Technical Program

Wednesday 15th March 2023

9:10 - 10:00	**Keynote Speaker: Andrew Plummer** Room: Turing (Holywell Park)	
10.30-12.30	**TT: Control Technologies in Mechatronics I** Room: Turing (Holywell Park)	**SS: Mechatronics for Energy Harvesting and Self-Powered Sensing** Room: Stephenson (Holywell Park)
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, Floran 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**	

13.30-15.30	**TT: Control Technologies in Mechatronics II** Room: Turing (Holywell Park)	**SS: Safe and Energy Efficient Control of Intelligent Vehicles:** Room: Stephenson (Holywell Park)
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		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)	**TT: Adaptive Control and AI in Mechatronics:** Room: Stephenson (Holywell Park)
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 16th March 2023

10:00 - 12:00	**TT: Control Technologies in Mechatronics III** Room: Turing (Holywell Park)	**SS: Robot, Human, and Environment Interaction** Room: Stephenson (Holywell Park)
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**

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)	**TT: Automotive Control, Autonomous Vehicles, and Guidance Systems:** Room: Stephenson (Holywell Park)
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**	15:40-16:00 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)	**TT: Design and Control of Distributed and Multibody Systems** Room: Stephenson (Holywell Park)
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 Ahmadiehkhanesar, 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**

Friday 17th March 2023

9:10 - 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)	**SS: Smart Precision Motion Control in Mechatronic Systems** Room: Stephenson (Holywell Park)
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**