processing and hold a MSc in relevant fields (electrical engineering, computer science, physics, mathematics, etc.). Excellent programming skills in C, C++, Matlab are essential. Strong knowledge and experience in video and image compression, multimedia security, multimedia systems, and computer vision are important. Applicants should be very well versed in both oral and written English.

Applicants should also fulfill the requirements for enrollment in Electrical Engineering (<http://phd.epfl.ch/eede>) or Computer, Communication and Information sciences (<http://phd.epfl.ch/edic>) doctoral schools.

How to apply:

Interested candidates should send their applications to Prof. Touradj Ebrahimi no later than February 3rd, 2014. Applications must include electronic copies of the following:

A detailed Curriculum Vitae, including names of at least three persons from whom reference letters can be requested.

A motivation letter explaining why the applicant believes to be suitable for the position offered.

University transcripts.

Successful applicants can expect a gross annual salary starting from 51'000 CHF.

Selected applicants for an interview will be contacted by email.

Important notice

Offered positions are open to outstanding researchers in top 1%. Apply only if you believe to be an outstanding

candidate for the open position. If you do not have an outstanding profile and if your profile does not perfectly match the requirements outlined in the announcement for open position in terms of knowledge, skills and experience, you save everybody, including yourself, time and efforts.

Motivation letter is an important part of the application package. Avoid sending motivation letters that do not explicitly refer to the open position, motivate clearly why you believe your profile matches the requirements in terms of knowledge, skills and experience, and why you consider yourself as an outstanding candidate. Incomplete applications that do not include all requested information are not considered.

We do not answer to requests asking if a candidate is suitable to apply for an open position by sending partial information about an applicant's profile. If a candidate does not know the answer, then he/she is not suitable!

Employer: EPFL
Expiration date: Friday, February 28, 2014
More information date: <http://mmspg.epfl.ch/cms/op/edit/lang/en/pid/58408>

PhD in Computer Vision and Machine Learning in London

Project Title

Automatic non verbal behaviour analysis in diagnosis and treatment of mental illnesses

Project Description

Applications are invited for a fully-funded PhD studentship at Queen Mary University of London starting in September 2014 (or soon after). The studentship is intended for EU or UK residents only and covers the full cost of the tuition fees and provides additional support of £15,786 per year for 3 years for maintenance.

The focus of the project is on Machine Learning and Computer Vision methodologies for the analysis of non-verbal behaviour of people with mental illnesses in group therapy sessions. Within this context, we will analyse facial and body behaviour (facial expressions and body language) and identify affective states (e.g. level of arousal) and types of interactions between members of the therapy groups. We will also explore whether and how the individual behaviours and group interactions are affected by the situational and social context, e.g. one-to-one interaction or interaction with several parties, and interaction at different stages of the group session.

The project is expected to build on recent developments in the field of Social Signal Processing and Affective Computing, and in recent advances in the field of the

Computer Vision and Machine Learning in analysis of human behaviour in uncontrolled conditions ('in the wild'). Particular emphasis will be given on modelling the dynamics of human behaviour and group interactions.

The student will be supervised by Dr. Ioannis Patras (www.eecs.qmul.ac.uk/~ioannisp/#) and Professor Stefan Priebe (www.stefanpriebe.com). The studentship will be hosted by the School of Electronic Engineering and Computer Science and by the Unit for Social and Community Psychiatry in the school of Medicine and Dentistry.

For informal enquiries and further information, please contact Dr. Ioannis Patras at i.pstras@qmul.ac.uk. Please make sure to include the string [PhD] in the subject of your email.

This studentship is part of 12 individual studentships being advertised and funded by the Life Sciences Institute at QMUL. Please note that 6 studentship appointments will be made out of the 12 available studentships. Selection of studentships will be based on candidate quality.

About the Student

Queen Mary University of London is committed to appointing only the very best candidates to its PhD programmes. To apply you should have a good first degree (BA or BSc Honours or equivalent), at upper second class or equivalent with evidence of some 1st class work, and a Masters qualification (at Merit or above with evidence of some Distinction level work) in a cognate discipline related to the studentship. All applicants will be judged according to the same criteria, namely: record of academic and/or professional achievement; and compatibility with the theme of the studentship.

The Award

Life Sciences Studentships are open to suitably qualified candidates from the UK & EU only. The Studentship consists of the full cost of tuition fees and £15,786 a year for maintenance for 3 years. Award holders will be expected to be resident in London during the 3 year period of the studentship.

Duration of Studentship: 3 years

How to apply

Candidates are encouraged to discuss their research proposal with a member of academic staff specialising in their research area.

To apply, please visit: <http://www.qmul.ac.uk/lifesciences/phd/index.html>

Application Deadline

The closing date for applications is 31st January 2014. All short-listed applicants will be interviewed shortly after the closing date.

Employer: Queen Mary University of London
Expiration date: Friday, January 31, 2014
More information date: <mailto:i.patras@eecs.qmul.ac.uk>

PhD position in HDR imaging and video

Multimedia Signal Processing Group (MMSPG) of Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, offers a Ph.D. position from January 1st, 2014.

Topic:

High Dynamic Range (HDR) imaging is believed to be the next frontier in imaging similar to transition from gray level to color. However, despite many recent developments there is still no standard approach for compression and quality assessment of HDR content.

The retained Ph.D. candidate will have to address these shortcomings by determining, via proposed new subjective evaluations and objective metrics, the influence of context and environmental parameters on HDR image and video content. The outcome of these evaluations will be used to design new HDR compression algorithms for images and video sequences. The compression algorithms will be later extended to 3D HDR image and video content.

Requirements:

Applicants should have experience in image/video processing and hold a MSc in relevant fields (electrical engineering, computer science, physics, mathematics, etc.). Excellent programming skills in C, C++, Matlab are essential. Strong knowledge and experience in video and image compression, HDR imaging, 3D video, and computer vision are important. Applicants should be very well versed in both oral and written English.

Applicants should also fulfill the requirements for enrollment in Electrical Engineering (<http://phd.epfl.ch/edee>) or Computer, Communication and Information sciences (<http://phd.epfl.ch/edic>) doctoral schools.

How to apply:

Interested candidates should send their applications to Prof. Touradj Ebrahimi no later than December 16th, 2013. Applications must include electronic copies of the following:

A detailed Curriculum Vitae, including names of at least three persons from whom reference letters can be requested.

A motivation letter explaining why the applicant believes to be suitable for the position offered.

University transcripts.

Successful applicants can expect a gross annual salary starting from 51'000 CHF.

Selected applicants for an interview will be contacted by email.

Important notice

Offered positions are open to outstanding researchers in top 1%. Apply only if you believe to be an outstanding candidate for the open position. If you do not have an outstanding profile and if your profile does not perfectly match the requirements outlined in the announcement for open position in terms of knowledge, skills and experience, you save everybody, including yourself, time and efforts.

Motivation letter is an important part of the application package. Avoid sending motivation letters that do not explicitly refer to the open position, motivate clearly why you believe your profile matches the requirements in terms of knowledge, skills and experience, and why you consider yourself as an outstanding candidate. Incomplete applications that do not include all requested information are not considered.

We do not answer to requests asking if a candidate is suitable to apply for an open position by sending partial information about an applicant's profile. If a candidate does not know the answer, then he/she is not suitable!

Employer: EPFL
Expiration date: Tuesday, December 31, 2013
More information date: <http://mmspg.epfl.ch/cms/op/edit/lang/en/pid/58408>

Postdoc on distributed and interactive multimedia systems

Centrum Wiskunde & Informatica (CWI) has a vacancy in the Distributed and Interactive Systems research group for a talented Postdoc, on the subject of distributed and interactive multimedia systems

This vacancy is particularly interesting if you publish in ACM MMsys, ACM SIGCOMM, or ACM Multimedia.

As a postdoc, you will be working on networking-related issues for enabling rich media-mediated communications (including videoconferencing and 3D tele-immersion). You will help our PhD students and will focus on a number of scientific challenges like: the delivery and synchronization of big amounts of multimedia content between distributed peers; network optimization strategies for real-time transmission of

media; system scalability for massive multi-party communications (online education, performances). Applicants should be ready to get their hands dirty and like and be able to work in a team.

Requirements:

Candidates are required to have a completed PhD (or expect to complete it within the following six months) in the area of computer science or telecommunications (specialization in distributed and interactive systems or multimedia), mathematics, or related field. Preferable qualifications for candidates include proven research talent, programming skills (C/C++, Python, Javascript), practical experience with multimedia systems, and software development in a team.

Candidates are expected to have an excellent command of English, and good academic writing and presentation skills.

Terms and conditions:

The terms of employment are in accordance with the Dutch Collective Labour Agreement for Research Centres ("CAO-onderzoeksinstituten"). The gross monthly salary for an employee on a full time basis, depending on relevant work experience, ranges from € 3,121 to € 4,439. The appointment will be for a period of two years

Employees are also entitled to a holiday allowance of 8% of the gross annual salary and a year-end bonus of 8,33%. CWI offers attractive working conditions, including flexible scheduling and help with housing for expat employees.

Information:

Applications can be sent before 30 November 2013 to apply@cwil.nl. All applications should include a detailed resume, motivation letter, a list of your PhD courses and grades, a copy of your doctoral thesis, and preferably a list of publications.

For more information about the vacancy, please contact dr. Pablo Cesar, <http://homepages.cwi.nl/~garcia/>

For more information about CWI, please visit www.cwi.nl or watch our video "A Fundamental Difference" about working at CWI.

About Centrum Wiskunde & Informatica

Centrum Wiskunde & Informatica (CWI) is the Dutch national research institute for mathematics and computer science and linked to the Netherlands Organisation for Scientific Research (NWO). The mission of CWI is to conduct pioneering research in mathematics and computer science, generating new knowledge in these fields and conveying it to trade, industry, and society at large.

CWI is located at Science Park Amsterdam. It is an internationally oriented institute, with 150 scientists from approximately 25 countries. The facilities are first-

rate and include excellent IT support, career planning, training, and courses.

Research group

The continued convergence of digital media production and distribution devices presents a host of new problems related to the creation, distribution, adaptation and rendering of multimedia on a range of dissimilar devices. Our group studies fundamental problems related to media distribution and modeling, media encoding and creation, and platform agnostic distribution.

More information about our group can be found on:

<http://www.cwi.nl/research-groups/distributed-and-interactive-systems>

Employer: CWI, Amsterdam

Expiration date: Saturday, November 30, 2013

More information date: <http://www.cwi.nl/jobs/postdoc-subject-of-distributed-and-interactive-multimedia-systems>

Postdoc on interactive systems and user experience

Centrum Wiskunde & Informatica (CWI) has a vacancy in the Distributed and Interactive Systems research group for a talented Postdoc, on the subject of interactive systems and user experience.

Job description

This vacancy is particularly interesting if you publish in ACM CHI, ACM CSCW, Ubicomp or ACM Multimedia. As a postdoc, you will be working with the group in interactive systems and user experience.

You will help our PhD students and will study novel interaction paradigms that result from the convergence of multimedia communications and social networking (including behavioral analysis). In this inter-disciplinary position, you are expected to have a strong background on user experience research, combined with technical skills. The work will primarily focus on QoE research for rich media-mediated communications, which might consider mobile and ubiquitous scenarios.

Applicants should be ready to get their hands dirty and like and be able to work in a team.

Requirements

Candidates are required to have a completed PhD (or expect to complete it within the following six months) in computer science or similar (but with a strong background in user experience), mathematics, or related field. Preferable qualifications for candidates include proven research talent, programming skills (C/C++, Python, Javascript), practical experience with multimedia systems, and software development in a team.

Candidates are expected to have an excellent command of English, and good academic writing and presentation skills.

Terms and conditions

Candidates are required to have a completed PhD (or expect to complete it within the following six months) in computer science or similar (but with a strong background in user experience), mathematics, or related field. Preferable qualifications for candidates include proven research talent, programming skills (C/C++, Python, Javascript), practical experience with multimedia systems, and software development in a team.

Candidates are expected to have an excellent command of English, and good academic writing and presentation skills.

Information

Application

Applications can be sent before 30 November 2013 to apply@cw.nl. All applications should include a detailed resume, motivation letter, a list of your PhD courses and grades, a copy of your doctoral thesis, and preferably a list of publications.

For more information about the vacancy, please contact dr. Pablo Cesar (<http://homepages.cwi.nl/~garcia/>)

For more information about CWI, please visit www.cwi.nl or watch our video "A Fundamental Difference" about working at CWI.

About Centrum Wiskunde & Informatica

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The continued convergence of digital media production and distribution devices presents a host of new problems related to the creation, distribution, adaptation and rendering of multimedia on a range of dissimilar devices. Our group studies fundamental problems related to media distribution and modeling, media encoding and creation, and platform agnostic distribution.

More information about our group can be found on:

<http://www.cwi.nl/research-groups/distributed-and-interactive-systems>

Employer: CWI, Amsterdam

Expiration date: Saturday, November 30, 2013

More information date: <http://www.cwi.nl/jobs/postdoc-subject-of-interactive-systems-and-user-experience>

Research Scientist, Collaborative Spaces and Telepresence

FX Palo Alto Laboratory (FXPAL) is seeking talented research scientists to join our lab as regular or visiting employees (e.g. post doc or faculty sabbatical). FXPAL's research spans multimedia, information access, smart spaces, and remote collaboration. The following research area is of particular interest, although we will consider exceptional candidates in other related areas.

Collaborative Spaces and Telepresence

This candidate will join an existing, technically diverse team working on a variety of presence and communication technologies. We seek candidates with backgrounds in multimedia systems, ubiquitous computing, distributed systems, and/or human-computer interaction. Ideal candidates will have prior experience working on communication tools and/or telepresence applications. The position requires a Ph.D. in Computer Science or related field, and strong development skills.

Submitting an Application

Please email your resume to: fxpalresumes@fxpal.com. We are an equal opportunity employer, and value diversity in the workplace.

More information

<mailto:Dick.Bulterman@fxpal.com>

Employer: FX Palo Alto Laboratory, Inc.

Expiration date: Friday, February 28, 2014

More information date: <http://fxpal.com/?p=internships>

Research Scientist, Data Mining/Vis Analytics

FX Palo Alto Laboratory (FXPAL) is seeking talented research scientists to join our lab as regular or visiting employees (e.g. post doc or faculty sabbatical). FXPAL's research spans multimedia, information

access, smart spaces, and remote collaboration. The following research area is of particular interest, although we will consider exceptional candidates in other related areas.

Data Mining and Visual Analytics

The ideal candidate has expertise in analysis, visualization and management of media such as text, image, video, and audio. Ideal candidates will also have experience in network analysis as applied to social and enterprise media such as microblogs, forums, and emails and/or data visualization and interactive large-scale data applications. Fluency with tools supporting the collection, organization and processing of large structured and unstructured data sets is desirable. The position requires a Ph.D. in Computer Science or related field, and strong development skills.

Submitting an Application

Please email your resume to: fxpalresumes@fxpal.com. We are an equal opportunity employer, and value diversity in the workplace.

More information

<mailto:Dick.Bulterman@fxpal.com>

Employer: FX Palo Alto Laboratory, Inc.
Expiration date: Friday, February 28, 2014
More information date: <http://fxpal.com/?p=employment>

Calls for Contribution

CFPs: Sponsored by ACM SIGMM

2nd BAMMF

(e.g. International Workshop on Tiny Details of TCP 2012)

Submission deadline: 04. January 2014
Location: 3174 Porter Drive, Palo Alto, CA
Dates: 04. February 2014 -04. February 2014
More information: <http://www.bammf.org>
Sponsored by ACM SIGMM and IEEE

Encouraged and sponsored by the ACM SIGMM, IEEE TCMC, IEEE TCSEM, and FXPAL, we started a half-day Bay Area Multimedia Forum (BAMMF) series. Here is the schedule of our second forum on Feb 4th. 1:00pm-1:30pm Attendee Networking 1:30pm-2:30pm Images Shared in Social Media: A Window into User Sentiment and Emotion ... Read more →

ACM ICMR 2014

International Conference on Multimedia Retrieval

Submission deadline: 02. December 2013
Location: Glasgow, UK
Dates: 01. April 2014 -04. April 2014
More information: <http://www.icmr2014.org/>
Sponsored by ACM SIGMM

The Annual ACM International Conference on Multimedia Retrieval (ICMR) offers a great opportunity for exchanging leading-edge multimedia retrieval ideas among researchers, practitioners and other potential users of multimedia retrieval systems. ICMR 2014 is seeking original high quality submissions addressing innovative research in the broad field of multimedia retrieval. We wish ... Read more →

AEC Area @ ACM MM 2014

Multimedia Art, Entertainment and Culture Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
Location: Orlando, FL, USA
Dates: 03. November 2014 -07. November 2014
More information: http://www.acmmm.org/2014/call_full_short_papers.html
Sponsored by ACM SIGMM

The focus of this area is on the innovative use of digital multimedia technology in arts, entertainment and culture, to support the creation of multimedia content, artistic interactive and multimodal installations, the analysis of media consumption and user experience, or cultural preservation. We seek long and short papers in a ... Read more →

Audio Area @ ACM MM 2014

Music, Speech and Audio Processing in Multimedia Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
Location: Orlando, FL, USA
Dates: 03. November 2014 -07. November 2014
More information: http://www.acmmm.org/2014/call_full_short_papers.html
Sponsored by ACM SIGMM

As a core part of multimedia data, the acoustic modality is of great importance as a source of information that is orthogonal to other modalities like video or text. Incorporating this modality in multimedia systems allows for richer information to be extracted when performing

multimedia content analysis and provides richer ... Read more →

CBMI 2104

12th International Workshop on Content-Based Multimedia Indexing

Submission deadline: 16. February 2014
Location: Klagenfurt, Austria
Dates: 18. June 2014 -20. June 2014
More information: <http://cbmi2014.itec.aau.at/>
Sponsored by ACM SIGMM and IEEE

The 12th International CBMI Workshop aims at bringing together the various communities involved in all aspects of content-based multimedia indexing, retrieval, browsing and presentation. The scientific program of CBMI 2014 will include invited keynote talks and regular, special and demo sessions with contributed research papers. CBMI 2014 is organized in ... Read more →

Crowd Area @ ACM MM 2014

Multimedia and the Crowd Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
Location: Orlando, FL, USA
Dates: 03. November 2014 -07. November 2014
More information: http://www.acmmm.org/2014/call_full_short_papers.html
Sponsored by ACM SIGMM

Crowdsourcing makes use of human intelligence and a large pool of contributors to address problems that are difficult to solve using conventional computation. This area crosscuts traditional multimedia topics and solicits submissions dedicated to results and novel ideas in multimedia that are made possible by the crowd, i.e., they exploit ... Read more →

Emotion Area @ ACM MM 2014

Emotional and Social Signals in Multimedia Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
Location: Orlando, FL, USA
Dates: 03. November 2014 -07. November 2014
More information: http://www.acmmm.org/2014/call_full_short_papers.html
Sponsored by ACM SIGMM

A lot of multimedia systems capture human behavior, and in particular, social and emotional signals. These systems would therefore benefit from the ability to automatically interpret and react to the social and

emotional context. The interpretation, analysis, and synthesis of social and emotional signals requires a different expertise that draws ... Read more →

HCI Area @ ACM MM 2014

Multimedia HCI and QoE Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
Location: Orlando, FL, USA
Dates: 03. November 2014 -07. November 2014
More information: http://www.acmmm.org/2014/call_full_short_papers.html
Sponsored by ACM SIGMM

There is a growing evolution of media towards interactivity, which is prompted by the intrinsically interactive nature of devices used for media consumption, as well as progress in media content description that makes it amenable to direct access and manipulation. In addition, the same advances provide a basis for capturing ... Read more →

ICMR 2014 special session

ICMR 2014 Special Session On User-Centric Video Search and Hyperlinking

Submission deadline: 05. January 2014
Location: Glasgow, UK
Dates: 01. April 2014 -04. April 2014
More information: http://www.icmr2014.org/?page_id=261
Sponsored by ACM SIGMM

This special session will focus on video search from a user-centric perspective and targets a real-world use-case scenario. We aim to step forward from the technical focus on search of video content to focus on search of video content that is supported to support user motivated search needs and the ... Read more →

Learning Area @ ACM MM 2014

Deep Learning Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
Location: Orlando, FL, USA
Dates: 03. November 2014 -07. November 2014
More information: http://www.acmmm.org/2014/call_full_short_papers.html
Sponsored by ACM SIGMM

Deep Learning is an emergent field of Machine Learning focusing on learning representations of data. Deep Learning has recently found success in a variety of domains, from computer vision to speech recognition, natural language processing, web search ranking, and

even online advertising. Deep Learning's power comes from learning rich representations ... [Read more](#) →

Multimodal Area @ ACM MM 2014

Multimodal Analysis and Description Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
 Location: Orlando, FL, USA
 Dates: 03. November 2014 -07. November 2014
 More information: http://www.acmmm.org/2014/call_full_short_papers.html
 Sponsored by ACM SIGMM

Analysis of multimedia content enables us to better understand what the content is about in order to improve its indexing, representation, and consumption for the purpose of retrieval, content creation/enhancement and interactive applications. Research so far has mostly focused on mono-modal analysis of multimedia content, such as looking only into ... [Read more](#) →

Scale Area @ ACM MM 2014

Big and Broad Multimedia Area of ACM Multimedia 2014

Submission deadline: 31. March 2014
 Location: Orlando, FL, USA
 Dates: 03. November 2014 -07. November 2014
 More information: http://www.acmmm.org/2014/call_full_short_papers.html
 Sponsored by ACM SIGMM

This area solicits novel research contributions that look at the different V's - volume, velocity, and variety - for value creation from 'big and broad' multimodal data. Paying attention to the variety of data streams being produced, we seek novel approaches and techniques that allow for integration and co-processing of multiple streams of data for newer insights, for ... [Read more](#) →

Search Area @ ACM MM 2014

Multimedia Search and Recommendation Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
 Location: Orlando, FL, USA
 Dates: 03. November 2014 -07. November 2014
 More information: http://www.acmmm.org/2014/call_full_short_papers.html
 Sponsored by ACM SIGMM

In the past decade, there has been an explosive growth of multimedia contents on the Web, desktops, and mobile devices. The deluge of multimedia leads to "information overload" and poses new

challenges and requirements for effective and efficient access to multimedia content. Multimedia search and recommendation techniques are essential in ... [Read more](#) →

Security Area @ ACM MM 2014

Multimedia Security, Privacy and Forensics Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
 Location: Orlando, FL, USA
 Dates: 03. November 2014 -07. November 2014
 More information: http://www.acmmm.org/2014/call_full_short_papers.html
 Sponsored by ACM SIGMM

The growth of multimedia as demonstrated by social networking sites such as Facebook and YouTube, combined with advances in multimedia content analysis, underscores potential risks for the unethical use of multimedia user data. In small scale or in isolation, multimedia analytics is a reasonably contained privacy threat. However, when linked ... [Read more](#) →

SEWM @ ACM ICMR 2014

ICMR Workshop on Social Events in Web Multimedia (SEWM)

Submission deadline: 01. February 2014
 Location: Glasgow, UK
 Dates: 01. April 2014 -04. April 2014
 More information: <http://mklab2.itl.gr/sewm14/>
 Sponsored by ACM SIGMM

The modeling, detection and processing of events is an area that has started to receive considerable attention by the multimedia community. The SEWM Workshop at ACM ICMR'14 aims to attract and present the latest developments and results on the discovery of social events from web multimedia content, and on techniques ... [Read more](#) →

Social Media Area @ ACM MM 2014

Social Media and Collective Online Presence Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
 Location: Orlando, FL, USA
 Dates: 03. November 2014 -07. November 2014
 More information: http://www.acmmm.org/2014/call_full_short_papers.html
 Sponsored by ACM SIGMM

This area seeks novel contributions investigating online social interactions around multimedia systems, streams, and collections. Social media (such as Facebook,

Twitter, Flickr, YouTube etc.) has substantially and pervasively changed the communication among organizations, communities, and individuals. Sharing of multimedia objects, such as images, videos, music, and associated text messages, constitutes ... Read more →

Society Area @ ACM MM 2014

Multimedia and Society Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
 Location: Orlando, FL, USA
 Dates: 03. November 2014 -07. November 2014
 More information: http://www.acmmm.org/2014/call_full_short_papers.html
 Sponsored by ACM SIGMM

Explosive amounts of multimedia content coupled with the Internet have enabled formation of virtual communities, virtual corporations, virtual hospitals, virtual schools, and virtual governments, just to name a few. They have brought about significant changes in our society. Patients receive wellness services or health treatments remotely. Home health monitoring services ... Read more →

Systems Area @ ACM MM 2014

Multimedia Systems and Middleware Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
 Location: Orlando, FL, USA
 Dates: 03. November 2014 -07. November 2014
 More information: http://www.acmmm.org/2014/call_full_short_papers.html
 Sponsored by ACM SIGMM

This area targets applications, mechanisms, algorithms, and tools that enable the design and development of efficient, robust and scalable multimedia systems. In general, it includes solutions at various levels in the software and hardware stack. We call for submissions that explore the design of architectures and software for mobile multimedia, ... Read more →

Transport Area @ ACM MM 2014

Media Transport and Delivery Area at ACM Multimedia 2014

Submission deadline: 31. March 2014
 Location: Orlando, FL, USA
 Dates: 03. November 2014 -07. November 2014
 More information: http://www.acmmm.org/2014/call_full_short_papers.html
 Sponsored by ACM SIGMM

The area of Media Transport and Delivery (MT&D) invites research that is concerned with the mechanisms that are used to move information through public networks like the Internet, as well as the placement and movement of information within CDNs, P2P networks, Clouds, clusters, or even within a single computer, with ... Read more →

CFPs: Sponsored by ACM (any SIG)

ACM e-Energy 2014

ACM e-Energy 2014

Submission deadline: 15. January 2014
 Location: Cambridge, UK
 Dates: 11. June 2014 -13. June 2014
 More information: <http://conferences.sigcomm.org/eenergy/2014>
 Sponsored by ACM

The fifth International Conference on Future Energy Systems (ACM e-Energy), to be held in Cambridge UK in June 2014, aims to be the premier venue for researchers working in the broad areas of computing and communication for smart energy systems (including the smart grid), and in energy-efficient computing and communication ... Read more →

ACM SIGIR 2014

The 37th Annual International ACM SIGIR Conference

Submission deadline: 27. January 2014
 Location: Gold Coast, Queensland, Australia
 Dates: 06. July 2014 -11. July 2014
 More information: <http://sigir.org/sigir2014/>
 Sponsored by ACM

SIGIR is the major international forum for the presentation of new research results and for the demonstration of new systems and techniques in the broad field of information retrieval. Next year's conference will feature 6 days of papers, posters, demonstrations, tutorials and workshops focused on research and development in the ... Read more →

EmpaTeX @ TVX 2014

First workshop on Empathic Television Experiences

Submission deadline: 23. March 2014
 Location: Newcastle-upon-Tyne
 Dates: 25. June 2014 -25. June 2014

More information: <http://empatex2014.org>
Sponsored by ACM

Personalized TV/media experiences are becoming mainstream. Recommender systems and other personalization technology are frequently included in television sets and second screen applications. Current systems lack one major ability: to be empathic, to take appropriate actions based on intentions, emotions or mood of persons in front of the TV. This workshop ...
Read more →

IH&MMSec 2014

The 2nd ACM Information Hiding and Multimedia Security Workshop

Submission deadline: 17. January 2014
Location: Salzburg, Austria
Dates: 11. June 2014 -13. June 2014
More information: <http://www.ihmmsec.org>
Sponsored by ACM

The 2nd ACM Information Hiding and Multimedia Security Workshop focusses on both, information hiding topics such as watermarking, steganography and steganalysis, anonymity, privacy, hard-to-intercept communications, and covert/subliminal channels as well as multimedia security topics such as data hiding, robust/perceptual hashing, biometrics, video surveillance, and multimedia forensics. The 2nd ACM Information ...
Read more →

LEARNING@SCALE @ SIGSCE 2014

ACM Conference on Learning at Scale

Submission deadline: 08. November 2013
Location: Atlanta, GA, USA
Dates: 04. March 2014 -05. March 2014
More information: <http://learningatscale.acm.org>
Sponsored by ACM

The first annual meeting of the ACM Conference on Learning at Scale will be held March 4-5, 2014 in Atlanta, GA, USA. This conference is intended to promote scientific exchange of interdisciplinary research at the intersection of the learning sciences and computer science. Inspired by the emergence of Massive Open ...
Read more →

QoMEX 2014

International Workshop on Quality of Multimedia Experience

Submission deadline: 04. May 2014

Location: Singapore
Dates: 18. September 2014 -20. September 2014
More information: <http://www.qomex2014.org>
Sponsored by ACM and IEEE

The sixth International Workshop on Quality of Multimedia Experience (QoMEX) will bring together leading experts from academia and industry interested in evaluating multimedia quality and user experience. Coming to Asia for the first time, QoMEX 2014 will be held in Singapore, conveniently located adjacent to InterSpeech and MMSP. Prospective organizers ...
Read more →

WSICC @ TVX 2014

2nd International Workshop on Interactive Content Consumption at TVX 2014

Submission deadline: 17. March 2014
Location: Newcastle upon Tyne, UK
Dates: 25. June 2014 -25. June 2014
More information: <http://wsicc.net>
Sponsored by ACM

This workshop focuses on novel forms of interactive content consumption. It will explore the shifting balance between lean-back passive TV and Web media consumption and lean-forward interactivity. Beyond entertainment, interactive audiovisual content has a high potential for learning and support scenarios. An interdisciplinary view on the topic shall be compiled ...
Read more →

CFPs: Sponsored by IEEE (any TC)

C-Game @ IEEE ICME 2014

The First International Workshop on Cloud Gaming Systems and Networks

Submission deadline: 23. March 2014
Location: Chengdu, China
Dates: 14. July 2014 -18. July 2014
More information: <https://sites.google.com/site/icmecgames2014/>
Sponsored by IEEE

Online gaming systems are now widely used not just for entertainment, but also for socializing, business, commerce, and many other practical purposes. Cloud gaming leverages the well-known concept of cloud computing to provide online gaming services to players. The aim of this workshop is to provide a forum that brings ...
Read more →

Grand Challenges @ IEEE ICME 2014

IEEE International Conference on Multimedia and Expo 2014 Grand Challenges

Submission deadline: 16. April 2014
Location: CHENGDU, China – Home of Panda
Dates: 14. July 2014 -18. July 2014
More information: <http://www.icme2014.org/grand-challenges>
Sponsored by IEEE

ICME2014 Grand Challenges, an industry sponsored program at the ICME2014, consist of a number of multimedia related Challenges or contests that are put forward by industry sponsors. These Challenges are challenging as well as entertaining, and provide cash awards. Both individuals and teams are welcome to participate in these Challenges. ... [Read more](#) →

ICME 2014

IEEE International Conference on Multimedia and Expo 2014

Submission deadline: 03. December 2013
Location: Chengdu, China – Home of Panda
Dates: 14. July 2014 -18. July 2014
More information: <http://www.icme2014.org>
Sponsored by IEEE

With around 1000 submissions and 500 participants each year, the IEEE International Conference on Multimedia & Expo has been the flagship multimedia conference sponsored by four IEEE societies since 2000. It serves as a forum to promote the exchange of the latest advances in multimedia technologies, systems, and applications from ... [Read more](#) →

IEEE ICIP 2014

IEEE International Conference on Image Processing

Submission deadline: 31. January 2014
Location: Paris, France
Dates: 27. October 2014 -30. October 2014
More information: <http://www.icip2014.com/>
Sponsored by IEEE

The International Conference on Image Processing (ICIP), sponsored by the IEEE Signal Processing Society, is the premier forum for the presentation of technological advances and research results in the fields of theoretical, experimental, and applied image

and video processing. ICIP 2014, the twentyfirst in the series that has been held ... [Read more](#) →

IEEE MultiMedia

IEEE MultiMedia Magazine

Social Multimedia and Storytelling

Submission deadline: 20. July 2014
Special issue
More information: <http://www.computer.org/portal/web/computingnow/mmcfp3>
Sponsored by IEEE

The objective of this special issue is to revisit how social multimedia is transforming the way multimedia content is captured, shared, and made available to others. In particular, we are interested on the different stages of the lifecycle of the social multimedia content — from the moment something is captured, ... [Read more](#) →

IEEE TAC

IEEE Transaction on Affective Computing

Advances in Affective Analysis in Multimedia

Submission deadline: 31. July 2014
Special issue
More information: http://ibug.doc.ic.ac.uk/media/uploads/documents/multimedia_special_issue_tac_cfp.pdf
Sponsored by IEEE

Recent advances in multimedia computing brought a dramatic increase in the research on multimedia retrieval and indexing based on highly subjective concepts such as emotions and preference. We are inviting original submissions from the following topics: – Affective/emotional content analysis of music, images and videos – Multimodal integration for affective ... [Read more](#) →

IEEE WoWMoM 2014

IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks

Submission deadline: 22. November 2013
Location: Sydney, Australia
Dates: 16. June 2014 -19. June 2014
More information: <http://wowmom14.conference.nicta.com.au>
Sponsored by IEEE

IEEE WoWMoM 2014 is soliciting original and previously unpublished papers addressing research challenges and advances towards a world of wireless, mobile, and multimedia pervasive communications. The evolution of wireless networking technologies and their key role in future Internet scenarios offer an increasing wealth of opportunities for distributing multimedia contents over wireless networks, enabling dissemination of ... [Read more](#) →

IWCA 2014

IEEE International Workshop on Cloud Analytics

Submission deadline: 22. November 2013
 Location: Boston, MA, USA
 Dates: 11. March 2014 -11. March 2014
 More information: <http://www.cs.ucsb.edu/~rich/IWCA-1/Boston,MA>
 Sponsored by IEEE

The purpose of this workshop is to provide a forum for researchers in the related fields to exchange ideas, and share their experiences in developing analytics to better deploy, operate and use the cloud. Specifically, we seek and wish to foster research contributions that draw on statistical analysis, analytical modeling, ... [Read more](#) →

MediaEval 2014: task proposals

MediaEval Benchmarking Initiative for Multimedia Evaluation

Submission deadline: 21. December 2013
 Location:
 Dates: 21. December 2013 -21. December 2013
 More information: <http://www.multimediaeval.org/mediaeval2014>
 Sponsored by IEEE

MediaEval is a benchmarking initiative dedicated to evaluating new algorithms for multimedia access and retrieval. It emphasizes the 'multi' in multimedia and focuses on human and social aspects of multimedia tasks. MediaEval is calling for proposals for tasks from researchers in academia and industry to run in the 2014 benchmarking ... [Read more](#) →

QCMAN 2014

2nd IEEE/IFIP Workshop on QoE Centric Management

Submission deadline: 07. December 2013
 Location: Krakow, Poland
 Dates: 09. May 2014 -09. May 2014
 More information: <http://www.qcman.org>

Sponsored by IEEE

The Second IEEE/IFIP International Workshop on Quality of Experience Centric Management (QCMAN) will be held in conjunction with IEEE/IFIP NOMS 2014 in Krakow, Poland, from May 5-9, 2014. The workshop is sponsored by the IEEE Communications Society (ComSoc) and supported by the Klagenfurt University and iMinds. The workshop is endorsed ... [Read more](#) →

SoMuS 2014

International Workshop on Social Multimedia and Storytelling

Submission deadline: 01. February 2014
 Location: Glasgow, Scotland
 Dates: 01. April 2014 -01. April 2014
 More information: <https://sites.google.com/site/socialmultimediasstorytelling>
 Sponsored by IEEE

We are pleased to announce the 1st International Workshop on Social Multimedia and Storytelling, co-located with ICMR2014! The workshop seeks research contributions that address different stages of the lifecycle of social multimedia content, from the moment an event is captured in media, through its online sharing, collection, and processing to ... [Read more](#) →

TEMU 2014

International Conference on Telecommunications and Multimedia

Submission deadline: 31. March 2014
 Location: Heraklion, Crete, Greece
 Dates: 28. July 2014 -30. July 2014
 More information: <http://www.temu.gr/>
 Sponsored by IEEE

The International Conference on Telecommunications and Multimedia (TEMU) provides a forum for discussion on recent advances in wired and wireless communication systems, audiovisual applications and content creation/delivery technologies, Internet services and interactive applications, as well as on tools and techniques for their performance evaluation and QoS/QoE validation under simulated and ... [Read more](#) →

WMNC 2014

7th IFIP Wireless and Mobile Networking Conference

Submission deadline: 29. January 2014
 Location: Vilamoura, Algarve, Portugal
 Dates: 20. May 2014 -22. May 2014
 More information: <http://wmnc2014.uc.pt/>

Sponsored by IEEE

The 7th IFIP Wireless and Mobile Networking Conference (WMNC 2014) is sponsored by IFIP TC6 and IEEE. Accepted and presented papers will be published in the conference proceedings and submitted to IEEE Xplore as well as other Abstracting and Indexing (A&I) databases. A "Best Paper Award" and one "Student Travel ... Read more →

CFPs: Not ACM-/IEEE-sponsored

#Microposts 2014

The 4th Making Sense of Microposts Workshop (#Microposts2014) at WWW 2014

Submission deadline: 07. January 2014
Location: Seoul, South Korea
Dates: 06. April 2014 -06. April 2014

AIPR 2014

The International Conference on Artificial Intelligence and Pattern Recognition

Submission deadline: 17. October 2014
Location: Kuala Lumpur, Malaysia
Dates: 17. November 2014 -19. November 2014
More information: <http://sdiwc.net/conferences/2014/aipr2014>

BigScholar @ WWW 2014

Workshop on Big Scholarly Data: Towards the Web of Scholars

Submission deadline: 14. January 2014
Location: Seoul, Korea
Dates: 08. April 2014 -08. April 2014
More information: <http://dutphonelab.org/bigscholar/>

DICTAP 2014

The Fourth International Conference on Digital Information and Communication Technology and its Applications

Submission deadline: 06. April 2014
Location: University of the Thai Chamber of Commerce, Bangkok, Thailand
Dates: 06. May 2014 -08. May 2014
More information: <http://sdiwc.net/conferences/2014/dictap2014/>

IDEE 2014

3rd Workshop on Interaction Design in Educational Environments

Submission deadline: 20. January 2014
Location: Lisbon, Portugal
Dates: 27. April 2014 -30. April 2014
More information: <http://idee-workshop.org>

IDGEI 2014

Video Analytics for Audience Measurement in Retail and Digital Signage

Submission deadline: 10. December 2014
Location: Haifa, Israel
Dates: 24. February 2014 -24. February 2014
More information: <http://idgei2014.joanneum.at>

ISWC 2014

International Symposium on Wearable Computers

Submission deadline: 28. March 2013
Location: Seattle, US
Dates: 13. September 2014 -17. September 2014
More information: <http://www.iswc.net/iswc14/>

MediViz 2014

11th International Conference on BioMedical Visualization

Submission deadline: 10. January 2014
Location: Paris, France
Dates: 15. July 2014 -18. July 2014
More information: <http://www.graphicsslink.co.uk/IV2014>

MMC @ IEEE ICME 2014

2014 IEEE International Workshop on Mobile Multimedia Computing (MMC 2014)

Submission deadline: 23. March 2014
Location: Chengdu, China
Dates: 14. July 2014 -18. July 2014
More information: <http://mclab.citi.sinica.edu.tw/open/mmc2014/>

PMIA 2014

Workshop on Personalised Multilingual Information Access (PMIA 2014) at UMAP

Submission deadline: 01. April 2014

Location: Aalborg, Denmark
Dates: 07. July 2014 -11. July 2014
More information: <http://www.cs.ubc.ca/~steichen/PMIA2014>

SAI 2014

Science and Information (SAI) Conference 2014

Submission deadline: 01. March 2014
Location: London UK
Dates: 27. August 2014 -29. August 2014
More information: <http://www.conference.thesai.org>

SPIE Europe 2014

SPIE Photonics Europe 2014, Special Track: "HDR Imaging and Privacy Intrusion"

Submission deadline: 17. March 2014
Location: Brussels, Belgium
Dates: 14. April 2014 -17. April 2014
More information: <http://spie.org/photonics-europe.xml>

TOFIEE

Transactions on Future Intelligent Educational Environments

Intelligent Environments in Education and Culture

Submission deadline: 20. February 2014
Special issue
More information: <https://sites.google.com/site/hrs17388/announce>

VAAM 2014

Video Analytics for Audience Measurement in Retail and Digital Signage

Submission deadline: 28. March 2014
Location: Stockholm, Sweden
Dates: 24. August 2014 -24. August 2014
More information: <http://www.ino.it/vaam/>

VisHMC @ IEEE ICME 2014

IEEE International Workshop on the Visualization of Heterogeneous Multimedia Content

Submission deadline: 23. March 2014

Location: Chengdu, China
Dates: 14. July 2014 -18. July 2014
More information: <http://vishmc2014.dai-labor.de/>

WMPA 2014

1st Winter School on Multimedia Processing and Applications Details of TCP 2012

Submission deadline: 01. November 2013
Location: Dublin, Ireland
Dates: 06. January 2014 -08. January 2014
More information: <http://winterschool.mediamixer.eu>

Back Matter

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