

# SMBE

Adelaide  
Feb 2013



## 2012 SMBE Christmas Dinner

The 2012 SMBE SA Christmas Dinner was held at the Queen's Head Hotel in North Adelaide for the second year in a row, on Thursday 29<sup>th</sup> November 2012.

The evening was a great success with 36 reservations, up 14 from the previous year. The dinner was very relaxed, which created a great environment to socialise amongst colleagues and friends, as well as meet new people. It was the perfect way to celebrate the year that was. Everyone who attended received a complementary SMBE SA drink holder as well as a Helicon Technologies pen and USB memory stick before a door prize raffle occurred after the main course. Congratulations to all prize winners!



Thanks on the evening went to the SMBE SA committee for their input and organisation over the last 12 months. For the evening, special mention went to Olivia Lockwood for creating the Christmas Dinner flyer and Vera Townsend for accounting for the attendees, organising sponsorship, and the great presentation of the drink holders. Also, big thanks went to Daniel Fletcher for organising the venue and to the Queen's Head staff for their professional and friendly service. Everyone who attended the Christmas Dinner in 2011 and 2012 had a great time, and from all reports, agree that the Queen's Head Hotel is a great venue and environment. The two course menu catered well, with the option between four main courses and three deserts. The meals were extremely nice!

On behalf of the SMBE SA committee, and everyone who attended, I wish to thank the following sponsors who helped make the 2012 Christmas Dinner such a success;

- Greg Smith – **Helicon Technologies**, for his kind donation of pens and USB memory sticks.
- Frank Cario – **Battery Specialties**, for his kind donation of prizes available to raffle on he night.
- Chris Thomas – **Surgical and Medical Supplies**, for his generous financial contribution.
- Michael Scobie – **IQ Medical**, for his generous financial contribution.

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Lachlan Eberhard

## SMBE Survey

Dear member,

We value your membership and wish to thank you for your continued support of the society.

The SMBE SA committee would like to further accommodate your interests and move forward by attracting new members while supporting the values of the society.

To aid future direction, the committee is asking for 5 minutes of your time to complete a short and simple survey to reveal the strengths of SMBE and also what you would like to experience from the society. You will be the long term benefactor of the short time spent completing the survey. All submissions are confidential.

Please click on the following link to begin;

<https://docs.google.com/spreadsheets/viewform?formkey=dHM4c21mR2NzcjA1ZERNQWNnV2F4YkE6MQ>

THANKS!

Lachlan Eberhard

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## Student Presentation Night 2012

The SMBE (SA) committee is pleased to congratulate Lynne Burrow for taking out 1<sup>st</sup> prize and Ryan Quarrington for 2<sup>nd</sup> prize in the Student Papers Night held on Wednesday 28<sup>th</sup> November 2012 at Flinders University.

The College of Biomedical Engineers (CBmE), in conjunction with the SMBE (SA) hosted the annual event, aimed at Honours, Masters and PhD students who are performing research in the field of Biomedical Engineering. This year, the Biomedical Engineering presentation category was separated from Physical Sciences due to a healthy number of presenters in both fields.

Each speaker is given 12 minutes to present their work (standard PowerPoint presentation format), plus 3 minutes question time. Speakers were judged on their delivery, presentation slides, scientific content and ability to answer questions.

Lynne, a PhD candidate at the School of Computer Science, Engineering & Mathematics, Flinders University, presented her research topic; A clinical educational tool for training medical students in abdominal palpation. She clearly and confidently explained her research, justified how the abdominal simulator was manufactured and explained the positive results obtained. She was awarded the first prize and \$400 prize money.

Ryan, a final year undergraduate at the School of Mechanical Engineering, The University of Adelaide, impressed everyone who attended with the evident complexity and hard work for his research as an undergraduate student. His presentation; Mechanical properties of bone in the lamb after intrauterine growth restriction, was awarded the second prize and \$150 prize money.



(L-R) Ryan Quarrington, David Hobbs (Chair of the College of Biomedical Engineers, Engineers Australia), Lynne Burrow

The SMBE (SA) committee wishes Lynne and Ryan all the best of success in their study and careers, and would also like to thank and acknowledge the remaining presenters; Daniel Padilla (University of South Australia), Yongyao Yan (Flinders University) and Bart Scicchitano (Adelaide University) as they continue their research and studies.

Lachlan Eberhard

Winners abstract are featured below:

**Lynne Burrow – 1<sup>st</sup> prize**

PhD candidate, School of Computer Science, Engineering & Mathematics, Flinders University Co-authors: Karen Reynolds, Harry Owen

***AbSIM: A clinical educational tool for training medical students in abdominal palpation***

Abdominal palpation is a routine but critical diagnostic procedure performed in many clinical situations. It provides an initial diagnosis of a patient's condition and determines next steps for treatment and the relative urgency. This procedure requires a tactile sensitivity to gather information by applying pressure to the abdomen. It is a difficult technique to teach and assess with great variation between examiners. A prototype abdominal palpation-training simulator (AbSIM), was developed for use as an educational tool in training and testing abdominal palpation skills. AbSIM consists of a platform able to measure the magnitude and location of applied force, a model of an "average" male, and an interface to a PC with custom software that records and displays the simulation session.

Clinical studies with the prototype are currently being undertaken to investigate the validity of this custom-developed abdominal palpation simulator as an educational tool for clinical training. Volunteer medical student and medical graduate participants are asked to palpate the abdomen of the simulator as they would for a real patient and to record their findings. Whilst doing this, the system records the location and force of the applied palpation to the model. The participants were also asked some brief feedback questions about the simulator's physical realism. Initial analysis from the feedback questionnaires from 118 medical students showed 58% of them thought the palpation trainer was sufficiently realistic to learn the technique.

Detailed data analysis will be performed once data collection is complete to determine the validity of the tool.

**Ryan Quarrington – 2<sup>nd</sup> prize**

Final-year undergraduate student, School of Mechanical Engineering, The University of Adelaide Co-authors: Reza Zarrinkalam, Kathy Gatford, William Robertson, Claire Jones

***Mechanical properties of bone in the lamb after intrauterine growth restriction***

Intrauterine Growth Restriction (IUGR) is related to low birth weight and occurs when the fetus receives inadequate nutrition and oxygen during pregnancy (Robinson et al., 1979). It is present in up to 17% of Australian pregnancies (National Centre for Epidemiology and Population Health, 1992). IUGR increases the risk of developing adult onset diseases such as diabetes (De Blasio et al., 2007) and osteoporosis (Romano et al., 2009). However, the effect of IUGR, and subsequent post-natal catch-up growth, on bone health is poorly understood. Insulin-like Growth Factor-I (IGF-I) is an important contributor to childhood growth; fetal administration of IGF-I during pregnancy may mitigate potential adverse effects of IUGR on bone health, but this has not been investigated previously. The aim of this study was to determine the effect of IUGR and IGF-I on the structural and mechanical properties, and morphology, of cortical and trabecular bone in the femur, using an established sheep model in which IUGR is induced via pre-conception placental restriction.

Femurs were harvested from lambs (N=41) in four experimental groups (1) Control, (2) IUGR, (3) Control plus IGF-I, and (4) IUGR plus IGF-I. The geometry of the diaphyseal region was determined from computed tomography images. Three-point bending tests were conducted on the diaphysis to obtain stiffness, ultimate and peak failure loads, and apparent flexural modulus and strength. Compression

tests of trabecular bone specimens from the femoral head/neck were conducted to determine trabecular elastic modulus and

ultimate compressive strength. The results from these mechanical evaluations will be presented.

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## SMBE Awards

### SMBE (SA) 2013 ABEC Travel Grant

SMBE SA is excited to announce that our \$1500 ABEC travel grant is available again this year for one successful applicant!

The 2013 ABEC conference will be held in Sydney on 13th-16th October. Details including speakers and abstract submission deadlines will be advertised to SMBE SA members when available.

For all eligible applicants, please start thinking about this great opportunity and prepare an abstract.

*The SMBE (SA) Biomedical Engineering Travel Scholarship is provided to advance knowledge amongst Biomedical Engineering students in South Australia and Northern Territory. The scholarship is for financial support (up to \$1500) for a student or postgraduate to present an oral (preferred) or poster session at the 2013 Australian Biomedical Engineering Conference in Sydney.*

To be eligible for this scholarship, the applicant must:

1. Be a member of SMBE (SA/NT) – can join immediately to be eligible. Refer to SMBE (SA/NT) website for application.
2. Accepted to present at the conference (preference given to students accepted for oral presentations).
3. Agree to write a report on the event and submit it for publication in the SMBE newsletter (no more than two A4 pages).
4. Submit relevant receipts for reimbursement up to the value of \$1500.

### SMBE (SA) Encouragement Award

Do you know someone who deserves to be recognised for their endeavour and enthusiasm within the field of Biomedical Engineering?

If you know of a worthy recipient who would benefit from the recognition, or if you think you are that person, we encourage you, or a peer, to submit a SMBE SA Encouragement Award nomination form. They are available on line at [www.smbe.asn.au](http://www.smbe.asn.au). The award is open to all Biomedical Engineering practitioners and incorporates one year free membership to SMBE SA as well as a funded visit to a Biomedical Engineering conference or seminar.

As a recipient of the then Draeger sponsored SMBE SA award in 2004, I have been fortunate to actively progress with my responsibilities within the society, have opportunities to meet people with similar interests and promote the career I enjoy. At the time of receiving the award, I was studying the undergraduate Bachelor of Science, Bachelor of Engineering (Biomedical) at Flinders University part time and working fulltime at the Royal Adelaide Hospital Biomedical Engineering Department. As a result of the award, I was offered registration for the 2005 Australian Biomedical Engineering Conference and the recognition of the award helped me to concentrate and continue to perform during my studies while managing a fulltime work load for the next 7 years. This encouragement and recognition can help someone you know and I strongly recommend taking the time to submit a nomination for that person.



## 2012 SMBE Scholarships

In 2012 the SMBE committee awarded the *SMBE \$1500 ABEC Travel Grant Award* to Issac Lawless and the *SMBE \$1000 Biomedical Engineering Scholarship* was awarded to Mr David Hobbs;

### On the Impression of ABEC 2012

#### Isaac Lawless

Brisbane. The city of bridges, tolls, one way streets and drivers at once unpredictable and all incapable of indicating. Perhaps there is something to be learned from observation of the haphazard chaos of Brisbane city.

An important clinical lesson from ABEC2012 is that hospitals are networks. Just as a city is a network of roads, powerlines and pipelines, a hospital comprises networks of hallways, patients, staff, computers and now integrative medical devices. There are two ways networks can be developed; planned or unplanned. If they develop haphazardly, different departments blazing their own trails into the future without intercommunication, then our hospital networks will end up like Brisbane; nearly impossible and dangerous to navigate, easy to get lost in, difficult to understand, risky, inefficient and difficult to modify. Plan the transition to the future in a collaborative interdepartmental effort however, and the result may be more like Adelaide; predictable, consistent, easy to navigate, risk-mitigated, efficient and easy to adapt. Adelaide city's network is not without its own problems but it has a solid, deliberate foundation.

A medical device revolution has arrived in which Information Technology and Biomedical Engineering are so closely entwined that they can no longer remain separate departments or even separate people if there is to be a planned and well orchestrated transition to fully network-integrated medical devices. It was put to ABEC and I put to you that it is easier for a Biomedical Engineer to learn IT than it is for an Information Technologist to learn Biomedical Engineering.

Another non-technical lesson presented at ABEC2012 centers around communication. We as engineers, capable as we are, need other people. In order to have our needs met (bean counting, administration, expert or customer opinion), we must be able to effectively

communicate. Mr Peter Slattery [Queensland Health] demonstrated that we as the engineers in the conversation need to recognise communication issues and design effective solutions. In Mr Slattery's example, language simplification and engineering drawings were not sufficient in demonstrating engineering concepts to the physiotherapists in his team. Though themselves highly qualified, physios do not speak in words and pictures because as therapists everything they learn and every therapy they apply is a physical, hands on situation. Once he understood their language, Peter developed models which the therapists could manipulate, sit in and physically simulate the disabilities and concepts the engineers were trying to convey. As if he had passed current through a thin filament, the physiotherapists could suddenly understand what the engineers were talking about.

Engineering is never undertaken in isolation. Therefore there is scope for all engineers - clinical, industrial and academic - to learn how to engineer communication.

ABEC2012 was a fantastic opportunity for students to communicate their work to the research community and to develop the critical skill of presentation. Across industry and academia, reputation is paramount to personal success and to the success of one's work. Comparing presentation quality to my opinion of the presenter, I realised that presentations are the first and often only chance at making an impression. Delightfully, the majority of presenters and especially the students spoke engagingly and clearly delivered their message. Unexpectedly, the poorest presentations came from some of the most senior research group leaders. This reflected, in my opinion, a lack of time dedicated to the development of the skills necessary to actually convey a message. It is a case of increasing return if we the audience provide honest and constructive feedback and

when in turn we present, we can eagerly absorb and apply suggestions.

2012 is the first year in which ABEC has been run as a standalone conference. Despite its independence infancy, three substantive streams were run concurrently for three days. It was a shame to only be able to witness a third of the presentations; even then there is too little space here for any more than a few highlights.

Many presentations focused on the development of new MRI techniques. This exciting field is still growing in both mechanical and computational techniques and presentations spanned that breadth, from new RF coil designs to improvements in brain tumor imaging through advanced processing techniques. Ever more detail is being captured by MRI and in combination with Synchrotron technology it seems the complete imaging of the human body is but a few years away.

Exciting developments in biomaterials and tissue engineering were presented. Focus has shifted from forcing engineering materials into implant designs toward the engineering of biomimetic materials, whose inherent biocompatibility make possible a new generation of more successful, longer lasting implants.

Alarmingly, much of the medical 'knowledge' relied upon to inform medical device design and therapeutic intervention is based on over simplified assumptions. A current study is redefining the location of the mechanical axis of the forearm based on the realisation that there are two bones in the forearm; until now mechanical and functional analysis of the wrist and forearm has assumed ulnar irrelevance.

The application of advanced control systems theory to medical devices was discussed. A young engineer proposed the exciting possibility of a complete closed-loop control patient care device, which adapts its function based on feedback from the patient. Envision a device which allows the relocation away from hospital of the primary point of care because it is smart enough to comprehensively monitor the patient and respond accordingly.

The excellence of Rod Farrar's [Paladin Risk Management Services] presentation on risk management cannot be overstated. Ex Australian Army, Rod is a seasoned public speaker and has a grounded perspective on risk management. In a painful irony, it seems as though the greatest risk to our usefulness is OH&S policy. Rod coined the phrase paralysis by analysis, the crippling of personal and institutional productivity through overzealous OH&S misinterpretation of risk management as total risk removal. A few of the Rod's main points:

- Effective risk management cannot be achieved without a blameless culture; blaming the operator is a scapegoat tactic and resolves nothing, in reality it is always a system failure. Systems can be risk managed.
- Risk ownership is critical for risk management - responsibility must lie in the correct hands.
- Writing a policy is not risk management; the implementation of what should be in the policy is.
- Controls cannot be allowed to run rampant. There must exist some yardstick by which control efficacy is assessed.
- A little risk management saves a lot of fan cleaning.

I urge you in the strongest sense to hear what Rod has to say - get your management in on it too.

The Australian Biomedical Engineering Conference brings together the Biomedical Community. Given its comparatively small population and underestimated impact on society's quality of life, our community should strive to be tight knit: collaboration, resource sharing and tactfully focusing our clinical and research directions will maximise our impact on the world.

One final thought: ABEC is a centralising event for networking and information, but it lacks legacy - what becomes of the great ideas generated by ABEC by the assembly of such

vast and varied expertise? What unifying body remains after ABEC to foster the born legacy? What role has the SMBE?

#### Acknowledgment

The author gratefully acknowledges the SMBE for their continuing support of student attendance to such a valuable experience. I hope this article sheds some insight into its lasting impression.

### **An Overview of the 2012 Australian Rehabilitation and Assistive Technology Association (ARATA) National Conference – Sydney, NSW**

**By David Hobbs**

When I started my career as a Rehabilitation Engineer at what is now known as Novita Children's Services (formerly The Crippled Children's Association of South Australia), I remember the being told a few simple anecdotes about the Rehabilitation Engineering and Assistive Technology (AT) sector by my new Director at the time, Dr Barry Seeger.

Anecdote 1: "David, the Rehabilitation Engineering and AT sector is small here in Australia and everyone knows everyone. It's like a family."

Anecdote 2: "The conference you MUST attend each time it comes around is the ARATA (or Australian Rehabilitation and Assistive Technology Association) National Conference. It's where anyone who's anyone working in AT goes – it's the place to be at, the place to present, and the place to network for everything AT".

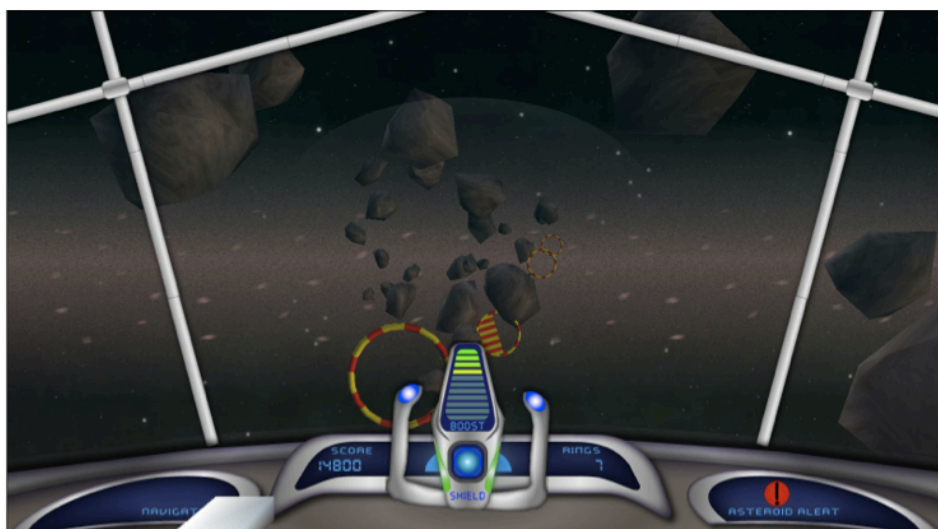
Consequently, after five short months on the job I was sent to my first ARATA Conference in Brisbane in October 2001 – and presented three papers on our work at Regency Park as well as

attended a pre-conference workshop for new Rehabilitation Engineers. I was 'in' – I was now part of the AT family here in Australia.

Fast-forward eleven years to 2012 and, still working in Rehabilitation Engineering and AT but now at Flinders University, it wasn't a difficult decision which conference to target when I wanted to present on the technology system I was developing for children with cerebral palsy (CP) as part of my PhD (more on this soon). It was important to me to present my work at the premier AT Conference in Australia. It was my fifth ARATA Conference and it was like attending a family gathering.

ARATA ([www.arata.org.au](http://www.arata.org.au)) is a national association whose purpose is to serve as a forum for issues in rehabilitation and assistive technology. Every two years ARATA hosts a national conference that draws rehabilitation engineers, physiotherapists, occupational therapists, speech pathologists, end-users, AT practitioners and policy developers to a 'chosen Australian city' to talk, discuss, debate, and highlight AT developments. The 2012 version of the Conference was hosted at the Sydney Masonic Centre in the heart of the Harbour City. Luckily you didn't require a secret hand-shake to enter the conference.

The theme for the Conference was 'Bridging the AT Gap' and for the first time in my memory much of the Conference was political in nature due to the mid-2013 launch of the



*Figure 1: One of the games we've developed for our accessible gaming system – Space Stuntz. The image shows the spacecraft approaching an asteroid field, and the red and yellow coloured hoops that must be navigated to succeed in the game.*



National Disability Insurance Scheme (or NDIS – see <http://www.ndis.gov.au/>). Some of you may be familiar with this acronym and know what the NDIS is all about, as it is a cornerstone of Julia Gillard’s Prime Ministership and has a significant budgetary impact both state and federally. In essence, the NDIS is about providing a national scheme for disability support, regardless of how the disability was obtained, who the person is, or where they live. According to the NDIS website, “A National Disability Insurance Scheme will give all Australians the peace of mind to know that if they have or acquire a disability that leaves them needing daily assistance with everyday life, or if they care for someone who has a disability, that they will be supported” (see: <http://www.ndis.gov.au/about-an-ndis/what-is-an-ndis/>).

The paper that I submitted to the Conference was based on part of my PhD work, which is the development of an interactive, engaging, fun and accessible gaming system that children with CP can play (Hobbs, D, Wilkinson, BG, Henschke, M & Reynolds, K 2012, ‘Game on! Accessible gaming for children with disabilities’). Most commercial gaming systems (such as the X-box, PlayStation, etc.) are inaccessible (meaning children with a disability cannot use them) for two main reasons – the first is that the software (the games themselves) can be too complex, requiring fast and coordinated

movements to press buttons and move joysticks in a controlled manner to play the game.

Whilst this is appropriate for typically developing children, it creates barriers for children with disabilities who might struggle with coordination, control, and precision finger positioning. To compound this, the ‘entry level’ of some games can be too complex for some children with disabilities, meaning they can’t achieve or succeed within the game, leading to low motivation to keep playing and persisting with the game.

The second reason is that the hardware (the games controller itself) can be too difficult to operate due to the number, size and location of the buttons that are typically used to play each game. Not being able to press a particular button when the time is right means you can’t succeed within the game. This leads to frustration and disappointment.

The focus of the ARATA presentation was on the software part of the project – the games and the gaming system. Martin Henschke (who I employed as a Research Assistant on the project) and I provided an overview of the project, demonstrated a few of the games and the game design and philosophy behind each one, and presented results from a trial of the games with a group of typically developing children. Our presentation was very well received and generated many questions and positive comments from the audience, which was fantastic feedback.



Figure 2: Another of the games we’ve developed for the project – *Biplane 1922*. The image shows the player’s biplane (centre) flying over an English countryside, navigating barns and avoiding silos, wind mills, hay bales and tractors.

Due to work and family commitments, I wasn’t able to attend all three days of the ARATA Conference – I flew into Sydney on the morning of the day I was presenting and flew home that night – I was in Sydney for just over 8 hours!

Upon returning to Adelaide I received a phone call from the ARATA President to tell me that our presentation was awarded First Prize in the ARATA Soft Technology Awards! (The ARATA Soft Technology Awards



are awarded by the ARATA Board for 'developments, improvements and innovations in service delivery to Assistive Technology users'). This was a complete surprise and an amazing honour to be recognised by our peers in this way. Martin and I were thrilled.

I'd like to take this opportunity to sincerely thank the SMBE (SA) for the Travel Grant – if it

wasn't for this grant I probably wouldn't have been able to attend the Conference at all, so I am really very thankful for the support. The next ARATA Conference will be held in Canberra, in the second half of 2014. It may even co-locate with ABEC that year, depending on how discussions go at a higher level.

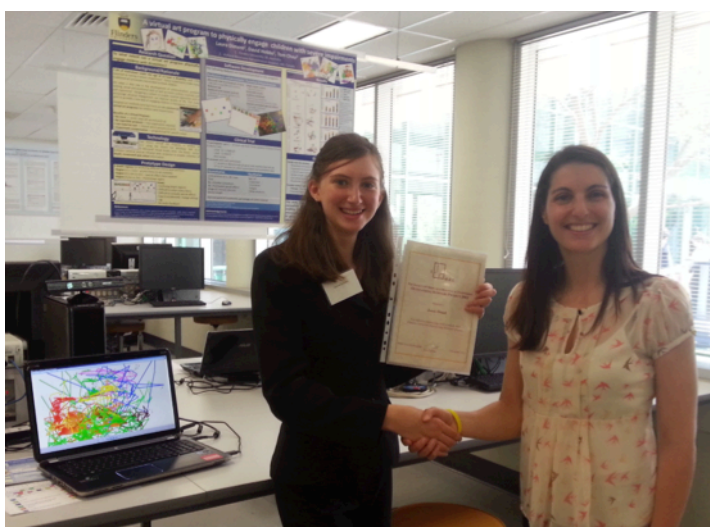
Mr David Hobbs

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## SMBE Outstanding Honours Project Award

**Computer Science, Engineering, Mathematics Honours and Masters Projects, Flinders University 2012**

*'...awarded to a Biomedical Engineering student for their superior work towards their honours project...'*



Laura Diment and Olivia Lockwood

This year saw 9 students selected for presentations at the Expo, held in the Sir Eric Neal Engineering Building at Flinders University on Wednesday 7<sup>th</sup> November 2012.

In the biomedical engineering discipline, there were two presentations, both of a very high standard. The judging for the SMBE SA Award was done by Olivia Lockwood, our Immediate Past President, and Greg Smith, Committee member. Congratulations go to all who presented their posters. The standard of work and research this year was very high, and there was some very fine work

on display. The future of Science in our State is in good hands, if the displays we saw are an indication of the quality of students passing through the doors of Flinders University.

The first project we looked at was presented by Laura Diment. The thesis title was "Assessing the Kinect Virtual Art Program's ability to physically engage severely impaired children". Laura gave an animated and succinct explanation of the extent to which a virtual art programme can engage children with disabilities. Laura cleverly used the Microsoft Visual Studio software and Kinect Virtual Art Programme to combine those technologies, to obtain depth, movement and colour for children to engage in methods to improve their visual and auditory feedback. It enabled children to create their own works of art whilst encouraging physical movement. Laura's studies showed that movement and enjoyment improved in 80% of her trial as well as anticipation of use leading to excitement many children. Laura performed Clinical Trials with children in the 5 to 10 age group from Trinity Gardens Primary School over five sessions. A lot of good data and a working model was on display and explained by Laura. This presentation won her the SMBE Outstanding Honours Project Award Prize. This award wins her \$500 prize money and a free year's membership to the SMBE SA.

The second biomedical presentation was from Bryant Roberts. Bryant's thesis was "Automatic failure detection of tabular bone structure using micro-CT images" A rather complex set of data

analysing stresses and strains on bone tissue undergoing simulated testing. He used predicted measurements derived from Finite Element Models (FEM) and a method of tracking pixels displacement from micro-CT scanning to compute the deformation and strain by using Digital Volume Correlation (DVC). The aim of this research was to undertake an extensive review of literature to identify and implement a suitable DVC algorithm for validating strain measurements derived from FEM's. Future methodologies may include 3D images, faster computation and better algorithms to flag subsets which fail to correlate within the pixel range. Bryant's work opens the door for further research into this important area of study which may lead to better understanding of the ability of bone tissue to withstand stresses during various events including trauma and surgical implanting of non-biological devices.

Greg Smith

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## **SEMINAR ON AS/NZS 3003:2011**

### **Electrical installations & patient treatment areas**

As many people will know a revised version of this standard was released late last year and it contains a number of new or different requirements to earlier versions. The SMBE in conjunction with Engineers Australia convened a one day seminar to outline and discuss this new document. We were fortunate to have the two most knowledgeable BME's on the topic within Australia, Stuart Clifton and Lawrie Knuckey, to guide us through it.

Whilst it is not possible to capture the enormous amount of information conveyed and the insight imparted, it is worth having a look at some of the key changes that were highlighted.

Since changes were made to the overarching electrical wiring standard (AS/NZS 3000), also known as the wiring rules, the requirements of 3003 are embraced in legislation. This means that applying 3003 represents more than just good practice, it is required under law.

- The standard now includes, after each normative clause, a description of how compliance to that clause can be tested. This is very useful inclusion as the methods are very clear.
- There is now good definitions of what areas should be Body and which should be Cardiac Protected. This is to get away from the historic practice of over-specifying areas as Cardiac Protected in the mis-understanding that they are safer or better. If an area that does not need to be cardiac protected is wired and signposted as one, the area will be noncompliant with the standard and cannot be commissioned.
- Power outlets within 5m of a doorway from a protected area need to be protected the same as a Body or Cardiac Protected area. This was 2m in the earlier versions. This has lead to some unintended consequences in that 5m is often enough to take in staff stations, store rooms and a lot of other areas that would not seem to require protection.
- Cardiac protected areas no longer need EP terminals.....the earth studs that have been so commonplace until now.
- The standard now applies to homes, not only for haemodialysis, but for the use of any medical electrical equipment. There are some caveats to this where the use of certain types of equipment, such as those that are class 2, mean that the requirements under the standard are not applicable.
- Maximum electromagnetic field strengths are now specified. These must be measured to ensure that the wiring installation will not generate excessive interference during procedures.

- A range of requirements are now included around the use of Uninterruptable Power Supplies (UPS's).

As well as these highlighted examples, there are a range of other detailed changes that will be recognised by people familiar with the standard. An excellent flow chart is included in the standard that gives clear advice on what work must be performed when alterations or additions are carried out. One of the most significant changes in my mind however is that around area commissioning. There is now the requirement for a specific appropriate individual to sign off the area as being fully compliant with the standard. This is above and beyond a contractor's simple certificate of compliance, which will be just one of the documents feeding into the commissioning process. The person performing the sign off assumes legal responsibility for the installation and can be held accountable into the future for any deviations that may give rise to problems. This dictates a comprehensive verification process and a signature not only on the documentation but also very visibly on the wall signage.

The seminar was extremely well attended by a broad range of BME's, engineering consultants and contractors, and the information conveyed to those groups will go a long way to ensuring that we move towards consistent interpretation and application. As in all cases with the release of a new standard, there were plenty of questions raised. Discussion was therefore long and productive, with everyone being much wiser for the experience.

Adrian Richards

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## Welcome to New Members

2012 has seen the addition of six new SMBE SA members. On behalf of the committee, I would like to welcome:

Mr Joe El-Aklouk  
Mr Muhammad Hasan  
Mr Neil Langlois  
Ms Hellieh Basirnia  
Ms Azadeh Sadeghi  
Ms Laura Diment

Lachlan Eberhard  
SMBE SA President 2013

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## BME List - Your connection to the Australian BME Community

Have you wished or wondered how to connect with the Australian Biomedical Engineering community? Here's how!

The BME List offers registered people an avenue to join discussion, seek help and ask questions relevant to the field of Biomedical Engineering.

Registration is free and can be accessed through the following link;

[http://www.smbe.asn.au/SMBE\\_Links/SMBE\\_Links.htm](http://www.smbe.asn.au/SMBE_Links/SMBE_Links.htm)

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## SMBE Membership Fees

Do you know if your SMBE SA membership is current?

Would you like to confirm your membership?

For all related questions, please contact the SMBE SA treasurer: [Treasurer@smbe.asn.au](mailto:Treasurer@smbe.asn.au)

A membership renewal form is available through our website; <http://www.smbe.asn.au>

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## Membership Certificates

**Are you a SMBE SA member without a Membership certificate?**

Would you like to update your email or contact details?

If so please contact the SMBE SA secretary: [Secretary@smbe.asn.au](mailto:Secretary@smbe.asn.au)

A membership certificate will be made for you and formally presented at our next technical meeting.

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## Newsletter Articles

Would you like to leave feedback or comments about the SMBE SA newsletter?

Maybe you have an interesting article to share?

If so, please contact the SMBE SA secretary [Secretary@smbe.asn.au](mailto:Secretary@smbe.asn.au)

We look forward to hearing from you!

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## Council Positions 2012/2013

President	Lachlan Eberhard
Immediate Past-President / Newsletter Editor	Olivia Lockwood
Vice-president	Tony Carlisle
Treasurer	Dan Fletcher
Secretary	Vera Townsend
Membership Officer	Hatice Kalkan
Council	Greg Smith Robin Woolford Maged Shenouda Adrian Richards Hatice Kalkan
Webmaster	Robin Woolford

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**The Society for Medical and Biological Engineering**  
*presents*

## ***Game on! Accessible Gaming for Children with Disabilities***

**by David Hobbs**

**School of Computer Science, Engineering & Mathematics, Flinders University**

Despite their popularity, commercial gaming systems are typically inaccessible for children with motor impairments. This presentation will describe and demonstrate a suite of novel computer games that were developed to address access issues. The games require joystick movement only and have been evaluated by children aged 5-12 years old.

David was awarded the 2012 SMBE Biomedical Engineering Scholarship, which helped him to present his research at The Australian Rehabilitation and Assistive Technology Association (ARATA) conference, 22-24<sup>th</sup> August 2012. He has extensive experience in the field of Rehabilitation Engineering and Assistive Technology, having worked at Novita Children's Services as a Senior Rehabilitation Engineer for 9 years (2001-2010), with a focus on research and development, technology transfer and national/international Standards Testing of rehabilitation products. David's research interests include Functional Electrical Stimulation (FES), mechanisms for inducing neuroplasticity, particularly in children with cerebral palsy (CP), and computer gaming for rehabilitation purposes.

*Note:* parking available in Carpark 9.

**Date:** Tuesday 26<sup>th</sup> February 2013

**Venue:** ***Science Innovation Learning Centre (SILC)***  
Flinders University  
Physical Sciences Rd  
Bedford Park

**Time:** 5:30pm refreshments  
6:00pm presentation

**Cost:** Free to members and guests

**RSVP:** 19<sup>th</sup> of February 2013

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