

ENGINEERING THE UPPER LIMB

Institution of
**MECHANICAL
ENGINEERS**

12–13 December 2016

One Birdcage Walk, London

Biomedical Engineering Association
Conference

More details available at
www.imeche.org/upperlimb



WHY ATTEND ENGINEERING THE UPPER LIMB

12–13 December 2016
One Birdcage Walk, London

INDUSTRY, ACADEMIA AND CLINICAL PRACTICE UNITE ON THE LATEST WORK IN UPPER LIMB SURGERY AND REHABILITATION AND DIAGNOSTIC TECHNOLOGIES.

With the increased urbanisation of society and a growing, ageing, population, upper limb pathology, including conditions of ageing, trauma, and neurological conditions, are increasing in number and clinical significance.

The numbers of joint replacements and soft-tissue surgical procedures have increased dramatically over the past decade, advances in prostheses have resulted in headlines heralding the new age of robotic hands, and rehabilitation technologies, including functional electrical stimulation, are used routinely and extensively.

Interaction between engineers and clinicians is vital to enhance surgical execution, design, functionality and rehabilitation technologies.

Engineering the Upper Limb brings together key leaders in upper limb research: from industry, academia and clinical practice, both from the UK and internationally, to provide a forum on the future development of devices and technologies for the treatment of upper limb pathologies.

KEY TOPICS COVERED INCLUDE:

- Hand
- Wrist
- Elbow
- Shoulder
- Soft tissue surgery
- Arthroplasty
- Rehabilitation
- Functional electrical stimulation
- Prostheses and orthoses
- Rehabilitation robotics and assistive technology

WHY ATTEND:

- Understand the latest development in joint replacement and soft-tissue surgical procedures
- Hear about advances in prostheses including the new age of robotic hands and rehabilitation technologies, including functional electrical stimulation, and how they are used
- Address key orthopaedic challenges facing clinicians and engineers including ageing patients, trauma and neurological conditions, and how they are being addressed

ORGANISING COMMITTEE

Biomedical Engineering Association
The Institution of Mechanical Engineers

MEMBERS CREDITS:

Anthony Bull,
Head of the Department of Bioengineering
Imperial College London

Ed Chadwick,
Senior Lecturer - Biomedical Engineering|
Keele University

Jonathan Jeffers,
Senior Lecturer - Department of Mechanical Engineering
Imperial College London

Peter Reilly,
Consultant Orthopaedic Surgeon
Imperial College NHS Trust

PROGRAMME

DAY 1	
10:00	REGISTRATION AND REFRESHMENTS
	REHABILITATION
10:20	CHAIRS OPENING REMARKS – ANTHONY BULL, IMPERIAL COLLEGE LONDON CHAIR – ED CHADWICK, KEELE UNIVERSITY
10:30	KEYNOTE – PROFESSOR RORY O’CONNOR Head of the Section of Rehabilitation Medicine, University of Leeds
11:20	QUESTION AND ANSWER SESSION
11:30	HAND FUNCTION ASSESSMENT OF PATIENTS WITH STROKE THROUGH REDUCE KINEMATICS ANALYSIS Speaker: Veronica Gracia-Ibanez, UJI Castellón Authors: Veronica Gracia-Ibanez, Joaquin L Sancho-Bru, Margarita Vergara, Denis Mottet, Isabelle Laffont, Karima Bahkti
11:40	IN VIVO QUANTIFICATION OF THE DART THROWERS MOTION OF THE WRIST FOR REHABILITATION Speaker: Vasiliki Vardakastani, Imperial College London Authors: Vasiliki Vardakastani, Angela E Kedgley
11:50	QUANTIFICATION AND VISUALIZATION OF UPPER LIMB JOINT COORDINATION DURING NON-CYCLIC MOTION Speaker: Richard Fineman, Massachusetts Institute of Technology Authors: Richard Fineman, Leia Stirling
12:00	SEMI-ACTIVE ORTHOSIS WITH PROPORTIONAL INTEGRAL CONTROL IMPLEMENTATION FOR SUPPRESSION OF UPPER LIMB PATHOLOGICAL TREMORS Speaker: Ihtisham Qasim Kalimullah, BITS Pilani, Dubai Authors: Ihtisham Qasim Kalimullah, Mohammed Shamroukh, Alan Chacko, Shreya Sharad Barlingay, V.Kalaichelvi
12:10	SHOULDER PAIN AND FUNCTION IN PROFESSIONAL WHEELCHAIR TENNIS PLAYERS Speaker: M Warner, University of Southampton Authors: Warner M.B., Wilson, D, Heller, M.O, Wood, D, Webborn, N, Veeger, V.E.J, Batt, M.
12:20	MIRROR MOTOR ACTIVITY IN CHILDREN WITH HEMIPLEGIC CEREBRAL PALSY AND ITS EFFECT ON UPPER LIMB FUNCTION Speaker: Habiba Yasmin, Kings College London Authors: Habiba Yasmin, Adam P Shortland, Monica Silva
12:30	LUNCH
	UPPER LIMB PROSTHESES AND CONTROL
	CHAIR - TBC
13:20	KEYNOTE – PROFESSOR DARIO FARINA Founding Director, Institute of Neurorehabilitation Systems, University Medical Center Gottingen, Georg-August University, Germany
14:10	SIMULATED GRIPPING WITH A REAL-TIME MUSCULOSKELETAL HAND MODEL: APPLICATION TO PROsthESIS CONTROL Speaker: Edward K Chadwick, Keele University Authors: Edward K Chadwick, Dimitra Blana, Amartya Ganguly, Antoine J van den Bogert, Wendy M Murray
14:20	THE REALITY OF USING A MYOELECTIC PROsthESIS Speaker: Alix Chadwell, University of Salford Authors: Alix Chadwell
14:30	DESIGN CONSIDERATIONS WHEN DEVELOPING UPPER LIMB PROSTHESES Speaker: Martin Wallace, Steeper Group Authors: Martin Wallace
14:40	3D PRINTED ANTHROPOMORPHIC HAND AND EXPERIMENTAL EVALUATION SYSTEM FOR HAND PROSTHESES Speaker: Immaculada Llop-Harillo, UJI Castellón Authors: Immaculada Llop-Harillo, Antonio Perez Gonzalez

For the most up-to-date and detailed programme for the event, please visit:
www.imeche.org/upperlimb

- This programme is subject to change.
- The Institution is not responsible for the views or opinions expressed by individual speakers.

PROGRAMME

14:50	CLASSIFICATION AND DECOMPOSITION OF EMG SIGNALS USING ARTIFICIAL NEURAL NETWORKS Speaker: R. Vepa, Queen Mary University Authors: S Shams, M. H. Shaheed, R, Twycross-Lewis, R. Vepa
15:00	NETWORKING REFRESHMENT BREAK
	FES
	CHAIR - TBC
15:30	KEYNOTE – BERNHARD GRAIMANN Head of Translational Research, Ottobock
16:20	EMG-TRIGGERED SURFACE FES FOR ARM REACHING IN TETRAPLEGIA Speaker: Dimitra Blana, Keele University Authors: Dimitra Blana, Neil Postans, Simon Pickard, Edward K Chadwick
16:30	CLOSED-LOOP FUNCTIONAL ELECTRICAL STIMULATION FOR UPPER-LIMB REHABILITATION FOLLOWING STROKE Speaker: Ed Hodkin, Newcastle University Authors: Ed Hodkin, Isabel Glover, Dr Hrishikesh Kumar, Prof Helen Rodgers, Dr Andrew Jackson
16:40	TETRAGRIP: A FOUR CHANNEL FES DEVICE FOR IMPROVING THE HAND FUNCTIONS FOR PEOPLE WITH C5/C6 TETRAPLEGIA Speaker: Lalitha Venugopalan, Bournemouth University Authors: Lalitha Venugopalan, Dr Paul Taylor, Dr Jon Cobb, Prof Ian Swain
16:50	FES-UPP – A NOVEL FUNCTIONAL ELECTRICAL STIMULATION SYSTEM TO SUPPORT UPPER LIMB FUNCTIONAL TASK PRACTICE FOLLOWING STROKE Speaker: Kenney, L, University of Salford Authors: Kenney, L, Howard, D, Sun, M, Luckie, H, Smith, C, Waring, K, Williamson, T, Hardiker, N, Taylor, P, Finn, S, Merson, E, Sadhoo, A, Nolan, D
17:00	END OF DAY 1

DAY 2	
08:30	REGISTRATION AND REFRESHMENTS
	ORTHOPAEDIC UPPER LIMB
	CHAIR - TBC
09:00	KEYNOTE – ROGER EMERY Ethical development of a shoulder prosthesis
09:50	DEVELOPMENT OF A TOTAL ELBOW REPLACEMENT SYSTEM FOR DOGS: CHALLENGES OF CANINE VS HUMAN TER Speaker: Paul Smirthwaite, Osteogen Authors: Paul Smirthwaite, John Innes, Rob Pettitt
10:00	WEAR TESTS OF A CONTEMPORARY TOTAL SHOULDER REPLACEMENT IN A UNIQUE SHOULDER SIMULATOR Speaker: Simon Smith, Newcastle University Authors: Tom Joyce, Simon Smith
10:10	PROSTHETIC GLENOID FIXATION: LATERALISATION OF THE CENTRE OF ROTATION OF A FIXED-FULCRUM TOTAL SHOULDER REPLACEMENT IS NOT ASSOCIATED WITH SUBOPTIMAL GLENOID BONE FORMATION DURING A FUNCTIONALLY-RELEVANT LOADING PROTOCOL Speaker: S Lambert, De Montfort University Authors: K Chin, S Taylor, G Blunn, S Lambert
10:20	SURGICAL RECONSTRUCTIONS FOLLOWING TRAPEZIECTOMY: COMPARISON USING A PHYSIOLOGIC WRIST SIMULATOR Speaker: Shah, D.S, Imperial College London Authors: Shah, D.S, Middleton, C, Gurdezi, S, Horwitz, M, Kedgley, A
10:30	NETWORKING REFRESHMENT BREAK
	ORTHOPAEDIC UPPER LIMB
	CHAIR - TBC
11:00	KEYNOTE – ANDREW HOPKINS Zimmer
11:50	THE HUMAN HAND: A UNIQUE CHALLENGE FOR MUSCULOSKELETAL MODELLING Speaker: Angela E Kedgley, Imperial College London Authors: Angela E Kedgley

PROGRAMME

12:00	TOPOGRAPHICAL EVALUATION OF PYROLYTIC CARBON FINGER PROSTHESES Speaker: Andrew Naylor, Newcastle University Authors: Andrew Naylor, Martin Bone, Sumedh Talwalkar, Ian Trail, Grey Giddins, Thomas J Joyce
12:10	GLENOID COMPONENT FOR ANATOMICAL SHOULDER ARTHROPLASTY Speaker: Diogo Geraldès, Imperial College London Authors: Diogo Geraldès, Ulrich Hansen, Andrew A Amis
12:20	QUANTIFYING THE CRITICAL SIZE OF A GLENOID OSSEOUS DEFECT CAUSING ANTERIOR SHOULDER INSTABILITY Speaker: Christinan Klemt, Imperial College London Authors: Christinan Klemt, Daniel Nolte, Peter Reilly, Erica Di Federico, Anthony M J Bull
12:30	LUNCH
	UPPER LIMB BIOMECHANICS/KINEMATICS CHAIR - ED CHADWICK
13:30	KEYNOTE - DR. WENDY MURRAY Associate Professor, Northwestern University and Director, Applied Research in Musculoskeletal Simulation (ARMS), Rehabilitation Institute of Chicago
14:20	BALL VELOCITY AND UPPER LIMB JOINT MOMENTS IN FASTBALL PITCHING Speaker: Xavier Gasparutto, Delft University of Technology Authors: Xavier Gasparutto, Erik van der Graaf, Dirkjan Veeger, Frans van der Helm
14:30	FROM THE YOUNG TO THE ELDERLY: PROSPECTIVE STUDY INVESTIGATING MUSCULOSKELETAL MODELLING OF SITTING AND STANDING Speaker: Samuel Smith, Imperial College London Authors: Samuel Smith, Peter Reilly, Anthony M J Bull
14:40	DOMINANCE AND AGE VARIATIONS IN THE UPWARD ROTATION OF THE SCAPULA IN YOUTH ELITE BASEBALL PITCHERS Speaker: Erik Van der Graaf, VU Amsterdam Authors: Erik Van der Graaf, Femke van Dis, Xavier Gasparutto, Bengt Kom, Marco Hoozemans, Dirkjan Veeger
14:50	DO SIMULATED MOVEMENTS OF THE UPPER-LIMB REPLICATE FUNCTIONAL DAILY LIVING ACTIVITIES? Speaker: Aliah Shaheen, University of Surrey Authors: Aliah Shaheen, Sarah Taylor, Angela Kedgley, Alexander Humphries
15:00	NETWORKING REFRESHMENT BREAK
	UPPER LIMB BIOMECHANICS/KINEMATICS CHAIR - TBC
15:30	JOINT CONSTRAINTS AND MARKER SET TO ACCURATELY ESTIMATE SCAPULA KINEMATICS Speaker: Benjamin Michaud, Université de Montréal Authors: Benjamin Michaud, Alexandre Naaim, Raphael Dumas, Mickael Begon
15:40	IMPACT OF WHEELCHAIR CONFIGURATIONS ON UPPER BODY BIOMECHANICS OF MANUAL WHEELCHAIR USERS Speaker: Hassanain Ali Lafta, Cardiff University Authors: Hassanain Ali Lafta, Robert Guppy, Gemma Whatling, Cathy Holt
15:50	MUSCULOSKELETAL MODEL BASED CHARACTERISATION OF COMPENSATORY MOVEMENTS IN FUNCTIONAL PROSTHETIC ARM USAGE Speaker: Vikranth Nagaraja, St Hilda's College, University of Oxford Authors: Vikranth Nagaraja, Jeroen H Bergmann, Michael S Andersen, Mark S Thompson
16:00	CHAIRS CLOSING REMARKS
16:15	END OF EVENT

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Fees and charges	Price	VAT	Total
Member, Supporting organisation	£368.00	£73.60	£441.60
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Author	£125.00	£25.00	£150.00
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THREE WAYS TO BOOK

1 Online:
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2 Email:
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Please read the information listed below as each booking is subject to the Institution's standard terms and conditions.

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Completed application forms should be returned to the address above, along with the correct payment. Attendance at the event will be confirmed on receipt of the full balance. All participants are advised to bring a copy of their confirmation with them on the day, to ensure the fastest possible entry.

SPECIAL REQUIREMENTS

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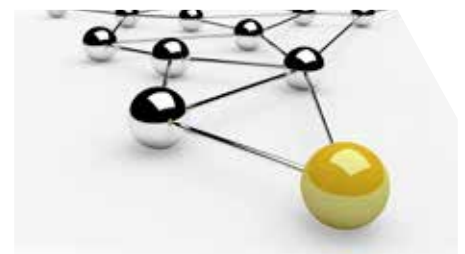


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