



ARC Communications Research Network

Newsletter December 2007

Convenors Report

It has been an eventful couple of months since the last newsletter. ACoRN has organized and conducted one school event and two workshop events. Furthermore, we have been successful in bringing the internationally recognized WCNC conference event to Australia in 2010, and we are supporting a promising bid process for bringing the gigantic ICASSP conference back to Australia in 2013.

On October 29th, ACoRN held the School on Applications of the EM algorithm for Localization at University of Adelaide, where Prof Maurice Charbit from ENST Paris gave a one-day lecture. The school was organised by Prof. Lang White and Dr. Belinda Chiera, and was a great success. Prof. Charbit subsequently went to University of Sydney to give an additional one-day school.

On November 20-22nd Ingmar Land (UniSA) and Lars Rasmussen (UniSA) organised the ACoRN Australian-European Workshop on Modern Coding Techniques for Wireless Communications, where leading Australian researchers in the area were invited to take part. The workshop also invited three top European researchers, Guido Montorsi (Politecnico di Torino), Alexandre Graell i Amat (ENST Bretagne), and Gottfried Lechner (FTW), with the objective of facilitation sustainable collaboration between Europe and Australia. The workshop took on a new format for ACoRN, encouraging presentations on problems rather than solutions. Although the format was new to every

one, it was a great success with many discussions and lots of seeds for future collaboration across Australia and the world.

A similar workshop event was organised by Sylvie Perreau (UniSA) and Stuart Milner (University of Maryland) in connection with the ISSNIP conference in Melbourne. This workshop was in fact a joint event with the ARC Research Network on Sensor Networks, representing one of the first cross-network events. The invited workshop was entitled Self-Organizing Networks, and was focused on autonomous configurability and control in dynamic wireless networks. As part of the workshop, delegates were invited from the ARC, ACoRN, DSTO, the US Navy Research Labs, the US Air Force Research Labs, as well as leading researchers in the area. The objective of the workshop was to formulate a joint research agenda, facilitating a higher level of collaboration between the US and Australia. The workshop was very successful, outputting a joint statement and a joint research agenda, which will prove valuable for setting research directions.

On the conference front, I am very pleased to inform the ACoRN community that the IEEE Wireless Communications Network Conference (WCNC) 2010 will be held in Sydney, Australia. The WCNC is a key event for the IEEE Communications Society and attracts attendances of 800-1000 delegates from all over the world. A/Prof. Abbas Jamalipour (University of Sydney) has been

instrumental in the successful bid, assisted by the Sydney Convention Centre. We are grateful for the work and efforts put into this bid, and we are looking forward to hosting the event. I would like to encourage ACoRN members interested in being involved in the organization and running of the event to contact Jamie Evans (University of Melbourne) as we are seeking to put together the organization committee.

Furthermore, the ACoRN bid for ICASSP 2013 has been revived and is set to put forward a strong case. Headed by Vaughan Clarkson (University of Queensland) and Jonathan Manton (Australian National University), a determined plan has been put in place for bringing ICASSP back to Australia.

Finally, to round off a successful couple of months, I am very pleased and proud to announce that ACoRN has received recognition from the ARC. This year the [Australian Research Council "Season's greetings" card for 2007](#) features 6 success stories from the ARC funding programs. Among the 6 handpicked activities, there are 2 ARC Linkage projects, 2 ARC Centres of Excellence, 1 ARC Discovery Project, and one ARC Research Network, namely ACoRN. This is a nice pat-on-the-back from the ARC, acknowledging that ACoRN is doing well in engaging the Australian Telecommunications research community. Well done all of us!!

In circles outside the research community, the name and function of ACoRN is also moving forward. In my capacity as Convenor of ACoRN, I was invited to an official State Government luncheon in honour of his Excellency Mr CHO Changbeom, Ambassador of the Republic of Korea. As ACoRN has funded several research visits by Korean researchers, the Ambassador and the Embassy staff were well aware of the facilitating activities of ACoRN. Yet another indication that ACoRN is heading in the right direction.

Reflecting on 2007 and Looking Ahead

ACoRN has had a very successful, busy 2007. There were many workshops, schools and much collaboration. After a few years people are now working together, when I ask where they first met it was at the ACoRN workshop on... I believe that ACoRN is really having an impact on researchers and students allowing them to meet more frequently and enhancing their research.

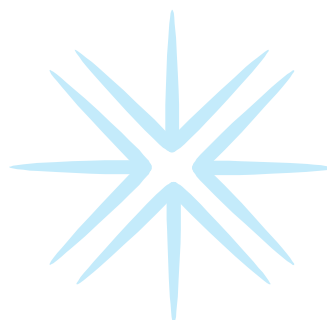
I would like to say a special thank-you to all of the Local ACoRN Representatives. There have been a few times when they have needed to supply information on their organisation, sometimes with very short deadlines and the Local ACoRN Representatives have always complied, enabling the ACoRN network to meet all requests of the ARC in a timely and efficient manner.

Recently we had to prepare statistics for the ARC. As at the end of November ACoRN had 250 signed members, including 19 professors, 10 assoc professors and 71 doctors. We also have over 500 guest members. These are researchers that do not belong to an ACoRN member organisation or are waiting for the full membership to be approved.

We have many things in the pipeline for 2008. For example, an Industry day is planned for June 2008 organized by Victoria University. Furthermore, ACoRN is joining forces with the Tall Poppy Campaign to organize an event aimed at exciting year 10 and 11 students about telecommunications. The first event will be in March 2008.

As you can see, there are many exciting events ahead of us in 2008. I wish all ACoRN members a joyful Holiday season, a Merry Christmas, and a prosperous New Year with many more ACoRN success stories.

Lars K. Rasmussen
ACoRN Network Convenor



ACoRN Workshop Reports

Applications of EM algorithm for Localization – Adelaide University

29th October 2007

Prof Charbitt delivered a one day school at Adelaide University. Researchers from Adelaide, Sydney and DSTO were very receptive to the information provided on Applications of EM Algorithms for localization and Applications of filtering for tracking. Discussions continued during all breaks and many new collaborations were made. As a result of this school Prof Charbitt was asked to visit University of Sydney to elaborate on some of the material that was presented.



Prof Charbitt visited Sydney on Wednesday Nov 21 and gave a one-day workshop at the School of Electrical and Information Engineering, the University of Sydney. The topic of the workshop is on "Expectation Maximization and Application in Localization", which has covered the principle of EM algorithm and some of its variants, and the application of EM algorithm in some tracking applications. Seven people have attended the workshop.

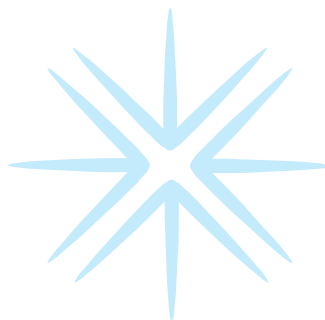
Considering that the group at the School of Electrical and Information Engineering, the University of Sydney, led by Dr Guoqiang Mao, has developed research profile in localization in the past several years, the workshop opens the scope for future collaboration in the area.

Australian-European Workshop on Modern on Modern Coding Techniques for Wireless Communications

20th – 22nd November 2007

ACoRN held its first Australian-European workshop in Adelaide. Researchers from Australia and Europe met for three days and exchanged their ideas on current work on modern coding techniques for wireless communications. The participants gave presentations about the research activities in their institutions and about personal research ideas. To create an open atmosphere that encourages discussions, the number of participants was kept relatively small: Alexandre Graell i Amat from France, Gottfried Lechner from Austria and Guido Montorsi from Italy joined with 12 researchers from Australian institutions. Furthermore, every participant had to present, and questions during the presentations were highly appreciated.

The format of the workshop was very successful. The participants had many lively discussions both during the presentations and during the breaks on the whiteboard. Moreover, they got to know each other and each others work, both within Australia and between Australia and Europe.



ACoRN News

UniSA



[Professor Alex Grant](#), the youngest academic to have been appointed Professor at UniSA has just been appointed to the role of Director of [UniSA's Institute for Telecommunications Research](#) at Mawson Lakes.

Prof Grant's research centres on developing coding for telecommunications networks that will improve the efficiency of these networks in a range of settings from remote defence and civilian applications to ICT-intense urban environments.

His outstanding performance saw him promoted to Senior Lecturer (Research) in 2001 and then to Research Professor of Information Theory in 2004 at the age of 32.

Prof Grant's research career has been remarkable. He has won more than \$3.9M in research funding including nine Australian Research Council grants and a prestigious Fellowship from the National ICT Australia. He was also co-founder of Cohda Wireless Pty Ltd, an Adelaide-based mobile broadband start up company.

In 2004 he was awarded a [Young Tall Poppy Science Award](#) from the Australian Institute of Political Science for outstanding achievements in science.

He has also built a number of significant collaborative research arrangements with national organisations such as Melbourne University, NICTA, CSIRO, the University of Sydney, Newcastle University, ANU, and DSTO and international organisations such as Bell Laboratories USA, the University of Southern California, Nortel Networks in the UK, the Vienna Telecommunications Research Centre in Austria and ENSEA in France.

Melbourne University

University of Melbourne research fellow Dr John Papandriopoulos has developed an algorithm to reduce the electromagnetic interference that slows down ADSL connections.



Most ADSL services around the world are effectively limited to speeds between 1 to 20Mbps, but if Dr Papandriopoulos's technology is successfully commercialised that speed ceiling would be closer to 100Mbps.

Dr Papandriopoulos, whose efforts also earned him the University of Melbourne's Chancellor's Prize for Excellence, has already applied for two patents relating to his discovery.

If it is successfully licensed to equipment vendors, Dr Papandriopoulos expects the technology to be implemented by internet providers around the world within two or three years.

John has recently moved to the US to further develop his research.

ACoRN News (cont.)

UniSA

In the context of a joint French-Australian project called FAST, Laura Cottatelluci, Nadia Fawaz and Raul De Lacerda from Eurecom Institute, Sophia-Antipolis, France, joined UniSA/ITR from September, 25th to October, 5th 2007 to work in cooperation with Terence Chan. FAST project deals with ADVANCED CONCEPTS FOR FUTURE BROADBAND WIRELESS NETWORKS.

During the time in Adelaide, their joint efforts were targeted at the analysis of large cooperative networks. They proposed new cooperative strategies combining Network Coding based Decode-and-Forward and CDMA in large networks.

Using random matrix theory, they analyzed the asymptotic performance of those strategies when the size of the network grows large. They showed that those strategies improve the performance in terms of capacity, with respect to regular Multiple-Access schemes.

The scientific cooperation between the researchers is still going on. They are currently preparing a conference paper gathering their first results, and plan to further develop their cooperative strategies, considering different coding schemes, relay selection protocols and power allocation.

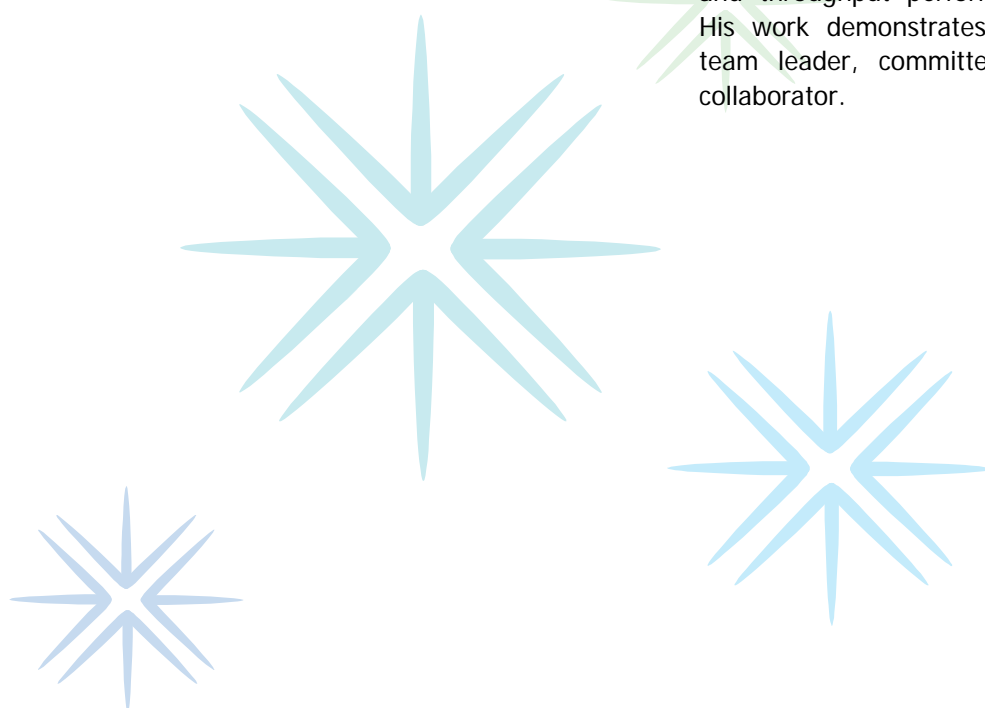
NICTA

Dr Mark Reed has received the ITEE College's 2007 IREE Neville Thiele Award. Dr Reed is a Principle Researcher with NICTA, Australia's Information and Communications Technology (ICT) Research Centre of Excellence, and an Adjunct Associate Professor at the Australian National University (ANU).



Among Dr Reed's achievements, is leading a team of research engineers to develop Australia's first 802.16 WiMAX digital base-band transceiver for deployment in mobile wireless data terminals. This system offers high performance, while reducing the number of base-stations required in urban areas. One of Dr Reed's referees remarked that "the performance of this receiver is believed to be the best in the world." The work by Dr Reed and his engineering team has significant commercial viability, for Australia and internationally.

Dr Reed has pioneered cutting edge research in modern state-of-the-art digital communications where benefits to users, service providers and equipment vendors result through extended range and throughput performance of these systems. His work demonstrates that he is an effective team leader, committee member, mentor and collaborator.



OPPORTUNITIES



University of South Australia

Research Fellow / Senior Research Fellow

Institute for Telecommunications Research

Total remuneration package:

- Research Fellow: \$76K - \$91K
- Senior Research Fellow: \$94 - \$108K

- 3 yr Fixed Term Contract
- Up to 2 positions

This is an exciting opportunity to join a vibrant and growing Research Institute and contribute to cutting edge telecommunications research. The Institute for Telecommunications Research (ITR) is one of Australia's premier research organisations in the area of wireless telecommunications, information theory and coding, communications signal processing and wireless networks.

We are currently seeking to fill up to 2 postdoctoral positions to work on an Australian Research Council (ARC) Discovery Grant "Efficient Data Transport using Network Coding".

Candidates with a PhD having experience in this or closely related areas are invited to apply.

Applications close: 25 January 2008

Further information:

<http://www.unisa.edu.au/hrm/careers/positions/25Jan1.asp>



OPPORTUNITIES (cont.)

Analog Devices Australia Pty Ltd have nine positions available

Analog Devices Australia Pty Ltd is one of Analog Devices Inc.'s global design and development centers. We are a high-tech electronics/software engineering group specialising in the development of embedded Digital Signal Processing (DSP) software such as voice, speech and image processing which is used globally in leading-edge multimedia, telecommunications and 3G wireless products.

- DSP DESIGN ENGINEERS (3 positions available)
- CONTRACT DSP SOFTWARE ENGINEERS (2 positions available)
- SOFTWARE TEST ENGINEERS (4 positions available)
- SENIOR SOFTWARE TEST ENGINEER & TEAM LEADER
- Experienced DSP Support/Applications Software ENGINEER (1 position available)

Further information is available at: -

<http://www.acorn.net.au/positions/>

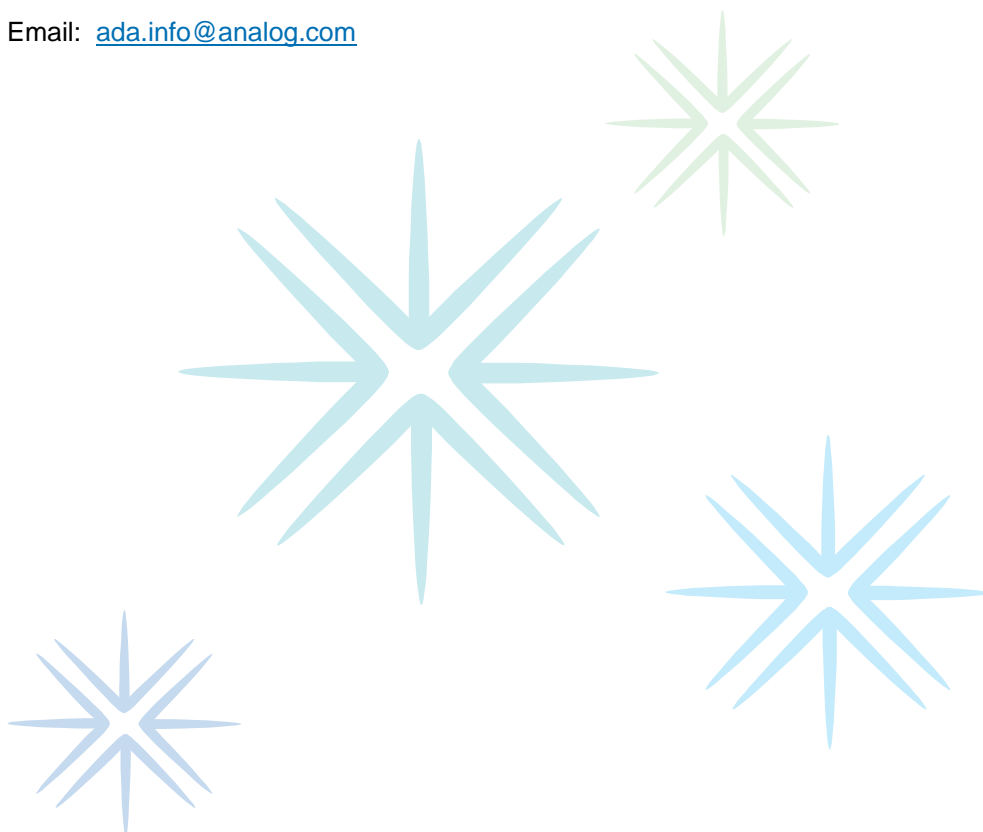
Please send a written or electronic application, including a detailed resume to:

Human Resources

Analog Devices Australia Pty Ltd

Unit 3, 97 Lewis Rd, Wantirna, Victoria, 3152

Email: ada.info@analog.com



OPPORTUNITIES (cont.)

SIMTech internship

A SIMTech internship offers you a unique opportunity to gain first hand experience in working in a progressive R&D organization, while discovering for yourself whether SIMTech could be the place of choice to start your research career.

Under the supervision and mentorship of our team of dedicated researchers, you will gain excellent experience on how our research scientists go about in their scientific discoveries.

The duration of the paid internship can range from 3 - 12 months, and would typically be taken between academic terms.

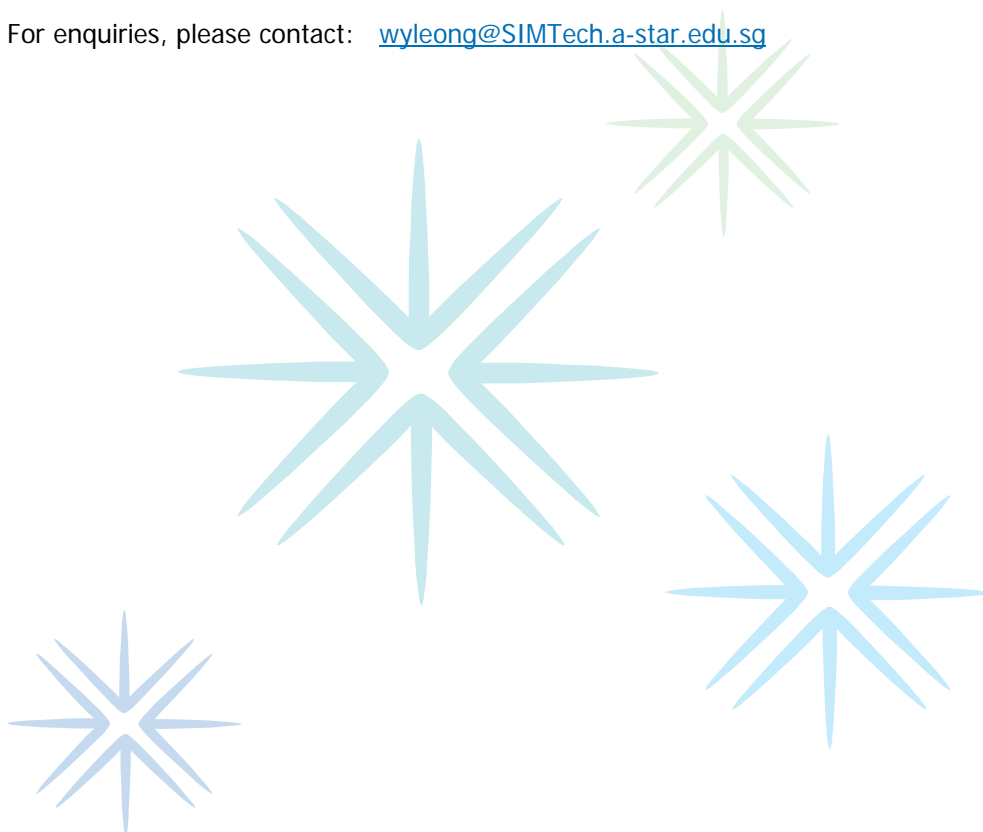
We welcome undergraduates, as well as post-graduates in the Engineering disciplines to apply. SIMTech offers competitive salary and benefits package, exceptional opportunities for professional growth, excellent training opportunities and a very stimulating work place.

If you are looking for a career or internship opportunities, please provide us with

- a) Cover Letter
- b) Full resume
- c) Personal Statement (1 page)
- d) Area of interest

<http://www.simtech.a-star.edu.sg/>

For enquiries, please contact: wyleong@SIMTech.a-star.edu.sg



Coming Events

Event Date	Event	Call for Papers
17-19 Dec 07	ICSPCS'2007 – Gold Coast Australia http://www.dspsc-witsp.com/icspcs_2007/cfp.html	4 Aug 07
3-4 Jan 08	NetCod 2008. Fourth Workshop on Network Coding, Theory, and Applications – The Chinese University of Hong Kong http://NetCod2008.ie.cuhk.edu.hk	1 Sep 07
30 Jan 08-1 Feb 08	AusCTW2008 – University of Canterbury, NEW ZEALAND	
18-20 Feb 08	Modern Digital Receiver Techniques: From Theory To Practice – Mawson Lakes, SA http://www.nicta.com.au/business/nicta_short_courses/...	
31 Mar 08-3 Apr 08	WCNC 2008 – Las Vegas, Nevada http://www.ieee-wcnc.org/	1 Sep 07
11-14 May 08	V67th IEEE Vehicular Technology Conference 2008 (VTC-Spring 2008) – Singapore http://www.ieeevtc.org/vtc2008spring/index.php	28 Sep 07
14-18 Sep 08	IEEE - PIMRC 2008 – France www.pimrc2008.org	3 Mar 08

For a complete list of coming events and call for papers, see the [event calendar](#).

