

SEPTEMBER 2010

# GOLDRush

The quarterly newsletter of IEEE GOLD for young professionals



## IN THIS ISSUE

Readers' Forum	3
Invited Articles	4
GOLD Member Profile	5
GOLD News	6
GOLD Affinity Group Profile	12
Peer-Reviewed Contributions	13
Notices	16
GOLD Committee	19

## HIGHLIGHTS

Global History Network	4
GOLD Member Profile - George Gordon	5
Future Multicore Multithreading Microprocessor Design	13
Quantum Engineering From Einstein's Spooky Action to Sustainable Technology?	14

## WELCOME FROM THE 2010 MGA GOLD CHAIR

*William Sommerville*

Welcome to another edition of GOLDRush! Once again I can see from this newsletter that our recent graduates in IEEE are vibrant, hard working, and ready for anything. GOLD members are gaining more influence in IEEE and we are expanding our network. I receive new GOLD Affinity Group formation requests regularly and I was happy to see the latest e-mail requesting one in Iraq: one of many places where young engineers are making huge strides each day to improve the country's infrastructure and economy.

As a GOLD member, my mission is to build a stronger community of young professionals where innovation and collaboration thrive. Part of this comes from young professionals meeting and working with each other and more experienced members. Part of this also comes from bringing up the latest generation of student members into IEEE and our professional networks. I find that my most trusted allies are those who I have been able to help in a material way – something that is easier to do for those who are less far along in our careers than we are. This is why I have been promoting collaborations and partnerships between GOLD members and student members, most notably through STEP events. You will see more information about these events in this issue.



Please feel free to take advantage of your global IEEE GOLD support network. We have volunteers in every region and most technical areas in IEEE who are always looking for collaborators and interested people. We are happy to serve as your gateway to the breadth and depth of IEEE resources and activities. You can contact [gold@ieee.org](mailto:gold@ieee.org) or me directly at [will.sommerville@ieee.org](mailto:will.sommerville@ieee.org). I would love to hear from you.

Will Sommerville  
2010 MGA GOLD Committee Chair

## Editorial

By Timothy Wong, IEEE GOLDRush Editor

Welcome to the September 2010 edition of the GOLDRush newsletter. We have a number of exciting events and content for you to catch up on. In this edition, you will find out more about the events run by the IEEE GOLD Affinity Groups and the up and coming conferences around the world. Be sure to check out the invited article on the Global History Network, an important initiative developed by the IEEE History Center as well as IEEE members and professional historians.

The IEEE elections are still currently underway until the 1st October 2010. Be sure to vote before the closing date and time, to ensure that your voice in IEEE is heard. Soon after the election, on 7th October 2010, is IEEE Day. This is an exciting new initiative which is being supported by the Member and Geographical Activities (MGA) board of IEEE to commemorate the first time in 1884 when IEEE members gathered to share their technical ideas. This is an important date in IEEE history and I urge you to refer to the



Copyright: Marmol

notices section for more information on this event.

Many of you may be interested in knowing the whereabouts of our previous GOLDRush Editor in Chief, George Gordon. In this edition, we profile George and learn of his career aspirations and whereabouts. We also profile the New Zealand North GOLD Affinity Group run by its capable Chairperson, Tom Hughes.

On another note, I am excited to announce the appointment of Assistant GOLDRush Editor in Chief, Brian Roberts. Brian has had experience volunteering in other areas of the IEEE and not for profit organizations. His experience, expertise and intellect are a welcome addition to the GOLDRush team and will help us serve you better. For more information on Brian, please refer to the article below.

There is one theme in common with all of the above. A significant amount of IEEE initiatives are made possible by the hard work and dedication of staff and volunteers within the IEEE. The spirit of volunteering still lives on within the IEEE along with a broad range of causes which start with your local section all the way to the global level. There is strong interest in humanitarian events within the IEEE. The commitment to humanitarian causes by the IEEE and its members is once again demonstrated by the concern and donations provided by the IEEE and its community for the Pakistan disaster relief efforts. For me, working with talent throughout the IEEE is one of the joys of volunteering.

We are always looking forward to hearing from you about your thoughts on GOLDRush. Tell us what you want and think of GOLDRush. If you have any suggestions or comments on the content or direction of IEEE GOLDRush, please send your feedback to [timothy.wong@ieee.org](mailto:timothy.wong@ieee.org).

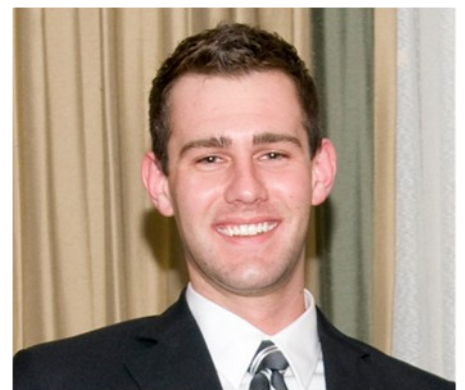
Timothy Wong  
2010 IEEE GOLDRush Editor In Chief

### Introducing IEEE GOLDRush Assistant Editor in Chief - Brian Roberts

Brian Roberts was recently appointed to be the Assistant Editor in Chief for the IEEE GOLDRush newsletter. He also currently serves as Chairperson of the New Hampshire IEEE GOLD/Women in Engineering (WIE) Affinity Group and is leading the MGA GOLD Member Value working group. In 2008, Brian was the New Hampshire

Secondary Delegate for the 2008 Sections Congress. He received his Bachelor of Science in Computer Systems Engineering from the University of Massachusetts, Amherst. While he was completing his undergraduate degree he was involved in public policy advocacy for public higher education and founded the Associated Students of Massachusetts, a non-profit advocacy group for students.

Upon completing his undergraduate degree, Brian went into the Engineering Leadership Development Program at BAE Systems. During his time at BAE Systems, Brian completed his Masters Degree in Electrical and Computer Engineering at Worcester Polytechnic Institute part-time. Brian's Masters Thesis research was published



in the 2009 IEEE Global Communication Conference. Brian recently started a new position as a Digital Electronics Design Engineer at Draper Laboratory, in Cambridge MA, where he is working in the Embedded Systems Group.

## READERS' FORUM

*Your questions and opinions*

### Be satisfied since the beginning

As young professionals, we should set some goals for our career. Many young professionals prefer to sacrifice higher remuneration in exchange for a well grounded professional experience. There are several young professionals who want to start off their career as managers as well as those who enter the job market with prior professional work experience, looking to further their career.

I consider myself as part of the last group, and I am glad to have the opportunity to share with you some valuable advice that I was given. I was talking with the Chief Financial Officer (CFO) at my previous job looking for a salary increase. I reminded him about the high expectations that I had since I joined the company and the promises made to me about a compensation increase. I didn't end up getting a salary increase or added benefits - only advice. The lesson I learned from this meeting was that companies hire people with expectations of business growth. They can never predict with absolute certainty, when the economic downturn will come and affect their plans and promises to their employees.

What is the significance of this advice? Well, the experienced CFO suggested that it is better to find a new job and negotiate a good compensation plan instead of waiting for a raise or promotion inside the company. He said that most of time, a promotion or a raise never eventuates due to different reasons, especially economic downturns.

Apart from this advice, let me share with you some others that could help you grow in another company

- Find a place/company where you want to stay for at least the next 3-4 years;
- Find out the average time the employees take to grow in the company you are interested in;

- Once you find a good company and they offer you a job, negotiate a good compensation plan (salary & benefits) enough to be satisfied for the next 2-3 years.
- If you have spent enough time in a company with no growth, or you feel unsatisfied, don't think twice!! Start to look for another job and a place to



Copyright Microsoft

*Express your opinions on GOLDRush articles and ask questions to the authors by submitting a letter to the GOLDRush Readers' Forum. Send your submissions to [GOLDRush@ieee.org](mailto:GOLDRush@ieee.org) before 5 November 2010 for inclusion in the December 2010 edition. Submissions must be no more than 200 words and may be edited if necessary. We look forward to hearing your thoughts!*

grow. Just remember, it is not good to have a lot of employers in a short time period, as it can be misunderstood as the lack of job loyalty.

- Finally, you should always be ethical and follow your own principles

I hope that you find these recommendations useful. I am open to learning more from your experiences and would appreciate it if you share your them with me. Please feel free to write to me at [e.guzman@ieee.org](mailto:e.guzman@ieee.org)



Edgar E. Guzman

login to  
**myIEEE**  
login



(IEEE Web Account Required)

[www.ieee.org/myieee](http://www.ieee.org/myieee)



## INVITED ARTICLE

### Global History Network

By Dr. Mike Geselowitz,  
Staff Director and Nathan  
Brewer, GHN Administrator  
IEEE History Center

Launched in late 2008, the IEEE Global History Network (GHN) was created with the intent of becoming the premier site for the history of IEEE, its members, their professions and related technology. The GHN, located at <http://www.ieeeeghn.org>, was developed and is operated by IEEE's historical arm, the IEEE History Center. The staff of the Center, overseen by the IEEE History Committee—a standing committee of the Board of Directors—are located on the campus of Rutgers University, a few kilometers from the IEEE Operations Center in Piscataway, New Jersey, USA.

Running off of the MediaWiki platform, the GHN serves many purposes. First and foremost, the wiki environment allows for, and encourages IEEE Members to share their knowledge and experience with the rest of the world. These shared experiences provide for a wide breadth of primary and secondary source materials which are beneficial to both historical researchers and those who have a general interest in the history of technology. Any IEEE Member can log in to the Global History Network and participate fully in writing and editing, while the general public can only view, comment on and rate pages. The GHN contains a wide range of content, the majority of which consists of topic articles, designed to cover various subjects. These range in scope from biographies of famous engineers, to IEEE Section and Society history pages, to articles on important

technological developments. Topic articles can be enriched by any form of multimedia content, including pictures, audio and video. The GHN also provides a space for First-Hand Histories, which gives engineers a chance to tell their story in their own words, without interference by other authors. These stories bring a very human element to the history of technology and are among the richest primary sources that are available on the GHN. All members are encouraged to contribute their accounts of their career and experiences. And nothing stops GOLD members from writing about what they are working on right now—it will be tomorrow's history and it is still fresh on your mind! A unique feature of the GHN allows groups that have collaborated on a real-world project to collaborate on telling the story of the project.

In addition, several IEEE History Center programs are housed on the GHN. The GHN contains the transcripts of the Center's oral history program; over 450 interviews with many prominent engineers, scientists, and IEEE volunteers are featured. The IEEE Milestones in Electrical Engineering and Computing Program provides a platform for IEEE Organizational Units to submit for recognition significant events from their technological history. When approved by the IEEE History Committee and the IEEE Board of Directors, these events are recognized with a bronze plaque at a dedication ceremony hosted by the local Section. Helping with the Milestone process would be a great way for a GOLD Affinity Group to get involved with their local Section!

The IEEE STARS Program (Significant Technological Achievement Recognition Selections) offers an online compendium of invited, peer-reviewed articles on the history of major developments in electrical and computer science and technology.

The Archives section of the GHN contains numerous paper and multimedia documents. These documents are not limited to institutional records from the IEEE Archives in Piscataway, NJ, but also include personal papers from many prominent engineers up to the 1950s. In addition, posted are scanned books dealing with the history of technology, and digitized historical videos. IEEE Sections, Regions, Societies and other organizational units are encouraged to digitize and post their archives on the Global History Network. The GHN is always in need of new member-generated content; every contribution, no matter how small, enhances the GHN. You, as an IEEE member, have experience that can become part of the group memory of the accomplishments of our organization, our profession and our technologies. So, if you have an interest in contributing to, or in just browsing the current content on your Global History Network, please visit the website at <http://www.ieeeeghn.org>. You can log in with your IEEE Web account (non-members who are experts in IEEE fields of interest can request a guest account for editing access).

[www.ieee.org](http://www.ieee.org) | [IEEE Explore Digital Library](http://www.ieee.org/digital-library) | [IEEE Standards Association](http://www.ieee.org/standards) | [Spectrum Online](http://www.spectrumonline.com) | [More IEEE Sites](http://www.ieee.org/sites)



## MEMBER PROFILE

Every issue, we profile a GOLD member. This issue's profile looks at the past IEEE GOLDRush Editor in Chief:

## George Gordon



### Career description:

Ph.D. student at Cambridge University, in photonic systems. I am currently developing a distributed antenna system that incorporates radio-over-fiber technology to improve in-building wireless coverage for next generation high-speed mobile systems.

### Personal interests:

My main hobby is playing the double bass. I particularly enjoy playing jazz and have played with a number of bands – it's a

good chance to exercise the right half of my brain! To keep fit I enjoy rowing on the Cam river or running alongside it. I am also learning Chinese Mandarin – perhaps my most challenging hobby. It has opened my eyes to the incredible complexity of human language.

### How has IEEE shaped your career?

The most important experiences IEEE has offered me ultimately stem from interactions with people. IEEE has offered me opportunities to meet many amazing people from around the globe at many different stages of their careers. As Chair of an IEEE Student Branch and then Editor-in-Chief of GOLDRush, I have been lucky to have met a wide range of students, academics and industry representatives from around the world. This has greatly broadened my outlook on the industry in which I will be making my career. I was also offered a rare chance to be in a position of leadership at an early stage in my career and to refine my leadership skills.

Of course, when put on a résumé, these volunteering activities serve as evidence of leadership experience and people skills. However, they are also a reflection of more fundamental personality traits – selflessness and willingness to help others. These are admirable traits in any situation and are respected by most people – job interviewers and bosses included!

In order to gain funding to complete my Ph.D. it was necessary

to undergo several rigorous interview processes. I felt that the combined experiences of my leadership roles and interactions with people through IEEE stood me in good stead for these interviews. My IEEE activities helped to reinforce that I have a genuine desire to contribute positively to society through my chosen career path. I believe this was a major influencing factor in my success.

### Words of advice for young professionals?

While it is very helpful to embark on various paths to self-improvement such as further education, networking activities and professional skill development, these activities should not be viewed as a means to an end. What you should really value is the experience of these things as they happen rather than just anticipating the end result. It is easy to envisage that some day you will be faced with some ultimate challenge where you will simultaneously need to draw upon every skill you have ever learned. For most people this may never happen and so it is important to enjoy the journey involved in acquiring skills. Learning never ceases at the end of a course or experience either and is something that continues throughout a lifetime.

## GOLD NEWS

*From around the world*

### A GOLD STEP with Student Branch Collaboration - South Africa GOLD

**By Keoikantse Marungwana  
Chairperson, South Africa GOLD  
Affinity group**

The IEEE South Africa GOLD Affinity Group (AG) Northern Region and Universities of Pretoria and Witwatersrand Student Branches were proud to host a STEP event which attracted audiences from both Universities and GOLD professionals from Pretoria. It was hosted at the University of Pretoria and attracted around 70 attendees.

Keoikantse Marungwana, Chairperson of the GOLD AG, opened the event with a welcome speech, introducing the keynote speakers. Prof Sunil Maharaj, of the Joint Signal Processing and Communications Society Chapter of IEEE South Africa Section, gave an overview of Chapter activities in the Section.

There were a number of presentations which focused on career development, with keynote speakers from the University of Pretoria's Gordon Institute of Business Science, and the Graduate School of Technology Management.

- Dr Siebert Benade, outlined the merits of Technology Management, Engineering Management, and Project Management qualifications for young engineers.
- Mr Brett Kilpatrick from GIBS captivated the audience, presenting the value of an MBA qualification for young engineers. The audience thoroughly engaged the speakers,

attempting to decide between an MBA qualification, and the Technology Management offerings.

The event also launched the ComSoc Chapter of the University of Pretoria IEEE Student Branch, highlighting a collaborative effort of GOLD and Student branches. The

inaugural Chapter Chair, Thinus Prinsloo, proudly declared the ComSoc Chapter of the Student Branch formally launched. Special thanks went to Martha Mailula, Vice-Chair of GOLD, Andrew Paverd, Chair of Wits Student Branch, and Geoffrey Hunt, Chair of the UP Student Branch.



Pictured from top, clockwise: Dr Brett Kilpatrick, Dr Siebert Benade, GOLD Step Event Audience, GOLD and University of Pretoria SB Excoms



## STEPping it up in Croatia

By Ana Katalinic  
(GOLD AG Croatia Section)

The IEEE Croatia GOLD Affinity Group and the University of Zagreb Student Branch, jointly organized the "STEP two" workshop which took place on 15th June 2010. This event is part of the Professional Activities and Industry Relations project initiative and was held at the University of Zagreb.

The workshop focused on personal professional development topics, including how to preserve self-competitiveness in a fast-changing technological environment. It started with an introduction to IEEE and its benefits, followed by presentations from three speakers based in industry, who shared their knowledge and experiences from different perspectives.

Ms Martina Bajs spoke on the topic of "Personal competitiveness – what to keep in mind when looking for a job?". Her presentation showed the importance of motivation and a clear vision when looking for a job, as well as the importance of on-going learning for the young professional's career. She gave important and relevant advice on writing a high quality CV and presentation at a job interview.

Mr Ninoslav Cerkez focused on the problems of keeping track in a fast-changing technological environment in a talk titled "Personal development – staying competitive in IT industry". The audience had the

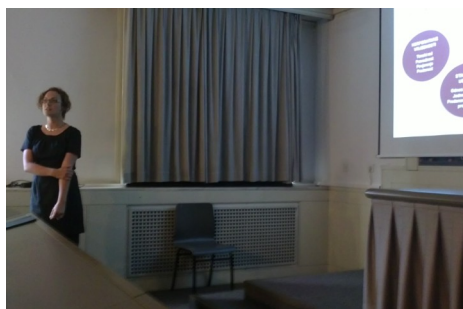


Pictured: Uvod and Martina presenting at the Croatia STEP event.

opportunity to learn from Mr Cerkez's experiences, including both good and bad career decisions..

Mr Marko Sladoljev gave a talk titled "Seven years later" based on his own career, where he shared his experiences with the companies, situations and circumstances which can influence people's career choices and decisions.

A social networking with session with snacks and drinks was held after the first two presentations. The students had the opportunity to meet professionals and GOLD members. All the 35 attendees (14 IEEE members and 21 non-members) participated in fruitful discussions.



Pictured: Mr Marko Sladoljev (left) and Ms Martina Bajs (right) deliver presentations on areas of relevance to GOLD members.

Innovation doesn't just happen.  
Read first-person accounts of  
IEEE members who were there.

IEEE Global History Network  
[www.ieeeagn.org](http://www.ieeeagn.org)

IEEE

## What is IEEE STEP?

STEP stands for Student Transition and Elevation Partnership and is an initiative that was developed to provide a standardized yet localized program for facilitating the transition from student member to young professional, by introducing the opportunities and benefits of IEEE membership during the onset of a career. The IEEE STEP Program Objectives are:

- Identify a local IEEE entity beyond the student branch for members to contact
- Plan a joint Section and GOLD event to introduce local IEEE resources
- Illustrate IEEE member benefits appropriate for young professional members
- Identify recent IEEE Student members who have graduated with an undergraduate or graduate degree; help retaining members by capturing any change of address, email or other contact information

Funding is available for STEP activities including a graduation reception for groups holding an event with a minimum of 10 recent graduates. Basic funding will be provided up to the amount of \$500 and additional funding may be available if the number of additional recent graduates attending exceeds 25.

IEEE will provide each STEP sponsor with a package of supplies to help make your workshop a success. The resources included in the STEP Kit will assist you in organizing and executing a Student Transition Event, as well as a successful IEEE membership campaign to help retain student members as young professional members and keeping them actively engaged with IEEE.

## New Zealand North IEEE GOLD Leadership Workshop

By Noel Gomes  
IEEE GOLD New Zealand North  
Affinity Group

On 24 June 2010, the IEEE GOLD New Zealand North section along with the IEEE student branches of The University of Auckland and Auckland University of Technology jointly organized a leadership workshop at the University of Auckland. The 3-hour workshop was conducted by a very active and long time IEEE member, Loreen Ozolins. The event was well attended and had a good mix of GOLD and student members, including a large number of young industry professionals.

Loreen Ozolins has over 20 years of leadership experience in the technology, retail, and customer services sectors including microelectronics, banking, aerospace, energy, airlines, telecommunications, pulp and paper, and fast moving consumer goods. She specialises in expert delivery of large and complex strategic programs with significant change management components, in particular for the Senior Executive Management Level. She is both flexible and innovative in her approach to managing multi-vendor environments, with expertise in aligning and mobilizing large cross-functional teams.

Loreen's involvement with the IEEE dates back to her university days in 1984 when her first position was as the Student Branch Chair at the University of Colorado at Colorado Springs. As an IEEE Senior Member, she remains actively involved with the IEEE in New Zealand and overseas.

The purpose of this event was to provide young professionals with an opportunity to meet Loreen, learn about leadership from her

experiences, and network with future young leaders. The event started with a brief introduction of Loreen, her background, work and involvement with the IEEE. Loreen opened the workshop by explaining the importance of leadership skills in today's world, the emphasis employers place on them, and gave examples of successful leaders across the globe. She then went on to outline an agenda with key topics she had planned to cover including attributes of a leader, personality and image, conflict management, and motivation styles. The workshop was divided into two sessions with a 15 minute break in between to socialise and have some refreshments. The workshop was comprised of several exercises with an increasing level of complexity based on different leadership/management styles. Loreen addressed questions from the audience as she progressed and delivered the workshop.

The first session began with an introduction to leadership, its definition and some typical attributes of leaders. Loreen then went on to give examples of real life leaders by



## New Zealand North IEEE GOLD Leadership Workshop (Continued)

sharing their success stories and listing attributes that make them so special. The introduction to leadership was followed by a comparison of leadership and management styles including a self assessment exercise on our primary( natural) or secondary (back-up) leadership style. Key characteristics like goals, vision, passion, dedication, charisma, honesty, and listening skills were addressed as defining qualities of leaders and managers.

Next up on the agenda was personality and image. Loreen explained the importance of maintaining a leadership image including attitude, body language, appearance, and writing style at work or in our professional networks. She then talked about key personality indicators like extroversion and introversion, personalities that are intuitive or sensing, thinking or feeling type, perceptive or judging type; following which we completed the Myers Briggs Personality Indicator exercise to identify our own personality type. Loreen

then went on to explain how different personality types could help in effective communication, understanding certain behaviours, conflict resolution, maximizing team motivation, and adapting an approach to certain situations. This concluded the first session.

The second session started with a focus on conflict management, conflict styles and steps to manage conflict. Key examples were discussed on how different conflict styles affect the outcome of a situation. These include conflict management styles such as competing, avoiding, compromising, collaborating and accommodating. This was followed by the final item on the agenda for the evening - motivation. Loreen provided examples of how people are motivated and steps to motivate people. She then spoke about different motivation styles like being affiliation oriented, security or influence oriented and achievement oriented. The session ended with a final self exercise on the "McLelland Model" to determine ones motivational factors.

The initial feedback received during and after the event showed that it was a great success. The attendees were very satisfied with the information provided and the extent of details covered by the speaker. Overall, the attendees had a good representation of the



John Wooden's Pyramid of Success. Source: <http://www.lukehohmann.com/blog/?p=26>

various leadership, management, personality and motivation styles discussed. Additionally, the workshop provided a great opportunity for members to network with each other and to meet Loreen. The committee would like to thank Loreen for her time and all the attendees for their participation. If you attended this event and have any suggestions or comments for future events, please do not hesitate to contact the committee at [tom.hughes@ieee.org](mailto:tom.hughes@ieee.org).

## GOLD Volunteer wins awards

One of our long term serving IEEE GOLD volunteers, Sampathkumar Veeraraghavan from the Madras Section in Region 10 has received a number of awards for his outstanding volunteer work in the IEEE and humanitarian activities. His awards included:

- IEEE MGA Achievement award "For outstanding leadership and contributions toward the development and implementation of IEEE humanitarian projects with government and non-governmental organizations, which engage IEEE members and geographic units in India"
- IEEE Presidents' Change the World Competition, Outstanding Student Humanitarian Prize for "Information on Human and health services (ISHHS)", 2009.
- Tufts Presidential Award for Citizenship and Public Service, in recognition of exemplary leadership and

scholarly achievement towards applying engineering in solving global humanitarian issues, 2010.

Congratulations Sampathkumar on your outstanding achievements and all the very best with your MBA and future career.



Pictures: Sampathkumar Veeraraghavan proudly receiving his achievement awards

## The 3rd Career Development Workshop for Young Students and Professionals

By Yasuharu Ohgoe (Member)  
and Alex Fung (Graduate Student Member)  
IEEE Tokyo GOLD Affinity Group

Quite often, young professionals find themselves in a dilemma. They are faced with many important decisions upon completing their degree that will affect their career and life in the long term. The 3rd Career Development Workshop for Young Students and Professionals was held at Tokyo Denki University (Kanda campus) on 5th June 2010. This workshop was mainly organized by the IEEE Tokyo GOLD Affinity Group and the IEEE Japan Council Women in Engineering Affinity Group, with the help of four student branches in Tokyo Denki University, Yokohama National University,

Tokyo University of Science and Keio University.

The workshop was aimed at helping young students in their undergraduate, masters and doctoral (Ph.D) programs think about their career paths and develop the necessary skill-sets. Topics discussed included "expectations for an engineer", "important matters on working overseas", "contributing to society as an engineer" and "career development for female engineers and cooperating with male engineers." Through these topics, the workshop helped students prepare for their career in advance.

There were 59 participants including 27 non-IEEE members. Seven active industry and academia based young professionals were invited as facilitators. There was one facilitator per group discussion. The facilitators engaged in an in-depth discussion with the participants, based on their own experiences.

Based on the feedback received, this workshop was very useful for the participants. Some comments included "I was able to discuss the career development opportunities in



Picture: Group Discussion

addition to research.", "I was able to talk with female engineers and gained more understanding.", and "the workshop has widened my view as I was able to listen to different opinions from students and company representatives", etc. The workshop was successful in providing a chance for networking and exchanges between participants.

We would like to express our appreciation to all of the people who supported this workshop. For more detailed information about this workshop, please visit Tokyo GOLD website (<http://www.ieee-jp.org/tokyogold/index.html>).

## 2010 Young Engineer of the Year Award

Kheng Swee Goh was awarded the prestigious 2010 Young Engineer of the Year Award by the IEEE Houston Section. This annual award is given to outstanding young members of IEEE in conjunction with Engineers Week, which was on Feb 14-20 this year.

With a Bachelors degree in Electrical Engineering from the University of Leeds (UK), Kheng Swee went on to acquire his Masters in Business Administration (MBA) from Binghamton University (NY). Kheng Swee started his career in telecommunications in Singapore, and later moved into project management roles while staying abreast with technology through IEEE.

Kheng Swee currently serves as Houston Section PACE Chair and Region 5 GOLD Coordinator. In the past few years, he has been actively involved in developing GOLD programs, to reach out to graduating students and young professionals in both the Houston section as well as the Boston section, where he was living prior to relocating to Houston. Kheng Swee also played an active role in the GOLD Summit held during the 2008 Sections Congress in Quebec City, Canada, as the Region 5 Summit Leader. He was also later credited as the first GOLD chair from Houston to reach out to other GOLD affinity groups from the other side of the globe. With his active participation and invaluable leadership in the group, he has won much accolade and recognition from his IEEE peers, and gained many friends within the IEEE GOLD community not only in the US, but across the world.



As a result of his invaluable contribution and resulting successes in all his IEEE projects, Kheng Swee was also awarded the Individual Achievement Award by Region 5 in 2009 as well as the Professional Achievement Award in the recent IEEE-USA meeting in Nashville, Tennessee.



## II Training and Interaction Event in the Argentina Section

By Ing. Augusto José Herrera  
GOLD Chair  
IEEE Argentina Section

The "II Training and Interaction Journal" (JEI in Spanish) took place on May 4, 2010 in Buenos Aires. The event provided training on the operating procedures of the Argentina Section to the leadership of student branches, professional chapters, affinity groups and the Cordoba subsection. Thirty-eight students and GOLD members and eighteen additional professional members attended this event. In total, fifteen universities and seven technical chapters from the section were represented.

### Opening

The day long training event began in the morning with content aimed at the student, Graduate Student Member (GSM) and GOLD members, and continued into the afternoon with training for both students and professionals.

### Morning Activities

The first lecture was The Section: Inside and Out, given by Guillermo Kalocai. Guillermo explained in detail, the organization of the IEEE in the Argentina Section, Region 9, and the world. This provided necessary context for several of the attendees who were fairly new to the IEEE - especially the student branch leaders.

Marcelo Moreyra (Section SAC), Federico Di Vruno, and Augusto Herrera (GOLD Argentina Chair) presented on, Financing for Student Branches and GOLD Activities. They emphasized the importance of submitting reports for funding from IEEE Headquarters and directed students to other resources available to them, including money from existing award programs. The SAC team noted that they are working to reach 250 student mem-



Pictured: Oscar "Inge" Fernandez, expounding about his experiences in more than 70 years as an IEEE member.

bers in 2010, as per the goal set at the last Student Branch National Meeting held in Cordoba in August 2009.

After a short coffee break, Marcelo, Federico, and Augusto presented RNR, RRR and RVR. In this session, they discussed student and GOLD participation in the Student Branch National Meeting (RNR). This was followed by an explanation of the Student Branch Regional Meeting (RRR). Marcelo then invited all attendees to participate in the Student Branch Virtual Meeting (RVR).

Following this, Oscar "Inge" Fernandez, who at the healthy age of 94, shared his experiences of more than 70 years with the IEEE through his wonderful talk titled, The

Institute and the Section: Past, Present, and Future.

### Afternoon Activities

Osvaldo Pérez led a workshop on Strategic Planning where attendees were divided into groups for a series of activities. The workshop was very rewarding because it addressed issues that are not seen by the students in their studies at university.

The last session began with a talk called "Toolbox" where Ricardo Taborda, Argentina Section Vice-Chair, gave an excellent presentation on membership development and local distinguished program speakers. He was followed by Norberto Lerendegui, Region 9 Director-Elect, who described a new membership development program for promoting qualified section members to Senior Member and promoting qualified Associate Members to Member grade.

The afternoon finished with a session of Questions & Answers from topics discussed during the day.

### Closing Activities

To close the second edition of JEI, all attendees were invited to an awards dinner where several volunteers were recognized for their outstanding contributions to the Argentina Section.



Pictured: Official Photo of the "II Training and Interaction Journal" developed in Argentina Section.



## IEEE GOLD AFFINITY GROUP PROFILE

## IEEE GOLD New Zealand North

**Fast Facts**

Date Founded: 2002

Chairperson: Tom Hughes

**History**

The GOLD New Zealand North Affinity Group has been formally running for just over 8 years. It was started in July 2002 by Adrian Pais.

**Events**

Like many other GOLD affiliate branches, NZ north places a strong focus on the three main areas of IEEE, namely social networking, professional development and enhancement of technical skills.

This year our social events included our induction dinner and a rock climbing event, the dinner occurred back in April and is covered in the June 2010 edition of the GOLDRush newsletter. We also intend to offer another dinner event later on as a final conclusion to the year. For this event we intend to invite a senior engineer from the industry to speak first hand of his experiences in the work force. I believe these events offer a lot of value to members since they enable us to find out where your career could take you.



**Pictured: IEEE GOLD Affinity Group New Zealand North Committee**

Our professional development event this year was a presentation given by Loreen Ozolins, a well recognized international speaker. This year, her focus has been on leadership, with the event run as a STEP event.

Our technical events planned for this year include a visit to Mighty River Power hydro-station at Lake Taupo. The committee has put a lot of work so far into this event, and we anticipate that it will be well supported and provide a valuable insight into how a power station works. For people interested in this event, it will take place on 25th September. Another event we are planning to have on 6th September is a visit to the Vector Renewable House of the Future. This is a specially designed house showcasing the possibilities that renewable energy has to offer.

**Interesting facts and initiatives**

An important part of running any successful event is ensuring the attendance of members and getting the word out there. The NZ north has used both email and one-one phone calls to encourage attendance of members.

Another initiative was undertaking of the leadership workshop as a joint event, with the highly active AUT university and Auckland university student branches. Holding this event jointly with the student branches has been of mutual benefit. Firstly it enables the student members to see a future beyond university, while for the GOLD committee it enables access to a wider variety of contacts for future site visits and events.

## PEER-REVIEWED CONTRIBUTIONS

### Future Multicore Multithreading Microprocessor Design

By Dr Chen Liu  
(IEEE Member)

With multicore microprocessors being widely introduced into commercial desktop and laptop computers, parallel computing has entered the world of everyday life.

Nevertheless, there are two different opinions about the future of multicore processors. The one on the aggressive side says that even though 2-core and 4-core microprocessors still dominate the market, With 6-core and 8-core microprocessors on the horizon, we could soon be looking at hundreds, even thousands of cores on a single chip in the near future. The conservative side, on the other hand, says that anything more than 8 cores is not practical because various hurdles such as how to program these kind of multi-core chips, how to maintain the memory coherency across these many cores and how to find enough parallel jobs to make every core busy.

Traditionally, the majority of the programs we write follow the “sequential programming model”<sup>1</sup>. This introduces data hazards, which cause data dependencies among instructions and control hazards, which change the direction of program flow. That’s why those codes lack the parallelism needed to effectively utilize the computational power of many processing engines. There are limitations on Instruction-Level Parallelism (ILP).

Thanks to the continuing progress in CMOS technology, we can put more transistors on a single chip and build more

complex microprocessors. Due to limited ILP, however, many modern microprocessors are equipped with more functional units that a single program can utilize. In an effort to improve the system throughput through better resource utilization, people came out with a clever idea called Simultaneous Multithreading (SMT).

SMT is a hardware technique that enables a single processing core to be able to issue and execute instructions from multiple threads at the same time. Obviously in this way there are more instructions to execute because you take advantage of Thread-Level Parallelism (TLP) in addition to ILP. Intel® names this technology HyperThreading (HT) and it is a feature enabled in most of the current high-end microprocessors like Intel Core i7™ and Xeon™ processors.

SMT has the advantage of improved system resource utilization and hence improved system throughput; however, it also introduces competition on the system resources among multiple threads. This is because now, multiple threads co-exist in the pipeline and when a thread experiences a cache miss and needs to go to the main memory to get data, some instructions from the cache-miss thread that are in the pipeline cannot progress because they are waiting for the data to return. They occupy the entries in the pipeline that holds the instructions and data. Correspondingly, this reduces the number of resources other thread(s) which co-exist(s) in the pipeline can utilize. That’s why including a smart resource management scheme for SMT architecture is one of the key factors of future multicore multithreading microprocessor design.

Now there are multiple cores and each one of them can take multiple threads and there are multi-thread workloads. It is not an easy task to construct a mapping between the workload and the cores to distribute the workload. One simple example is that some threads are “cache-light”, which means they



don’t need to access the cache often to get data, while on the other hand, “cache-heavy” threads need to access the cache to get data quite frequently. However, for each core, its bandwidth to the shared last-level cache is limited. As you can see, if you schedule two “cache-heavy” threads on the same core, they would compete for the memory bandwidth, causing competition and hindering the overall performance.

What makes the problem even worse is that a program’s behavior is dynamic. You cannot expect a program to be “cache-heavy” or “cache-light” all the time. It is in fact an interchanging process. Catching this dynamic behavior and constructing a smart thread scheduling algorithm is another key factor for future multicore multi-threading microprocessor design.

There is much research being conducted on these two problems of resource management and thread scheduling. There is currently there is no single optimum solution yet to this problem. I believe that there will be many of the IEEE GOLD members who are currently in this field are or will be working on these two topics.

<sup>1</sup> unless specifically written parallel programs for scientific computing.

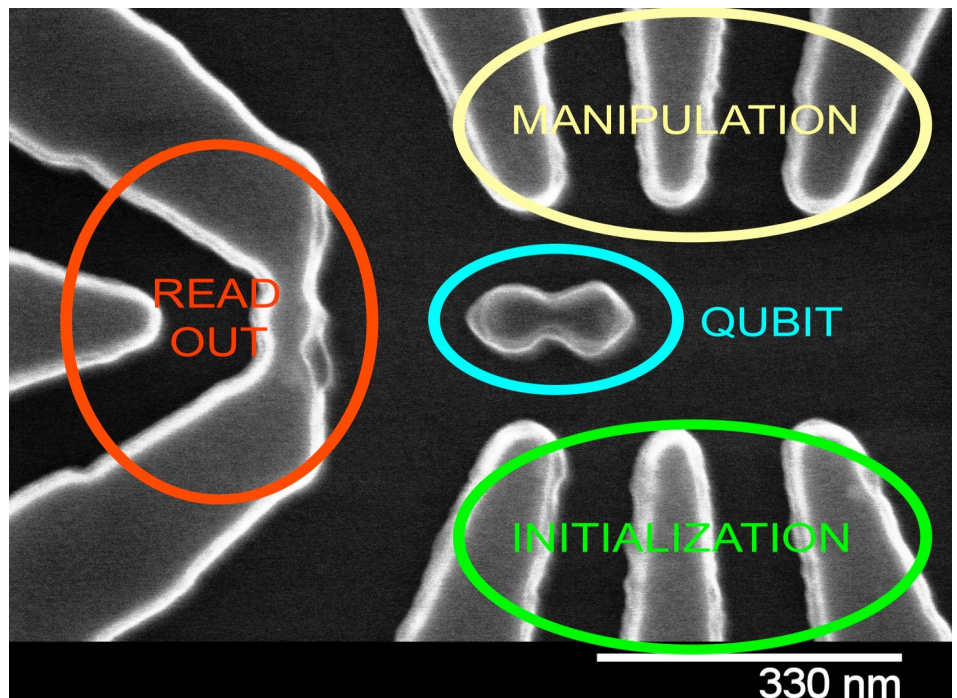
## PEER-REVIEWED CONTRIBUTIONS

### Quantum Engineering : From Einstein's Spooky Action to Sustainable Technology?

By Frank C Langbein and  
Sophie G Schirmer

Quantum physics is often associated with a range of phenomena that are at odds with our usual understanding of how the world works. Famous scientists such as Einstein used the predictions of quantum theory to argue that the theory must be incomplete, as they could not accept the notion of reality implied. Unlike in classical physics, the state of a quantum system is described by a complex probability distribution (wavefunction) that determines the likelihood of obtaining certain measurement outcomes. The wave-like properties of these distributions enable systems to exist in so-called superposition states that can interfere with each other and lead to a phenomenon called entanglement, the possibility of instantaneous non-local correlations between quantum states and measurement results. Other important features are the impossibility of measuring all physical properties of a system simultaneously due to uncertainty relations and the fact that measurements alter the state of the measured system. These peculiar features may explain why many scientists and engineers prefer to avoid quantum mechanics.

Yet, beyond philosophical issues, quantum phenomena are today well supported by experiments and play a vital role in many conventional technologies such as semiconductors, superconductivity or laser



Pictured: Prototype silicon qubit with control and readout circuit fabricated by Hitachi Cambridge Labs (2005).

technology. Even entanglement, referred to by Einstein as spooky action at a distance, is well established, forming the basis for secure quantum communication and cryptography. Current technology, though, utilizes only a small range of quantum effects and the possibilities for future quantum technologies are vast. The possibilities range from electronic circuits that exploit quantum properties such as spin (spintronics/magnetoelectronics) or coherence (coherent electronics) to create more or less conventional electronic devices with novel functionalities to perhaps quantum computers, with communication, imaging and more accurate and novel measurement technologies along the way. Furthermore, quantum effects such as tunnelling and interference are unavoidable on the quest to reduce feature size of conventional integrated circuits to increase speed and efficiency and lower energy requirements.

Progress and potential applications in this area, especially spintronics, was one of the key topics discussed at a recent industry workshop on physics for sustainability organized by the Hitachi Cambridge Laboratory (<http://www.hit.phy.cam.ac.uk/>) in Cambridge (UK). To mention a few possibilities, novel components, such as a Datta-Das-Spin-transistor-like device, may provide the basis for new devices in electronics, storage and communication. Organic semiconductors may make the materials such devices are made of more sustainable and utilizing the self-organizational properties present in certain (purple) bacteria may lead to devices collectively optimizing their efficiency. Novel electron microscopy techniques enable us to observe nano-structures on an atomistic level to better understand their operation.

While the rich physics of quantum phenomena continues to provide ample



## PEER-REVIEWED CONTRIBUTIONS

### Quantum Engineering From Einstein's Spooky Action to Sustainable Technology?

(Continued)

opportunity for physics research, this shows that what were once considered strange effects have moved into the realm of engineering as novel means to find innovative solutions to current problems. However, there are many challenges that must be overcome to make such technologies a reality, including building tools to model, design, simulate and control such devices. A further challenge is to find novel ways to utilize quantum effects and innovative device

designs, and to integrate them with current technology. This requires an interdisciplinary effort and presents an opportunity for many engineering disciplines such as nano-engineering, material science, electronic engineering and control systems engineering to work together with computer science, physics and mathematics. It may sound like fantasy to create devices that are faster and smaller while requiring less energy, are easy to recycle and are made from ubiquitously available materials, but quantum engineering may well solve at least some of these problems.

*What do you think? Join us on the Quantum Engineering discussion group on LinkedIn (<http://www.linkedin.com/e/vgh/3047752/>).*



**Imagine**  
a teenager excited  
about technology

Every innovative, life-changing idea comes from someone's imagination.

The IEEE Foundation provides resources to advance education, innovation and preservation. Make a gift—and imagine the difference you can make.

**Donate today at**  
**[www.ieeefoundation.org](http://www.ieeefoundation.org)**

 **IEEE FOUNDATION**



Pictured: David Williams speaking at Hitachi Cambridge Lab's 20th anniversary seminar on Physics for Sustainability.

## NOTICES

### IEEE Day - 7 October 2010

By João Figueiras  
Region 8 GOLD Coordinator

IEEE Day is a global event planned for 7 October 2010, in recognition of IEEE members -- past, present, and future -- on the anniversary of the first time IEEE members gathered to share their technical ideas in 1884. IEEE organizational units (regions, sections, chapters, affinity groups, student branches, etc.) will be encouraged to participate by providing local events for their members and use social networking to communicate members' technological interests and successes.

IEEE Day is grounded in a simple concept: Celebrate, everywhere around the world on October 7, the achievements of IEEE. The project aims to build a platform and network where all IEEE members, affinity groups, sections, regions, chapters, societies and technology lovers in general can organize events in their home locations with the aim of celebrating the IEEE's technological advancements. Any type of event counts as long as this event is connected to the IEEE Day network!

#### Nurturing the project

The IEEE Day project was first proposed by Salima Kaissi, Region 8 GOLD member, and further developed by a group of interested GOLD and Student volunteers. For the first time, this idea was compiled in a comprehensive project proposal submitted to the 2010 MGA Challenge. After several iterations, the project won the Challenge and is now a primary focus for MGA.

#### How to get involved in IEEE Day

IEEE Day has defined three ways to network and share your participation in this yearly celebration:

"Photo wall of the year": every member will be invited to share a picture showing themselves in action (for example, in the laboratory, at their desk, in the classroom, working with equipment in the field, etc.)

"Let's wear an IEEE Day t-shirt": members can find a link on the IEEE Day website where they can order IEEE Day t-shirts. They can also choose to download and print the logo locally.

"Upload your IEEE Facebook profile picture": members can upload any photos taken during IEEE Day to social networking sites.

You can access the IEEE Day network on:

Web: <http://www.ieeeday.org/>

Facebook:

<http://www.facebook.com/IEEEDay>

Twitter: <http://twitter.com/IEEEDay>

LinkedIn: <http://www.linkedin.com/groups?gid=3240378>

#### Project Goals

The goal of IEEE Day is an ambitious one. It aims to accumulate 100,000 online actions among all the IEEE Day networking channels. Comments, photos, videos, page hits, friend invitations, etc. are all considered online actions.

Awards will be given to the 10 entities (Section, Chapter, Affinity Groups, etc.) who organize the best activities. In addition, awards will be given to the 10 individuals who submit the best pictures or videos to the online "Photo wall of the year."

Help us reach our goal. Don't forget to put IEEE Day, 7 October on your calendar and start thinking of creative ways to

participate in the excitement. Use IEEE Day to tell us about yourself, share your work, and get to know your fellow members.

### 2011 IEEE Green Technology Conference

<http://www.ieeegreentech.org>

April 14-15, 2011

Baton Rouge, LA, USA

Hosted by Louisiana State University, IEEE-USA, IEEE Region 5, IEEE Baton Rouge Section, and the City of Baton Rouge.

Contributed papers, particularly in the following areas, are solicited:

- Energy Generation & Storage Technologies including nuclear, wind, solar, water, geothermal, biomass, energy harvesting and storage.
- Energy Usage Reduction and Conservation including energy management, planning and forecasting, home and commercial automation, innovative HVAC and lighting.
- Architectural and engineering sustainable designs, including strategies for sustainability, performance evaluation, use of green building components, system management.
- Environmental, Legal, Social, Economic, and Political Impacts including emerging standards for renewable and reduced carbon emission energy sources, safety, technologies for developed and underdeveloped countries.

## NOTICES

- Smart Grid communication and control, evolution and integration of renewable and reduced emission energy sources.
- Protection of the Environment, including oil spill prevention and control.

### Submissions

Submissions in any of the identified track areas will be accepted starting September 1, 2010 and until November 1, 2010.

- All submissions need to follow the IEEE conference paper template found at the bottom, or at the conference web-site.
- Must be submitted as PDF files using the on-line EDAS system (<http://edas.info>) using the acronym GTC'11.
- The maximum manuscript length is six pages in double-column format.

Accepted papers will be presented during the conference at the Hilton Hotel in Baton Rouge, Louisiana. Accepted papers will also be published in a conference proceedings CD and available through the digital library IEEEExplore. Check the Conference website for additional information. Go to the link below for the paper template.

<http://www.ieee.org/web/publications/pubservices/confpub/AuthorTools/conferenceTemplates.html>

Proposals for seminars and special sessions are encouraged. Send proposals to:

Hsiao-Chun Wu, PhD  
[hwu1@lsu.edu](mailto:hwu1@lsu.edu)

### IEEE Graduates Of the Last Decade (GOLD) Session - The Decision: Industry or Academia?

Tuesday, December 7, 2010

5:20pm - 6:30pm. At the IEEE Global Telecommunications Conference (GLOBECOM 2010) Miami, Florida, USA  
[www.ieee-globecom.org](http://www.ieee-globecom.org)

#### Free Admission with Door Prizes!

The GOLD session is right before the GLOBECOM Welcome Reception Refreshment & Snacks will be provided

Before the recent graduate steps into the career world, he/she faced the multitude of career choices. Have you ever wondered whether you have made the right decision to go into Industry or Academia? IEEE GOLD (Graduates Of the Last Decade) has developed many programs to facilitate your career decision by providing guidance, mentoring, and direction with the professional networks. This GOLD panel session will connect the students and young professionals to a network of Professionals from the Industry and Academia, and provide advice on their early career either in the Industry or Academic environment.

#### Panel Speakers

##### Heinrich Stüttgen (IEEE Fellow)

*Vice President, NEC Lab Europe, Germany*

##### Andrzej Jajszczyk (IEEE Fellow)

*Professor, AGH University of Science and Technology, Poland*

##### Celia Desmond (Past ComSoc President)

*President, World Class – Telecommunications, Canada*

##### Robert S. Fish

*Chief Product Officer and Senior Vice President, Mformation Technologies, USA*

### Public Visibility Initiative IEEE Green Your World Challenge Grows Beyond United Nations' World Environment Day

The IEEE Public Visibility Initiative (PVI) created the IEEE Green Your World Challenge as part of the United Nations World Environment Day (WED) which was celebrated on 5 June 2010. Although the UN World Environment Day has passed, the awareness campaign that celebrates the positive impact that global sustainability technologies have made on the environment continues to this day.

IEEE Green Your World is asking citizens from around the world to take one or more of the five environmental challenges:

- Stepping into the (Energy-Efficient) Light -- replace incandescent light bulbs
- Every Drop Counts -- reduce daily water usage
- Reforest Your Community -- plant a tree
- Unplug 'Energy Vampires' -- unplug stand-by electronics
- Be an e-Waste Hero -- recycle old electronics

Take the challenge now at [www.ieeegreenyourworld.org](http://www.ieeegreenyourworld.org). Become one of over 400 fans of the IEEE Green Your World Challenge Facebook page and send a tweet to IEEEorg.

For more information on IEEE Public Visibility Initiative programs, visit the newsroom at <http://www.ieee.org/about/news/index.html>



## NOTICES

### Call for Articles: GOLDRush December Edition

IEEE GOLDRush invites you to submit an article for publication in the December 2010 edition. The article topic(s) shall be of interest to young professionals, the primary readers of the publication. Articles must be **strictly no more** than 700 words and should be sent to the IEEE GOLDRush editor at [GOLDRush@ieee.org](mailto:GOLDRush@ieee.org) on or before 5 November 2010. Please feel free to include captioned photos or pictures with your submission. All articles and photo(s) will be peer reviewed and edited if necessary. Full submission guidelines must be adhered to and can be found at <http://www.ieee.org/web/membership/gold/newsletter/goldrushPolicy.html>

Make the most of this great opportunity to express your ideas!

### Upcoming GOLD Webinars

#### Emotional Intelligence by Alice Fuscaldto

Why do smart people do dumb things? Is IQ the only predictor of success in life and work?

The speakers will attempt to answer some of these questions and become aware of the business case for learning and applying Emotional Intelligence at work. Topics include the nature of emotional intelligence and how the brain works, the four dimensions of EQ, and developing and applying self-awareness, self-management, social awareness, and relationship management skills.

Webinar Date: 19 October 2010  
Time: 2:00 - 3:00 pm Eastern Daylight Time  
To register, visit - [http://www.ieee.org/membership\\_services/membership/gold/events/index.html](http://www.ieee.org/membership_services/membership/gold/events/index.html)



Copyright Microsoft



Delivered via the IEEE LMS

### IEEE eLearning Library

The premier online collection of short courses and conference workshops

The IEEE eLearning Library presents a better way to learn for technology professionals, students and any organization who wants its team to strive, excel and stay competitive.

- Advanced technology courses, written and peer-reviewed by experts
- Earn CEU and PDH continuing education credits
- Relaxed, self-paced, online

IEEE is a certified continuing education provider

[www.ieee.org/go/elearning](http://www.ieee.org/go/elearning)



## GOLD COMMITTEE 2010

### Chair

William Sommerville

### Past Chair

Adrian Pais

### TAB Representatives to GOLD

Elya Joffe  
Roelof Swanepoel  
Gim Soon Wan

### MGA Representatives to GOLD

Gustavo Giannattasio  
Guruprasad Madhavan  
Megha Joshi

### Regional Coordinators

#### Region 1

Uri Moszkowicz

#### Region 2

Michael Pearce

#### Region 3

Wah Garriss

#### Region 4

Aisha Yousuf

#### Region 5

Kheng Swee Goh

#### Region 6

Gigi Lau

#### Region 7

April Khademi

#### Region 8

Joao Figueiras

#### Region 9

Salomon Herrera

#### Region 10

Timothy Wong

### GOLD Representatives on IEEE Societies

#### Society Overseer

Matthias Reumann

#### Aerospace & Electronic

#### Systems Society

Mike Roberts

#### Antennas & Propagation Society

Ryan S. Adams

#### Broadcast Technology Society

Heidi Himmanen

### Circuits & Systems Society

Sunil Pai,  
Delia Rodriguez de Llera,  
Martin Di Federico,  
Pui-In (Elvis) Mak

### Communications Society

Angela Yingjun Zhang

### Computational Intelligence Society

Justin Zhan

### Computer Society

Carlos Rueda-Artunduaga

### Consumer Electronics Society

Tom Wilson

### Council on Electronics Design Automation

David Atenza

### Education Society

Aju Thomas

### Electron Devices Society

Ravi Todi

### Engineering in Medicine & Biology Society

Matthias Reumann

### Geoscience & Remote Sensing Society

Shannon Brown

### Magnetics Society

John Nibarger

### Microwave Theory & Techniques Society

Sergio Palma Pacheco,

Jenshen Lin

### Photonics Society

Lianshan Yan

### Power & Energy Society

Glen Tang

### Robotics Society

Agostino Desantis

### Society on Social Implications of Technology

Emily Anesta

### Solid-State Circuits Society

Sean Nicolson

### GOLD Representatives on IEEE Societies (continued)

#### Systems, Man & Cybernetics Society

Ferit Sahin and Wing Ng  
Technology Management Council

Marisa Bazanez-Borgert  
Vehicular Technology Society  
William Sommerville

### GOLD Representatives on other IEEE Entities

#### IEEE-USA

Cathy Strickland

#### Publications Services & Products Board

Timothy Wong

#### Educational Activities

Prasanna Venkatesan

#### Student Activities

Elizabeth Johnston

### IEEE GOLDRush Volunteers

#### Editor

Timothy Wong

#### Assistant Editor-In-Chief

Brian Roberts

#### Immediate Past Editor-In-Chief

George Gordon

#### Editorial Assistants

Stuart Bottom

Claudio Camasca

Lara Fast (MGA Staff)

Kheng Swee Goh

Lori Hogan

Kristi Hummel

Lisa Lazareck

Sabarni Palit

Michael Pearce

Rajnish Sharma

Agusti Solanas

Mohnish Tuladhar

Aisha Yousuf

#### Graphic Designers

Alex Wong

Kenny Wong