



# Newsletter

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IEEE Queensland Section

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## From the Editor

Welcome to the second IEEE Qld Section Newsletter for 2003. The aim of this newsletter is to provide a means of keeping IEEE Members in QLD abreast of any events in the IEEE. There will be one more newsletter this year which will be issued in September. I hope you find them useful and informative.

As always, if you have any comments on the content of the newsletter or suggestions for improvements, please feel free to e-mail me at: [zelniker@itee.uq.edu.au](mailto:zelniker@itee.uq.edu.au).

**Emanuel Zelniker**  
Newsletter Editor, IEEE Queensland Section

## Chair's Message

### Section Activities

As you will see from this quarter's newsletter, a number of technical events are planned in the next few months. We hope you will find these events of value and we would welcome your feedback on them.

### Section Elections

This issue of the newsletter contains a call for nominations for next year's office holders. Please consider nominating yourself or a fellow member to take on a role on the committee. The election process will happen over the next few months and results will be announced at our Annual General Meeting (currently scheduled for the evening of Tuesday November 25). There are also a number of non-elected positions on the committee – a number of which are still vacant. If you're not sure what's involved in being on the committee, or you wish to volunteer for some position, feel free to contact me and I'll be happy to discuss the role with you. You'll find my contact details and those of the other committee members towards the back of this newsletter.

## Membership Survey

Thank you to those members who completed the member survey in the last issue. We received 55 responses (about 10% of our membership). Some of the results are as follows:

- Most respondents are members of the IEEE because of the technical publications and to stay current.
- Most respondents did not attend any IEEE Queensland events last year, with the major reasons given as a lack of time, inconvenient time and/or location and a lack of interest in the topic
- The preferred days of the week for events are Tuesday, Wednesday and Thursday, with the preferred time being late afternoon or early evening
- The preferred venue for events was the Brisbane CBD
- Most respondents were interested in technical seminars (introductory or detailed) rather than other types of events

Your feedback will be taken onboard wherever possible. Thank you also to those members who expressed an interest in volunteering. I, or one of the committee members, should be contacting you soon.

If you have ideas for events which can benefit your fellow IEEE members, please let us know by contacting any member of the committee. You can also contact the committee as a whole by emailing [qld-committee@ieee.org](mailto:qld-committee@ieee.org).

**Peter Sutton**  
Chair, IEEE Queensland Section  
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**Visit the section website**

**<http://www.ieee.org/queensland>**

for details of student prizes and section activities.

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## **From the Chair of the Joint Microwave Theory and Techniques and Antennas and Propagation Chapter**

The joint chapter of Microwave Theory and Techniques and Antennas and Propagation is pleased to announce two upcoming seminars.

### **Joint seminar of Institution of Engineers, Australia, and the IEEE Queensland Section**

*"Evolution of an Engineering Intensive Industry"* Peter Bradley, EM Solutions  
3 July, 6:15pm,  
Hawken Auditorium, Engineering House

#### **Abstract:**

In 1981, a three person team with a directive to design and develop components for the microwave industry in Australia was set up at UQ. Over the next 6 years both the team and the work undertaken expanded and the group left the University to set up a commercial company. In the following 10 years, MITEC, as the company was called, grew rapidly and went through a cycle of private company, publicly listed company and back to a private company. The growth of the company itself and the consequent demand on suppliers and subcontractors helped push the development of local infrastructure. Some of the work undertaken by MITEC made heavy demands on the company and it's subcontractors in terms of project control and quality and this helped lift the overall standard. However, it was the concentration of engineering talent and the splintering and fracturing of the company that really fuelled the development of a local industry. As a consequence there is now a strong industry sector in Brisbane with at least six manufacturing companies directly employing about 300 people and involved in activities from precision machining to optical communications.

For Peter Bradley's biography and to register for this event please go to the Engineers Australia, Queensland division, webpage at <http://qld.ieaust.org.au> and follow the links to the Events page.

*"Computer Simulation for Electromagnetic Compatibility"* Professor Herman Singer  
Technical University Hamburg-Harburg  
16 July, 6:30pm

Venue to be advised – please see <http://www.itee.uq.edu.au/~zagr/> for final details

#### **Abstract:**

Computer simulation has become a well-established tool for prediction and analysis of the electromagnetic behavior of a wide range of electronic devices and systems. In many applications computer simulation not only allows investigations without the need of building a prototype but also gives a deeper insight in what is going on in a system than measurements could do. For this reason, not only obtaining correct results is of importance but also their presentation in diagrams and pictures and movies is essential in order to understand the electromagnetic behaviour of the system under investigation.

In his talk Prof. Singer will introduce the most important simulation methods, focussing on the Method of Moments, and give some examples of state-of-the-art EMC simulations. These will include emission and susceptibility of PCB structures, analysis of shielding effectiveness, research on wiring in automobiles, analysis of antennas on ships and large commercial aeroplanes."

To register for this event please e-mail [ieee@micro.com](mailto:ieee@micro.com) by 14 July.

#### **Ashley Robinson**

**Acting Chair, MTT/AP Queensland Chapter  
Micro Ltd**

**E-mail:** [ieee@micro.com](mailto:ieee@micro.com)

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### **Event Notification**

Are you organising an event that is relevant to the IEEE Queensland Section? If so, e-mail the editor ([zelniker@itee.uq.edu.au](mailto:zelniker@itee.uq.edu.au)) and let us know! We might be able to advertise it in the newsletter for extra exposure. Appropriate events could include (but are not limited to):

- Conference Announcements
- Call for Papers
- Chapter Announcements
- Professional Seminars
- Anything else related to the IEEE!

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## ***From the Chair of the Signal Processing and Communications Chapter***

The following journals (hard copy) from the IEEE Communications Society are available for reference.

1. IEEE Communications Magazine
2. IEEE Journal on Selected Areas in Communications
3. IEEE Transactions on Communications
4. IEEE Network
5. IEEE Personal Communications
6. IEEE/ACM Transaction on Networking
7. IEEE Communications Letters.

If you wish to refer to them please contact Chair of the IEEE Chapter on Communication by telephone or email. The journals are also available at the QUT library.

**Professor Sridha Sridharan**  
**Chair, Communications Society, IEEE**  
**Chapter, Queensland Section**  
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**Engineering**  
**Queensland University of Technology**  
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Email : s.sridharan@qut.edu.au

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## ***From the Chair of the Power Engineering Chapter***

The IEEE Power Engineering Society, Queensland Chapter has had a great start to the year with a joint IEEE/IEAust seminar held on the 9<sup>th</sup> of April. Entitled

*“The Impact of Network Structure on the National Electricity Market”*

the seminar was presented jointly by Tim George and David Bones from NEMMCO, the National Electricity Market Management Company. The seminar was very well attended with approximately 50 people enjoying the excellent presentation and stimulating question and answer session following the seminar. If you would like

a copy of the slides of the presentation please email me at [jdm@itee.uq.edu.au](mailto:jdm@itee.uq.edu.au) and I will send a copy out to you.

### **Future Events:**

No new events have been finalised at this stage, although we are hoping to have Dr John Edwards from the Queensland University of Technology present a seminar in the near future. Details when finalised will be provided in both emails and also on the chapter website at

[http://www.eese.bee.qut.edu.au/people/palmer/iee\\_e\\_pes/index.html](http://www.eese.bee.qut.edu.au/people/palmer/iee_e_pes/index.html)

If, however, any of you have ideas or suggested topics that you would like to see presented, please do not hesitate to contact me at [jdm@itee.uq.edu.au](mailto:jdm@itee.uq.edu.au). Similarly if you would like to become more involved in the organisation of the chapter itself, please let me know and I would be happy to provide you with more information.

**John McDonald**  
**Chair, Power Engineering Chapter**  
**Queensland Section**  
E-mail: [jdm@itee.uq.edu.au](mailto:jdm@itee.uq.edu.au)

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## ***From the Chair of the Control Systems Society/Robotics and Automation Chapter***

The CSS/R&A Chapter is pleased to announce that the following distinguished lecturers, researchers and academics will visit us in 2003.

- Emeritus Professor **Mike Brisk**, Chemical Engineering, Monash University, with a talk on *Improving your Process Control Makes Sense -- and Dollars Too !*; the lecture will be held on 29 July from 05:30 pm, 447 Upper Edward Street.

- Professor **Fumio Harashima**, Tokyo Denki University, Japan, with a talk on *Interaction and Intelligence – A New Direction of Robotics Research*; the date is yet to be confirmed.

- Professor **Robert Bitmead**, University of California San Diego, USA, with a talk on

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*Model Predictive Control, State Estimation and Coordinated Vehicles*; the date is yet to be confirmed.

**Future events for 2003:**

IEEE – Joint CSS/R&A Societies Chapter,  
Queensland, and IEAust - ITEE Queensland  
present

**Improving your Process Control Makes Sense  
-- and Dollars Too !**

**Mike Brisk** FTSE, FIEAust, FIChemE  
Emeritus Professor, Chemical Engineering,  
Monash University

**Date:** 29<sup>th</sup> July 2003  
**Time:** 5:30pm for 6:00pm (Light refreshments  
will be provided from 5:30pm)  
**Venue:** Hawken Auditorium Engineering  
house, Institution of Engineers Australia  
447 Upper Edward Street, Brisbane

**Abstract:**

Fifteen years ago the University of Sydney Warren Centre's study on the benefits of advanced process control used six Australian plant case studies to demonstrate that introducing improved control systems could provide bottom-line benefits in the range of two to six percent of operating costs. Throughout the nineties there have been many reported successes which achieved, or exceeded these economic returns by employing a host of advanced technologies. A plethora of multivariable predictive controls, inferential sensors, fundamental dynamic modelling tools, fuzzy logic, and neural networks are available in the market. So does it follow that we are achieving the best possible process control performance and realising those benefits?

The answer, unfortunately, is an emphatic no! Recent studies have shown that only about a third of industrial controllers, irrespective of their level of technology, are achieving acceptable levels of performance. Indeed there are reported trends which indicate the gap between desired and actual controller performance is widening!

This talk will revisit the Warren Centre study and its benefits analysis methodology, and then address some of the issues related both to the introduction of improved process control, and also the often overlooked issues of ensuring

continued maintenance of the best performance of existing controls, including the humble – but vital – PID controller.

For further details, please contact the Chapter Chair,

**Dr. Ljubo Vlacic**  
**Chair, Control Systems Society/Robotics & Automation Chapter**  
**E-mail:** [L.Vlacic@griffith.edu.au](mailto:L.Vlacic@griffith.edu.au),

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***From the Chair of the  
Computer Chapter***

**Future events for 2003:**

**Seminar**

**Soft Computing Pattern Recognition and  
data Mining: Concepts, Features &  
Examples**

**Professor Sankar Pal**

**Date:** 18<sup>th</sup> July, 2003  
**Time:** 17:30 – 19:00  
**Venue:** General Purpose South, Room 78-420,  
Staff House Rd, The University of  
Queensland, St Lucia  
Parking: Metered parking at top of Staff  
House Rd or coupon parking on College  
Rd  
**Contact:** Brian Lovell  
Email: [lovell@itee.uq.edu.au](mailto:lovell@itee.uq.edu.au)  
Tel: 0411 094 380

Included: Pizza and Soft Drink  
Please RSVP to [lovell@itee.uq.edu.au](mailto:lovell@itee.uq.edu.au) by 18<sup>th</sup>  
July  
Cost: Free!

**Abstract:**

Different characteristics of soft computing and its relation with machine intelligence and pattern recognition are explained. Effectiveness of the searching capability of Genetic Algorithms (comparatively newer than fuzzy logic and artificial neural network) for designing a non-parametric classifier is described with both theoretical and experimental results. Emergence of data mining and knowledge discovery from pattern recognition point of view is illustrated.

Significance of integrating various soft computing tools for efficient learning in this regard is described. Two examples, demonstrating such integration of fuzzy sets, artificial neural networks, genetic algorithms and rough sets for (i) efficient classification, rule generation and rule evaluation, and (ii) granular case generation in case based reasoning problems, are provided along with their application specific merits. An application of rough-fuzzy granulation, integrated with expectation maximization (EM) and minimal spanning tree (MST) algorithms, is then described for multispectral image segmentation. Different features of these methodologies are extensively demonstrated along with comparisons on different real life data sets. The talk concludes explaining the relation of rough-fuzzy computing with the recently emerged computational theory of perceptions (CTP) and the future scope of research in data mining including web mining.

**Dr. Renate Sitte**  
**Chair, Computer Chapter**  
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## WEB update

Don't forget to check and correct/update your membership details. The following URL's are available to members for checking and correcting/updating their details.

The following URL's go from specific to general. For membership enquires and updates (WEB update. Requires Web account), see

<http://services1.ieee.org/membersvc/coa/intro.htm>

For making changes to your address or contact information,

[http://www.ieee.org/portal/index.jsp?pageID=corp\\_level1&path=membership&file=coa.xml&xsl=generic.xsl](http://www.ieee.org/portal/index.jsp?pageID=corp_level1&path=membership&file=coa.xml&xsl=generic.xsl)

For making general membership enquires, go to

[http://www.ieee.org/portal/index.jsp?pageID=corp\\_level1&path=membership&file=index.xml&xsl=generic.xsl](http://www.ieee.org/portal/index.jsp?pageID=corp_level1&path=membership&file=index.xml&xsl=generic.xsl)

# Preliminary Call for Participation

International Conference on

## SOFTWARE ENGINEERING AND FORMAL METHODS

SEFM'03

22nd - 27th September, 2003  
 Brisbane - Australia

### Sponsors

IEEE Computer Society  
 Australian Computer Society  
 Embassy of Italy in Australia

### Keynote Speakers

**Geoff Dromey** - Griffith University, Brisbane, Australia  
**Gianna Reggio** - University of Genova, Genova, Italy  
**Davide Sangiorgi** - University of Bologna, Bologna, Italy

### About the Conference

The objective of the conference is to bring together practitioners and researchers from academia, industry and government to exchange views on the theoretical foundation of formal methods, their application to software engineering and the socio-economic impact of their use.

### Registration

Advance Registration  
 - IEEE/CS Members US\$290.00  
 - Non-members US\$362.50  
 - Student Members US\$220.00

Late/On-site Registration  
 - IEEE/CS Members US\$348.00  
 - Non-members US\$435.00  
 - Student Members US\$264.00

### Topics

- precise design
- formal specification and verification
- integration of formal and informal methods
- formal methods/tool integration
- refinement
- automated verification
- real-time constraints
- multi-agent systems
- hybrid and probabilistic systems
- object-orientation
- coordination
- formalisation of reuse
- lightweight formal methods
- test case generation
- visualisation
- formalisation of informal requirements
- formal models for security and for mobility
- applications to industrial case studies
- use of formal methods in small and medium enterprises
- socio-economic implications of the use of formal methods

<http://www.svrc.uq.edu.au/Events/SEFM03/>

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**Educational Activities Chair**

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**Student Activities Chair**

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**Awards Chair**

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## Call for Nominations – 2004 Officers

Nominations are now being called for the following 2004 Queensland Section committee positions:

**Section Officers:**

- Chair
- Chair-elect (will be Vice-chair in 2004 and Section chair in 2005)
- Treasurer
- Secretary

**Chapter Officers:**

- Chair, Computer Chapter
- Chair, Power Engineering Chapter

*Who is eligible to hold office?*

Any Queensland section member of grade member or higher may hold an elected office position. Only members of the Computer Society may be chair of the Computer Chapter.

*Who is eligible to vote?*

Any Queensland section member of associate grade or higher (i.e. excluding student and society affiliate members) may vote in the election. Only Computer Society/Power Engineering Society members (associate grade or higher) may vote for the position of Computer Chapter chair/Power Chapter chair respectively.

*Who may nominate?*

Any voting member may submit a nomination, including a nomination for themselves. The nominating committee will check eligibility and willingness to serve and will select 2-3 candidates for each position. A person may be nominated for more than one section officer position but will not be selected as a candidate for more than one section officer position.

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The nomination must reach the chair of the section nominating committee by close of business on Friday July 25, 2003. Please use the attached form for nominations and either e-mail it to [e.palmer@qut.edu.au](mailto:e.palmer@qut.edu.au) or post it to the following address:

IEEE QLD Section Nominating Committee  
c/- Dr Ed Palmer  
School of Electrical & Electronic Systems  
Queensland University of Technology  
GPO Box 2434  
BRISBANE QLD 4001

### Nomination Form

I, being a member of the IEEE QLD section eligible to vote in the 2004 election, nominate

Name: \_\_\_\_\_ Member Number: \_\_\_\_\_

Address: \_\_\_\_\_

Email address: \_\_\_\_\_ Daytime phone: \_\_\_\_\_

for the position of Chair / Chair-elect / Treasurer / Secretary / Chair, Computer Chapter  
/ Chair, Power Chapter  
(delete as appropriate) in the 2004 IEEE QLD section committee.

**PERSON MAKING NOMINATION**

Name: \_\_\_\_\_ Member Number: \_\_\_\_\_