



ICM 2023

IEEE
International Conference
on Mechatronics

15-17 March, 2023
Loughborough University

Welcome Message from ICM2023 General Co-Chairs

On behalf of the conference Organisers and Industrial Electronics Society of the IEEE, we are very excited to welcome you at Loughborough for attending IEEE International Conference in Mechatronics (ICM2023) in person. COVID-19 pandemic has prevented many of us to meet with each other personally in the last three years. And despite there was a significant uncertainty in future development of pandemic and some countries were still in lockdown when preparing ICM2023, we collectively made a risky decision to hold ICM2023 as an in person only conference. Today we are very pleased to see you are here at Loughborough to attend and enjoy the conference.

After rigorous peer review, the Technical Program Committee selected 72 papers from all the received manuscripts submitted to technical tracks and organized special sessions. We are very pleased to welcome the authors from more than 15 countries worldwide, which reflects the truly international nature of the IEEE ICM series. Three preeminent experts in mechatronics were also invited to give the plenary talks, sharing their outstanding achievement and insightful thinking about mechatronics of today and future. In the three days of the conference, two and half days are full of technical programme and presentations for stimulating and exchanging new ideas and new development in both theories and applications of mechatronics, followed by a half day of visiting Woolsthorpe Manor, the birthplace of Sir Isaac Newton, a scientific giant. We hope ICM2023 will provide an excellent opportunity for you to network, catch up with old friends and make new friends.

Loughborough is a small market town in the middle of England. In addition to attending ICM2023, it also offers you an opportunity to experience typical English culture and countryside. You are encouraged to take this opportunity to explore more of the town and its surroundings.

We hope that ICM2023 will fulfil your highest expectations, and wish you have a wonderful and memorable time at Loughborough in attending ICM2023.

Wen-Hua Chen
Loughborough University

Michael Ruderman
University of Agder

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Michael Ruderman

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 Naoki Motoi
 Ning Sun
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 Shota Yamada
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 Taku Senoo
 Takumi Hayashi
 Tarik Uzunovic
 Ting Li
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 Tomoyuki Shimono
 Toshiaki Tsuji
 Toshimasa Miyazaki
 Tudor-Bogdan Airimitoiaie
 Vasileios Tzoumas
 Wataru Ohnishi
 Wenwu Zhu
 Witold Byrski
 Xiao Pan
 Xinming Wang
 Yang Kuang
 Yesim Oniz
 Yingbo Huang
 Yongchun Fang
 Yongfeng Lv
 Yoshiyuki Hatta
 Yosuke Asano
 Yuan Tan
 Yuki Nagatsu
 Yuki Yokokura
 Yunda Yan
 Yunjia Li
 Zheng Tian
 Zhenhua Zhao
 Zhongxin Fan
 Zilin Feng
 Zuo Wang

General information

Conference Venue

Holywell Park (Sir Denis Rooke)
Loughborough University,
Loughborough, Leicestershire, LE11 3TU,
United Kingdom (UK)

Registration Desk

Time: Between 08:00 - 16:00 each day
Location: Holywell Park - Sir Denis Rooke
Building, Loughborough University

Wi-Fi Connection

During the conference the free of charge internet Wi-Fi connection is available with speeds up to 1Gbps.

Coffee Breaks

All coffee breaks take place in the Babbage room ground floor of Holywell Park.

Lunch Breaks

Lunches will be served in the restaurant, on the first floor of main building.



Holywell Park (Sir Denis Rooke)

Welcome Reception

Time: Wednesday 15 March (18:30 - 22:00)

Location: Burleigh Court, Lounge and Restaurant

(Follow QR Code on Ticket for Location/Directions)

*If you have signed up for Welcome Reception, please bring the ticket "Welcome Reception" given in your Delegate Bag. 1x Free Welcome Drink and Evening Buffet included. Additional drinks are at your own cost.



Conference Gala Dinner

Time: Thursday 16 March (18:30 - 22:30)

Location: Prestwold Hall, Prestwold, Loughborough

(Follow QR Code on Ticket for Venue Information)

*If you have signed up for the Gala Dinner, please bring the Gala Dinner Ticket given in your Delegate Bag. One welcome drink, 3 Course Dinner and Table Wine included. Additional drinks are at your own cost. Coach Travel will be provided to and from Prestwold Hall.



Social Excursion Home of Sir Isaac Newton

Time: Friday 17 March (13:30 - 16:30)

Location: Woolsthorpe Manor

(Follow QR Code on Ticket for more Information)

*If you have signed up for the Social Excursion, please bring the Woolsthorpe Manor Ticket given in your Delegate Bag. Coach Travel will be provided to and from Woolsthorpe Manor.



Conference Participants Policies

All presentation and conference activities are conducted in the English language.

The participants are obligated to carry the name badge given at Registration.

The participants are not expected to take pictures of or record the presentations, since it can violate consent from the presenters. It shall be reminded that the conference organiser will have a dedicated photographer in operation during the conference, for promoting the conference and reporting. If anyone has any concern, please talk with the conference organiser.

Access On/Off Campus

By air

We are just 8 miles from East Midlands Airport, 38 miles from Birmingham International Airport and 90 miles from Manchester Airport.

eastmidlandsairport.com | birminghamairport.co.uk | airport-manchester.com

Rail

Trains are renowned as being one of the most sustainable forms of transport and Loughborough has a great link to many of the major cities.

Local connections

Regular Intercity services operate between Loughborough and other main line towns - including over 40 trains daily to and from London St Pancras around 90 minutes away.

More information can be found at National Rail. nationalrail.co.uk

Bus

Buses are great way to get around the town without having to jump into your car. Using buses over cars has a positive environmental impact.

Kinch Sprint Bus

If you're commuting by train you can jump on the Kinchbus Sprint service from Loughborough Railway station, which will bring you straight to campus. During term-time it runs every ten minutes from various points across campus, so whether you're on your way in or heading home after a long day, remove the stress from your journey and just hop on.

When you're on campus enjoy free travel on the bus between 07:30 and 18:30, this service runs every 5 minutes during term time. Just jump on the bus while they take you to where you need to be.

Local buses

There is a good local bus service and access to the national bus network if you need to get away on the cheap. Below is a selection of local services providers.

kinchbus.co.uk/services/sprint | arrivabus.co.uk | trentbarton.co.uk

On Foot

If the weather permits, it is possible to walk to Campus from the Town Centre; this would take about 30-40 minutes.

Useful Information

Taxi

Taxis can be ordered on the following numbers:

Aimans Taxis: +44 (0)7970 278503

Loughborough Taxis: +44 (0)1509 230230

ADT Taxis: +44 (0) 509 260000

Emergency

In case of emergency, the following number is to be used:

Fire, Police and Ambulance: 999

*If calling from a phone within the Hotels or Conference Centre please dial an additional 9 for an outside line.

For cases **not deemed and emergency**, the following number is to be used:

Fire, Police and Health Service: 111

*If calling from a phone within the Hotels or Conference Centre please dial an additional 9 for an outside line.

Insurance

Participants of ICM2023 are advised to take out their own insurance in case of emergency illness or lost baggage. The conference registration fees **DO NOT** include any provisions for the insurance of participants against personal injuries, sickness, and theft or property damage.

Currency

The official currency is the Great British Pound (GBP)

All major credit cards are accepted in the most hotels, stores, and restaurants.

Power Supply

230V AC, 50 Hz

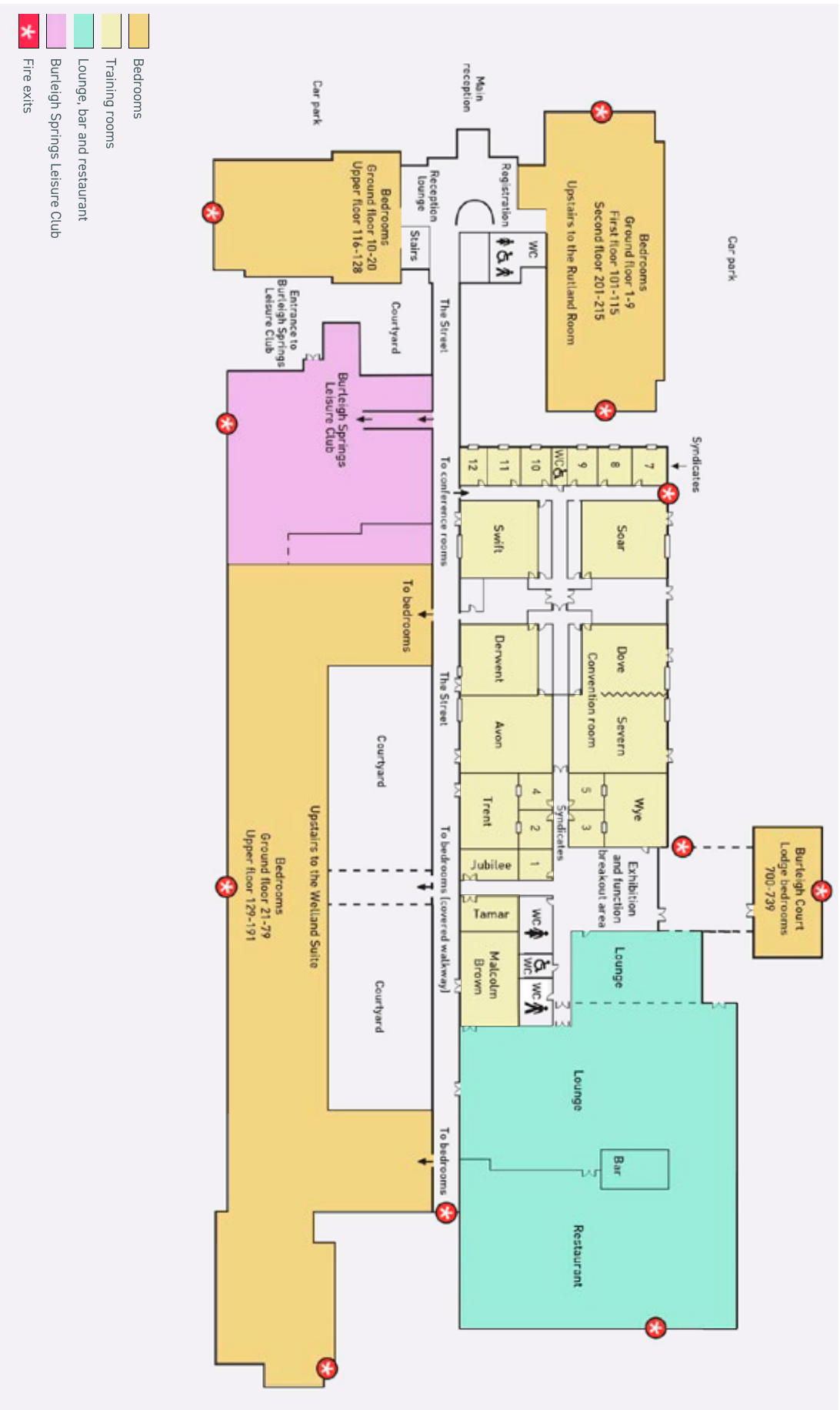


Loughborough University with Holywell Park (top right)

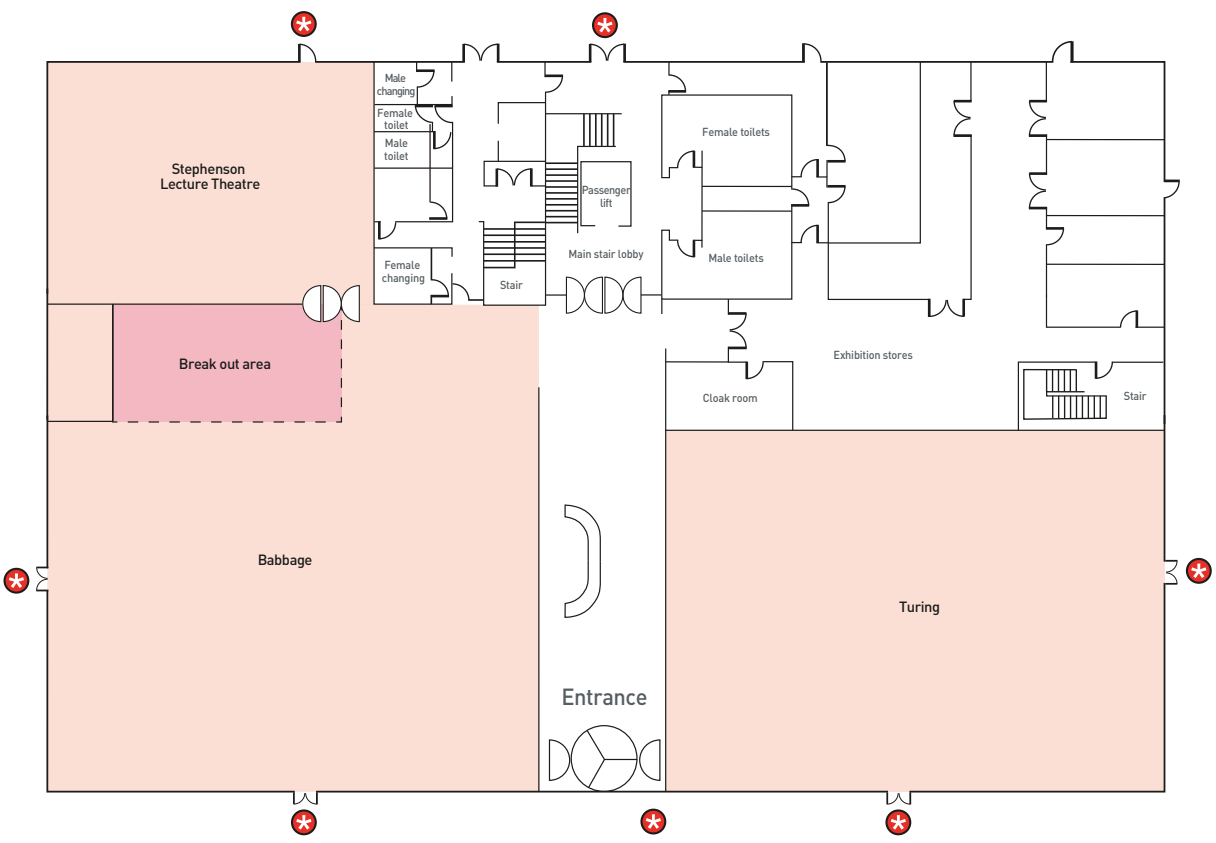
Loughborough University Campus Map



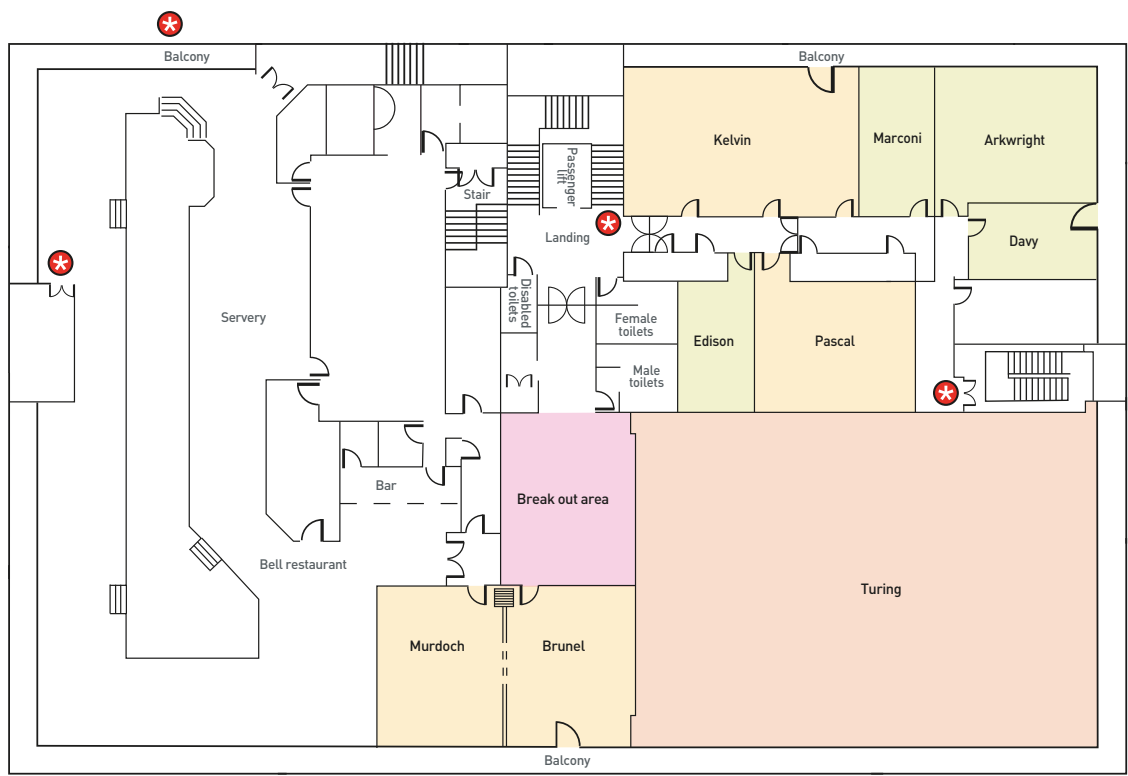
Burleigh Court (ground floor)



Holywell Park (ground floor)



Holywell Park (first floor)



Conference Programme Overview

WEDNESDAY 15 MARCH

09.00-09.10	Opening Ceremony - Room: Turing (Holywell Park)	
09.10-10.00	Plenary Session I - Room: Turing (Holywell Park)	
10.00-10.30	Coffee Break - Room: Babbage (Holywell Park)	
Parallel Sessions		
10.30-12.30	TT: Control Technologies in Mechatronics I: Room: Turing (Holywell Park) 6001, 6205, 7164, 9730, 7930, 1609	SS: Mechatronics for Energy Harvesting and Self-Powered Sensing: Room: Stephenson (Holywell Park) 8120, 1933, 3517, 3525, 1148
12.30-13.30	Lunch Break - Restaurant (Holywell Park)	
Parallel Sessions		
13.30-15.30	TT: Control Technologies in Mechatronics II: Room: Turing (Holywell Park) 9264, 1774, 5948, 1790, 3253	SS: Safe and Energy Efficient Control of Intelligent Vehicles: Room: Stephenson (Holywell Park) 6919, 7985, 4718, 3066, 5246, 2653
15.30-16.00	Coffee Break - Room: Babbage (Holywell Park)	
Parallel Sessions		
16.00-18.00	TT: Haptics and Robotics: Room: Turing (Holywell Park) 1069, 3526, 4090, 1632, 5908, 2663	TT: Adaptive Control and AI in Mechatronics: Room: Stephenson (Holywell Park) 4458, 6655, 9010, 4886, 1245
18.30-22.00	Welcome Reception - Room: Bar, Lounge and Restaurant (Burleigh Court)	

THURSDAY 16 MARCH

Parallel Sessions		
10.00-12.00	TT: Control Technologies in Mechatronics III: Room: Turing (Holywell Park) 2870, 9536, 4348, 1044, 4750	SS: Robot, Human, and Environment Interaction: Room: Stephenson (Holywell Park) 4805, 8158, 6139, 1776, 5701, 9856
12.00-13.00	Lunch Break - Restaurant (Holywell Park)	
13.10-14.00	Plenary Session II - Room: Turing (Holywell Park)	
Parallel Sessions		
14.00-16.00	TT: Actuator and Sensor Systems: Room: Turing (Holywell Park) 8113, 6426, 7432, 8383, 2467, 7312	TT: Automotive Control, Autonomous Vehicles, and Guidance Systems: Room: Stephenson (Holywell Park) 3837, 2474, 995, 2154, 6487, 3307
16.00-16.30	Coffee Break - Room: Babbage (Holywell Park)	
Parallel Sessions		
16.30-17.30	TT: Measurement, Calibration, and Signal Processing: Room: Turing (Holywell Park) 1905, 9938, 1026	TT: Design and Control of Distributed and Multibody Systems: Room: Stephenson (Holywell Park) 318, 1580, 1713
18.30*-22.30	Gala Dinner - Prestwold Hall (*Coaches depart at 18.30)	

FRIDAY 17 MARCH

09.10-10.00	Plenary Session III - Room: Turing (Holywell Park)	
10.00-10.30	Coffee Break - Room: Babbage (Holywell Park)	
Parallel Sessions		
10.30-11.30	SS: Differentiation, Estimation and Observation in Control: Room: Turing (Holywell Park) 7307, 1359, 2025	SS: Smart Precision Motion Control in Mechatronic Systems: Room: Stephenson (Holywell Park) 8099, 7794, 2562
11.30-12.00	Closing Ceremony (Including Best Paper Award) - Room: Turing (Holywell Park)	
12.00-13.00	Lunch Break - Restaurant (Holywell Park)	
13.30*-16.30	Social Excursion - Woolsthorpe Manor (*Coaches depart at 13.30)	

Keynote speakers



Andrew Plummer **Professor of Machine Systems,** **University of Bath, UK**

Wednesday 15 March (9.10-10.00)
Room: Turing (Holywell Park)

Andrew Plummer is Director of the Centre for Power Transmission and Motion Control at the University of Bath, UK, and Head of the Mechanical Engineering Department. He has a variety of research interests in the field of motion and force control, including inverse-model based control of electrohydraulic servosystems, digital fluid power, model-in-the-loop testing systems, hybrid hydraulic/piezoelectric actuation, and active vehicle control. He received his PHD from the University of Bath in 1991, for research into control of electrohydraulic systems. He worked as a research engineer for Thales from 1990, developing flight simulator control technology, before joining the University of Leeds in 1994. From 1999 he was global control systems R&D manager for Instron, manufacturers of materials and structural testing systems, developing high performance electrohydraulic machines including crash-testing catapults, Formula One racing car test rigs, and earthquake simulation tables. Professor Plummer was appointed to his present position in 2006. The Centre for Power Transmission and Motion Control at Bath, founded in 1968, has an international reputation as a centre of excellence in hydraulics, mechanical power transmission and motion control systems, with applications in the aerospace, automotive, robotics and renewable energy sectors amongst others. Professor Plummer has chaired the UK Automatic Control Council, the IMechE Mechatronics Informatics and Control Group, and is Chair of the Global Fluid Power Society.

Andrew Plummer: Integrated Hydromechatronic Actuators

Using the opportunities provided by additive manufacture, advanced high performance electrohydraulic actuators are emerging which exhibit tightly-integrated sensing, control and power stages. Not only do these provide excellent power density and dynamic response, but the potential for robust control and health monitoring built on their embedded sensing capability. In this talk, I will review the pros and cons of traditional hydraulic actuation and discuss concepts for improved performance. A key challenge is the poor energy efficiency of hydraulic actuators controlled by throttling valves, but this can be overcome by using servomotor driven pumps (as in Electrohydrostatic Actuators, EHAs), or digital hydraulic architectures such as those using high-speed switching valves. Whichever architecture is used, merging the separate parts into one structural unit gives enormous benefits in terms of compactness, reliability, reduced part count, and improved dynamic performance. Additive manufacture (AM) is the key to this integration, as it allows hydraulic components with complex internal galleries to be made without the constraints of line-of-sight machining, and dramatically reduces weight and material waste. Critically, AM also promises a much shorter development cycle. I will present examples of AM hydromechatronic actuators designed for aerospace, and also for robotic and medical applications (prostheses) where the new approach has generated smaller scale devices than are normally associated with hydraulics.



Marcel Heertjes
Department of Mechanical Engineering,
Eindhoven University of Technology

Thursday 16 March (13.10-14.00)
Room: Turing (Holywell Park)

Marcel Heertjes received the M.Sc. and Ph.D. degrees from the Eindhoven University of Technology, Eindhoven, The Netherlands, in 1995 and 1999, respectively. After being with the Philips Center for Industrial Technology from 2000-2005, he joined ASML in 2006. He was a recipient of the IEEE Control Systems Technology Award 2015 for variable gain control and its applications to wafer scanners.

In 2019, he was appointed (part-time) full Professor on Industrial Nonlinear Control for High-Precision Systems at Eindhoven University of Technology. He acts as an Associate Editor for IFAC Mechatronics since 2016. His main interests are with hybrid integrator-gain systems, learning based control, and industrial mechatronics & motion control.

Marcel Heertjes: Hybrid Integrator-Gain System: how to obtain scanning accuracy at nanoscale with unstable controller modes?

Wafer scanners are complex lithography machines that are critical to the production of integrated circuits. Driven by improved performance in terms of throughput, overlay, and imaging, the control design of wafer scanners is part of its success. Inherent design limitations like the waterbed effect, however, pose constraints on the ever-increasing demand for improved control specifications and as such provide the motivation to explore nonlinear strategies. For the fast positioning stages of a wafer scanner a typical example is given by the recent developments in hybrid integrator-gain systems (HIGS). Such systems operate alternately in integrator mode or in gain mode as to exploit phase benefits. Unlike, for example, reset control approaches with (partial) state resets, HIGS does not produce discontinuous control signals. This is particularly useful when dealing with weakly damped resonances of the wafer scanner. In the plenary lecture, an industrial nonlinear control perspective will be discussed that includes the ability to surpass inherent design limitations as well as the recent developments in time- and frequency-domain stability tools, robust nonlinear control design/considerations, and demonstrations together with the encountered pitfalls the come along when bringing nonlinear motion control to practice.

CONTINUES...



Valeriy Vyatkin
Aalto University, Finland & Luleå
University of Technology, Sweden

Friday 17 March (9.10-10.00)
Room: Turing (Holywell Park)

Valeriy Vyatkin (IEEE Fellow) is Professor of Information and Computer Engineering in Automation at Aalto University, Finland on joint appointment as Chaired Professor (Ämnesföreläsare) of Dependable Computation and Communication Systems, Luleå University of Technology, Luleå, Sweden. He has been leading research projects related to software and systems engineering for cyber-physical automation systems, intelligent energy, logistics and transportation, addressing such aspects as dependability, distributed architectures and multi-agent systems applied in various industry sectors: SmartGrid, material handling, building management systems and reconfigurable manufacturing, funded by the National Science Foundation (USA), Vettenskap Råd (Sweden), Academy of Sciences (Finland), various national and private agencies in Japan, Germany, New Zealand, Sweden, Finland and the EU. Valeriy is an active IEEE volunteer for about 20 years, currently serving as Vice-President for Technical Activities of Industrial Electronics Society.

Valeriy Vyatkin: Cyber-Physical Engineering of Mechatronic Swarms for Flexibility of Automation Systems.

This talk discusses the concept of cyber-physical engineering (CPE) for the study and design of flexible automation systems composed of smart autonomous cyber-physical components (CPC). In such systems, flexibility and adaptivity is achieved on account of autonomy of the CPCs collaboratively exhibiting emergent behaviour in response for various disturbances in various domains: physical, cyber, societal and market. Wireless communication is just one of the factors complicating assurance of dependable behaviour of such mechatronic swarms, therefore new engineering methods are required. The principle of cyber-physical engineering, discussed in this talk, assumes the use of languages and tools for interdisciplinary modelling at all stages of systems' design, analysis and operation.

Conference Programme Overview

WEDNESDAY 15 MARCH

09.10-10.00	Keynote Speaker: Andrew Plummer - Room: Turing (Holywell Park)	
10.30-12.30	TT: Control Technologies in Mechatronics I: Room: Turing (Holywell Park) 6001, 6205, 7164, 9730, 7930, 1609	SS: Mechatronics for Energy Harvesting and Self-Powered Sensing: Room: Stephenson (Holywell Park) 8120, 1933, 3517, 3525, 1148
10.30-10.50	Xinxin Zhang and S. Hassan Hosseinnia Frequency-domain Analysis for Infinite Resets Systems	Tianhui Li, Hailing Fu, Stephanos Theodossiades and Sotiris Korossis Simultaneous Ultrasonic Power Transfer and Depth Feedback for Active Medical Implants
10.50-11.10	Reza Hosseinzadeh, Florian Martin and Marko Hinkkanen Energy-Efficient Control of Bearingless Linear Motors	Torben Dankwort, Minhaz Ahmed, Anmol Khare, Sven Grünzig and Björn Gojdka High-performance Aluminum Scandium Nitride MEMS energy harvester with wafer-level integrated micromagnets for contactless rotational motion harvesting
11.10-11.30	Muneue Suwa, Kentaro Hirata and Yukinori Nakamura H_∞ Control of the Furuta Pendulum with Backlash and Analysis of the Effect of Bounded-Disturbance	Quan Zhang, Ziyu Liu, Xuzhang Peng and Zhongjie Li Investigating the geometrical impact on sub-size single-body wave energy converters through simulation
11.30-11.50	Akhil Chadha, Vishrut Jain, Andrea Lazcano and Barys Shyrokau Computationally-efficient Motion Cueing Algorithm via Model Predictive Control	Ryoto Fujita, Takashi Ohhira and Hideki Hashimoto, Stable Electrocardiogram Measurement Using Capacitive-Coupled Electrodes
11.50-12.10	Hikaru Yajima, Toshiyuki Murakami, Kosuke Ishizaki, Yasuhiro Miyata, Masamichi Nawa and Norihiko Kato Posture Stabilization Control Compensating Variation of Body Center of Gravity in Underactuated System	Viktor Buskes, Marcin Kaczmarek, Jonas Veenstra, Corentin Coulais and Hassan Hosseinnia Control Architectures for Metamaterials in Vibration Control
12.10-12.30	Takumi Hayashi, Hiroshi Fujimoto, Yoshihiro Isaoka and Yuki Terada Fitting-based Cutting Force Estimation for Machine Tool with Encoder Resolution Analysis	

CONTINUES...

13.30-15.30	TT: Control Technologies in Mechatronics II: Room: Turing (Holywell Park) 9264, 1774, 5948, 1790, 3253	SS: Safe and Energy Efficient Control of Intelligent Vehicles: Room: Stephenson (Holywell Park) 6919, 7985, 4718, 3066, 5246, 2653
13.30-13.50	Dominik Reitmeier and Axel Mertens Active Reduction of Gear Mesh Vibrations by Drive Torque Control	James Fleming and Will Midgley Energy-efficient automated driving: effect of a naturalistic eco-ACC on a following vehicle
13.50-14.10	Julian Staiger, Lorenzo Mazzanti and Frank Naets State-oriented evaluation of observability and sensor placement for mechanical estimation applications	Will Midgley, James Fleming and Mohammad Otoofi Model-free Road Friction Estimation using Machine Learning
14:10-14:30	Kazu Nagaya, Takashi Ohhira and Hideki Hashimoto Developing power-assisted two wheeled luggage-carrying robot for stair-lifting using admittance control	Songtao Xie, Junyan Hu, Zhengtao Ding and Farshad Arvin Distributed Cooperative Autonomous Driving of Intelligent Vehicles Based on Spring-Damper Energy System
14:30-14:50	Abdallah Farrage, Hideki Takahashi, Kenichi Terauchi, Shintaro Sasai, Hitoshi Sakurai, Masaki Okubo and Naoki Uchiyama Modified A* Algorithm for Optimal Motion Trajectory Generation of Rotary Cranes	Sheng Yu, Xiao Pan, Anastasis Georgiou, Boli Chen, Imad M. Jaimoukha and Simos A. Evangelou A Robust Model Predictive Control Framework for Ecological Adaptive Cruise Control Strategy of Electric Vehicles
14:50-15:10	Robbert van der Kruk, Arend-Jan van Noorden, Tom Oomen, Rene van de Molengraft and Herman Bruyninckx Robotic Control for Vibration Reduction of Swinging Products	Ahmed Ibnouf, Ayman Fadlallah, Muaiz Ali and Abdelmalek Zidouri Drowsy Driver Detection System For Poor Light Condition Cases
15.10-15.30		Yifei Li and Erik-Jan van Kampen Adaptive Optimal Flight Control for a Fixed-wing Unmanned Aerial Vehicle using Incremental Value Iteration
16.00-18.00	TT: Haptics and Robotics: Room: Turing (Holywell Park) 1069, 3526, 4090, 1632, 5908, 2663	TT: Adaptive Control and AI in Mechatronics: Room: Stephenson (Holywell Park) 4458, 6655, 9010, 4886, 1245
16:00-16:20	Hiroki Morishita and Toshiyuki Murakami, Assistance Torque Control Based on Musculoskeletal Hexagon Output Distribution for Upper Limb Exoskeleton	Foeke Vanbecelaere, Michael Monte and Kurt Stockman Stiffness estimation of a lumped mass-spring system using sliding DFT
16:20-16:40	Weiyong Si, Tianjian Zhong, Ning Wang and Chenguang Yang A Multimodal Interface-based Framework for Human-robot Collaboration	Yipu Sun, Xin Chen, Wenpeng He, Luo Wang, Edwardo F. Fukushima and Jinhua She Q-learning-based feedback linearization method for unknown dynamics
16:40-17:00	Yuki Saito, Hiroshi Asai, Tomoya Kitamura and Kouhei Ohnishi Machine Learning-Based Performance Improvement of Bilateral Teleoperation with Hydraulic Actuator	Mustafa Siddiqui, Gayan Kahandawa and H.S Hewawasam Artificial Intelligence Enabled Digital Twin For Predictive Maintenance In Industrial Automation System

17:00-17:20	Shunichi Sakurai and Seiichiro Katsura A New Design of Redundant 7-DOF Parallel Robot with Large Workspace	Fadi Snobar, Andreas Michalka, Maik Horn, Christoph Strohmeyer and Knut Graichen Rack force estimation from standstill to high speeds by hybrid model design and blending
17:20-17:40	Lingzi Xie, Darong Huang, Zhenyu Lu, Ning Wang and Chenguang Yang Handheld Device Design for Robotic Teleoperation based on Multi-Sensor Fusion	Toshiki Seki Yoji Masui, Nobumasa Ushiro and Naoki Uchiyama Discrete-time adaptive pole placement control of a multi-inertia system with high-frequency resonance and time-delay
17:40-18:00	Evan Krisdityawan, Sho Yokota, Akihiro Matsumoto, Daisuke Chugo, Satoshi Muramatsu and Hiroshi Hashimoto Soft Robotic Tongue that Mimicking English Pronunciation Movements.	

THURSDAY 16 MARCH

10.00-12.00	TT: Control Technologies in Mechatronics III: Room: Turing (Holywell Park) 2870, 9536, 4348, 1044, 4750	SS: Robot, Human, and Environment Interaction: Room: Stephenson (Holywell Park) 4805, 8158, 6139, 1776, 5701, 9856
10:00-10:20	Benjamin James Marshall, James, Knowles, Cunjia Liu and Yunda Yan A Novel Disturbance Device for Aerial Manipulation Experiments	Erim Can Ozcinar, Ozkan Bebek and Barkan Ugurlu Contact Force Distribution Using Centroidal Momentum Feedback for Quadruped Locomotion
10:20-10:40	Riccardo Checchin, Michael Ruderman and Roberto Oboe Robust two-degrees-of-freedom control of hydraulic drive with remote wireless operation	Minoru Yokoyama, Tomoyuki Shimono, Tarik Uzunovic and Asif Sabanovic Sliding Mode-Based Design of Unified Force and Position Control for Series Elastic Actuator
10:40-11:00	Tomoaki Nakamura, Masato Kobayashi and Naoki Motoi Local Path Planning with Turnabouts for Mobile Robot by Deep Deterministic Policy Gradient	Emre Sariyildiz A Stability Analysis for the Reaction Torque Observer-based Sensorless Force Control Systems
11:00-11:20	Ken Miyahara and Seiichiro Katsura Energy Localization in Spring Motor Coupling System by Switching Mass Control	Kazuki Yane and Takahiro Nozaki Preliminary Study of Object Recognition by Converting Physical Responses to Images in Two Dimensions
11:20-11:40	David van Os, Koen Laurijssen, Hendrik Vansompel, Peter Sergeant, Niels Divens and Kurt Stockman Evaluation Framework for the Comparison of Modular Drivetrain Architectures	Emre Sariyildiz Variable Stiffness Improves Safety and Performance in Soft Robotics
11:40-12:00		Takaaki Hayashi, Shota Yamada and Hiroshi Fujimoto A basic study on admittance control using torsional torque control for a two-inertia system

CONTINUES...

13:10-14:00	Keynote Speaker: Marcel Heertjes - Room: Turing (Holywell Park)	
14:00-16:00	TT: Actuator and Sensor Systems: Room: Turing (Holywell Park) 8113, 6426, 7432, 8383, 2467, 7312	TT: Automotive Control, Autonomous Vehicles, and Guidance Systems: Room: Stephenson (Holywell Park) 3837, 2474, 995, 2154, 6487, 3307
14:00-14:20	Akishi Takeyama, Shota Komatsuzaki, Takashi Ohhira and Hideki Hashimoto Levenberg-Marquardt method based Precise Angle Estimation for Eccentric Magnetic Absolute Encoders	Takumi Ueno, Binh-Minh Nguyen and Hiroshi Fujimoto Direct Yaw Moment Control for Electric Vehicles with Variable Rate-Slip-Ratio-Limiter Based Driving Force Control
14:20-14:40	Momodayu Hattori, Subaru Murakami, Takashi Ohhira and Hideki Hashimoto A Coil Temperature Estimation for Disk Rotor Type Brushless DC Motors	Zhaolun Li, Jingjing Jiang and Wen-Hua Chen Dual MPC for Adaptive Cruise Control with Unknown Road Profile
14:40-15:00	Thijs Van der Veken, Jordi Marco I Jordan, Bart Blockmans, Matteo Kirchner and Frank Naets State-parameter estimation for a helical gear transmission with pitting defects	Markus Schumann, Sebastian Ebersberger and Knut Graichen Improved nonlinear estimation in thermal networks using machine learning
15:00-15:20	Pavel Ettler Sensor Fusion Helps to Improve Strip Speed Measurement in Cold Rolling Mills	Mohammad Otoofi, William J.B. Midgley, Leo Laine, Henderson Leon, Laura Justham and James Fleming Estimating friction coefficient using generative modelling
15:20-15:40	Yoshiyuki Hatta and Kazuaki Ito Development of Magnetic Geared Screw Two-Degree-of-Freedom Motor with Halbach Array	Till Fuchs, Matthias Zinser, Kevin Renatus and Bernard Bäker Automotive digital twins: A traversal algorithm for virtual testing of software over-the-air updates
15:40-16:00	Shunya Aoki, Sho Yokota, Akihiro Matsumoto, Daisuke Chugo, Satoshi Muramatsu and Hiroshi Hashimoto Development of cart providing constant steerability regardless of loading weight or position	Ikenna Enebuse, Babul Ksm Kader Ibrahima, Mathias Foo, Ranveer S Matharu and Hafiz Ahmed An Accuracy Assessment of Hand-Eye Calibration Techniques in Uncertain Environment for Vision Guided Robots
16.30-17.30	TT: Measurement, Calibration, and Signal Processing: Room: Turing (Holywell Park) 1905, 9938, 1026	TT: Design and Control of Distributed and Multibody Systems: Room: Stephenson (Holywell Park) 318, 1580, 1713
16:30-16:50	Hiromichi Kawahara, Taku Senoo and Idaku Ishii Grasping complex shapes with the integration of high-speed vision and machine learning in a dynamic situation	Luis T. Aguilar and Yury Orlov Generation of Self-oscillation in a Flexible Rope using Boundary Two-Relay Controller
16:50-17:10	Tizian Dagner and Jonathan Leidich Including Product Manufacturing Information for Assembly-specific Boundary Conditions in 3D Automated Electrical Routing	Fatemeh Rekabi Bana, Martin Stefanec, Jiri Ulrich, Erhan Keyvan, Tomas Roucek, George Broughton, Bilal Gudere, Omer Sahin, Ali Turgut, Erol Sahin, Tomas Krajnik, Thomas Schmick and Farshad Arvin Mechatronics Designs for Multi Robots-Insect Swarms Interactions

17:10-17:30	Mojtaba Ahmadiyekhanesar, Minrui Yan, Peter Kendal, Mohammad Isa, Samanta Piano and David Branson Intelligent Static Calibration of Industrial Robots using Artificial Bee Colony Algorithm	Marco Monte, Roberto Oboe, Emanuele Siego, Davide Pilastro and Stefano Bizzotto Minimum curvature path planning for a dual stage positioning system
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FRIDAY 17 MARCH

09.10-10.00	Keynote Speaker: Valeriy Vyatkin - Room: Turing (Holywell Park)	
10.30-11.30	SS: Differentiation, Estimation and Observation in Control: Room: Turing (Holywell Park) 7307, 1359, 2025	SS: Smart Precision Motion Control in Mechatronic Systems: Room: Stephenson (Holywell Park) 8099, 7794, 2562
10:30-10:50	Maliheh Hashemi, Michael Stolz and Daniel Watzenig Super-Twisting Algorithm Based Sliding Mode Observer to Diagnose Open-Circuit Fault in PWM Voltage Source Inverter for an In-Wheel Motor Drive System	Eitaro Kuroda, Hiroaki Noda, Yoshihiro Maeda and Makoto Iwasaki Cooperative Optimization-Based Efficient Autonomous Parameter Design for Cascade Feedback Control System
10:50-11:10	Matti Noack, Johann Reger and Jerome Jouffroy Adaptive Velocity Estimation for Lagrangian Systems using Modulating Functions	Liang Oei, Kentaro Tsurumoto and Wataru Ohnishi Improved Intersample Behaviour of Non-Minimum Phase Systems using State-Tracking Iterative Learning Control
11:10-11:30	Yuki Tanaka and Seiichiro Katsura A Voice-Controlled Motion Reproduction Using Large Language Models for Polishing Robots	Taejune Kong, Hanul Jung and Sehoon Oh Data-Driven Iterative Optimization of TDOF Controller with Rational Model



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ICM 2023

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