

A Report on the IASTED PDCN 2005 Conference (Innsbruck, Austria)

By

Mr Boran Gazi

Optical Communications Research Group,
School of Engineering and Technology,
The University of Northumbria
Newcastle upon Tyne, UK

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1. Executive Summary

The International Association of Science and Technology for Development (IASTED) is a non-profit organisation founded in Zurich, Switzerland in 1977. The main objective of IASTED is to promote economic development through science and technology. IASTED organises over 300 conferences in more than 25 countries worldwide. By this way, researchers from various institutes and members of industry are brought together to exchange ideas and initiate collaborative work at an international level.

The IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN 2005) is a part of Twenty-Third IASTED International Multi-Conference on *APPLIED INFORMATICS*. PDCN 2005 was held in conjunction with the IASTED International Conferences on Artificial Intelligence and Applications (AIA 2005), Databases and Applications (DBA 2005), Software Engineering (SE 2005), Modelling, Identification, and Control (MIC 2005), and Biomedical Engineering (BioMED 2005) at the city of Innsbruck, Austria, at Innsbruck Congress on 15-17 February 2005. PDCN is sponsored by the International Association of Science and Technology for Development (IASTED), Technical Committee on Parallel and Distributed Computing and Systems, and World Modelling and Simulation Forum (WMSF), also in cooperation with IEEE Technical Committee on Parallel Processing (TCPP).

The aim of this report is to reflect and share observations and knowledge acquired during the IASTED PDCN 2005 conference. The next section provides a general overview of the PDCN conference and talks about different topic groups presented during this conference. Section 3 talks about some of the sessions that have been attended. This section provides information on some of the presentations and observations from my presentation. Section 4 talks about the benefits of this visit to my study and institution/research group.

2. Scope of the Conference

The PDCN conference covers a wide range of subjects such as parallel and distributed systems, communications and computer networks. The topics presented at the PDCN conference can be classified into the following major fields of study:

- Grid Computing
- Operating Systems and Scheduling
- Computer Networks
- Wireless Networks
- Algorithms
- Modelling and Simulation
- Distributed Real-Time Systems
- Interconnection Networks and Protocols
- Parallelization Technologies
- Performance Evaluation
- Distributed Multimedia Systems
- Distributed Computing and Web Technologies
- Fault Tolerance and Reliability
- Parallel Programming and Applications
- Architectures
- Mobile Computing

These subject groups are highly related to each other as well. Organisers tried to form a wide range topic groups whilst relating some research topics to each other to attract researchers from other sessions. This helped to create interest in other fields of study and thus improve the interaction between researchers.

Conference organisers have also included keynote talks to address current issues and trends in parallel and distributed systems and communication networks. One of the keynote speakers (Dr J. Bacon) from the University of Cambridge addressed the potentials of network based systems to form a well-established framework for services such as healthcare, taxation, policing, social services, transport etc. It was also argued that new challenges arise as the technology evolves. For example, software applications developed for healthcare workers and police must take into account that they are mobile and new technologies such as wireless/mobile networks must be considered to enhance the availability of such services. Finally, the speaker presented key research topics in this area studied at the University of Cambridge Computer Laboratory (see [3]).

Apart from new trends, a special session on “service-oriented technologies and paradigms” has been organised to encourage communication between researchers and developers in the special field of service architectures both in industry and academia. The main purpose of this special session was to attract the attention of other researchers to contribute in this research area and boost the awareness of both industry and research groups to meet the technological demands in the coming years. The common message given at this special session was that service-oriented technologies will be highly on demand in the near future in different industry domains such as automotive, telecommunications and home environments [4].

3. Sessions

The conference organisers received a vast amount of papers all around the world and they managed to include well-established key research topics for this conference. The majority of papers that have been accepted for this joint conference are from Europe, US and Japan. The figures provided by the conference organisers show that these countries are the main contributors and fund raisers for research.

Papers were sorted according to the keywords provided by the authors and also the availability of papers in this area. Therefore some of the topics appeared under different subjects, but still related to topics that appear in the same session. Due to very busy timetable and parallel sessions, it wasn't very easy to attend the specific presentations of interest.

My session was under the subject of "Modelling and Simulation". The topics presented in this session covers different aspects of modelling, simulation and analysis methods. Application domains of these topics were very diverse. However, the common practice was the methods used by the researchers to study and analyse the problem in hand. Entire session was in the form of asking and exchanging ideas to learn the methods and practices used by other researchers. The key questions that I received from the audience and the conference chair include:

- Manufacturing the developed architecture
- And specific technical questions on
 - Performance issues
 - Algorithm design considerations
 - Simulation and analysis methods

Technical questions were of most interest. Other researchers mostly tried to understand how the simulation software was developed and tested, which platform and programming language have been used. This is because one of the presenters was talking about reducing simulation times by using different techniques and I was asked how I coped with long simulation times. Since my research is not funded, the question on "manufacturing" was the most difficult one for me. Hence I explained the audience that we are currently seeking interest and funds from the industry.

Parallel sessions made it difficult to attend some of the other interesting sessions. Therefore I checked the proceedings provided on the day I registered with the conference. I read the abstracts of most of the topics that I am interested in. Hence I

come up with a schedule and attended selected presentations only. The following are the main criteria considered when selecting which sessions to attend:

- Whether the session is related to my research topic
- Whether the session is related to what my research group is working on
- Whether the session is in line with current research trends

Therefore, the following are some of the interesting presentations that I had chance to attend:

1. **Storage and Network Technology** [5] - High-capacity, high-speed, reliable and flexible data storage subsystems to support a range of communication technologies and performance specifications.
2. **The design of topologies and communication strategies for interconnection networks** [6]
3. **Massively parallel optoelectronic processor architectures** [7]
4. **Design, analysis and improvement of scalable systems and applications** [8]
5. **Control, Communication and Information Technologies in Assembly Automation** [9]
6. **Content Management** [10]

4. Benefits of the Visit

Participating at an international conference and meeting people from various countries around the globe have numerous benefits both to individuals and their institutes.

Attending a research conference is a big chance to meet other researchers and learn about their research interests, current trends, industry contacts and pave path for collaboration work. During presentations, you often come across questions that are in the form of suggestions to help to improve the quality of research. For example, the technical questions that I received during my presentation helped me to change the perspective that I am looking at the problem in hand. During discussions with another researcher, I was suggested to use an analysis technique to come up with a model for my system.

International conferences benefit the research institutes the most. Before each presentation, presenters have chance to talk about their research groups, interests, industry contacts etc. There I had chance to talk about my research group and our research goals. Besides I had chance to represent the University of Northumbria. The conference proceedings is a shared resource for every research group. All members of a research group have chance to read the topics of interest. Besides, a small talk or seminar can be given to share the observations from a conference. Hence all group members become aware of current research topics and people/institutions working ahead of these research areas.

5. Conclusions

Conferences and workshops are potential places to meet people and make contacts. IASTED is one of the major organisations that organise conferences to bring researchers together around the globe. The benefits of such events include making contacts, receiving valuable feedback and suggestions, initiating collaborative study and many more. Institutes benefit from this by sending their delegates so that the existence of such research groups and their contribution to research is recognised by others. Besides, initiating contacts with people from the industry might as well bring money for research and teaching to the universities. More time must be spent to improve research. Research improves teaching and hence teaching brings more funds for research.

6. Useful Links

[1] IASTED

[<http://www.iasted.com>]

[2] IEEE Technical Committee on Parallel Processing

[<http://www.computer.org/tab/tclist/tcpp.htm>]

[3] University of Cambridge, Computer Laboratory, System Research Group, UK

[<http://www.cl.cam.ac.uk/Research/SRG/>]

[4] EU Project, Service Infrastructure for Real time Embedded Networked Applications (Sirena)

[<http://www.sirena-itea.org/Sirena/Home.htm>]

[5] [<http://xyratex.com>]

[6] Departament de Matem`atica Aplicada IV, Universitat Polit`ecnica de Catalunya, Spain, [http://www-mat.upc.es/grup_de_grafs/]

[7] University of Kent, Department of Electronics, UK

[<http://www.ee.kent.ac.uk/research/research.html>]

[8] SCAPE Laboratory, USA

[<http://scape.cse.sc.edu/>]

[9] Assembly Automation Laboratory, Finland

[<http://pe.tut.fi/aal/>]

[10] Open LAB, Sweden

[<http://www.dsv.su.se/~openlab/>]