

The 2nd IFToMM ASIAN Conference on Mechanism and Machine Science (ASIAN-MMS2012)

Tokyo, Japan, Nov. 7-10, 2012

Final Program

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[November 7, 2012]

Optional Tour

Registration 15:00-19:00 Registration Desk

Opening Session 16:30-17:30 Room A

16:30 Opening Session

Keynote Session 1 17:30-19:30 Room A

17:30 **Keynote Speech 1** (Chair: Chintien Huang, National Cheng Kung University, Taiwan)

Professor Frank Chongwoo Park

School of Mechanical & Aerospace Engineering, Seoul National University, Korea

Towards a Theory of Robot Motor Control

18:30 **Keynote Speech 2** (Chair: Nobuyuki Iwatsuki, Tokyo Institute of Technology, Japan)

Professor Shuo-Hung Chang

Department of Mechanical Engineering, National Taiwan University, Taiwan

MEMS Techniques for Optical Management in Solar Cells

Welcome Reception 19:40-20:40

[November 8, 2012]

Keynote Session 2 8:30-9:30 Room A

8:30 **Keynote Speech 3** (Chair: Kenjiro Takemura, Keio University, Japan)

Professor Shigeo Hirose

Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan

Creative Design of Robotic Mechanisms (Past Experience and Future Direction)

Morning Session 2-1 9:40-11:00

Room A A1 Computational Kinematics

Co-chairs: Burkhard Corves, RWTH Aachen University, Germany

Jun Nango, Yamagata University, Japan

9:40 ID 87

Simultaneous Solver for Kinematic Identification and Inverse Kinematics of Human Skeletal Model from Motion

Capture Data

Ko Ayusawa, The University of Tokyo, Japan

Yosuke Ikegami, The University of Tokyo, Japan

Yoshihiko Nakamura, The University of Tokyo, Japan

10:00 ID 62

Projective-Angle-Based Rotation Matrix and Its Applications

Chin-Hsing Kuo, Taiwan Tech, Taiwan

10:20 ID 40

Synthesis of an Indexing Mechanism Under Consideration of Dynamic Performance

Burkhard Corves, RWTH Aachen University, Germany

Guido Lonij, RWTH Aachen University, Germany

Mathias Husing, RWTH Aachen University, Germany

10:40 ID 27

Mechanical Generator of 2-DoF Translation along a Right Helicoid

Chung-Ching Lee, National Kaohsiung University of Applied Sciences, Taiwan

Jacques M. Herve, Grande Voie des Vignes, France

Room B B1 Precision Engineering and Manufacturing

Co-chairs: Kuang-Chao Fan, National Taiwan University, Taiwan

Takaaki Oiwa, Shizuoka University, Japan

9:40 ID 63

Development of a High Precision Co-Planar Stage with a Multi-Degree-of-Freedom Sensor

Hung-Yu Wang, National Taiwan University, Taiwan

Chung-Hao Lin, National Taiwan University, Taiwan

Bo-Hsun Liao, National Taiwan University, Taiwan

Kuang-Chao Fan, National Taiwan University, Taiwan

10:00 ID 90

Improvement in Positioning Repeatability of Kinematic Coupling Based on Ultrasonic Oscillation

Takaaki Oiwa, Shizuoka University, Japan

Hiroshi Tanaka, Shizuoka University, Japan
Junichi Asama, Shizuoka University, Japan

10:20 ID 67

Tool Path Generation for 3D Freeform Surface Machining Based on the Feature of CAD Model

Jiang Zhu, Tokyo Institute of Technology, Japan
Tomohisa Tanaka, Tokyo Institute of Technology, Japan
Yoshio Saito, Tokyo Institute of Technology, Japan

10:40 ID 80

Functional Evaluation of the Curved Surface Created by 3D Direct Drawing

Kaoru Mitsuhashi, Yokohama National University, Japan

Room-C C1 Gearing and Transmissions-1

Co-chairs: Shyi-Jeng Tsai, National Central University, Taiwan
Morimasa Nakamura, Kyoto Institute of Technology, Japan

9:40 ID 71

Effects of Viscoelastic Behavior of Plastic Gears for Power Transmission on Tooth Root Stress

Morimasa Nakamura, Kyoto Institute of Technology, Japan
Fumitaka Tokuda, Kyoto Institute of Technology, Japan
Ichiro Moriwaki, Kyoto Institute of Technology, Japan

10:00 ID119

Root Stresses of Thin-rimmed Helical Gears with Web Arrangement

Kouitsu Miyachika, Tottori University, Japan
Daing Mohamad Nafiz Bin Daing Idris, Tottori University, Japan
Takao Koide, Tottori University, Japan

10:20 ID 37

Tooth Contact Analysis of Planetary Gear Sets with a Floating Sun Gear

Shyi-Jeng Tsai, National Central University, Taiwan
Guan-Lin Huang, Taiwan Takisawa Technology Co., Ltd., Taiwan
Siang-Yu Ye, National Central University, Taiwan

10:40 ID103

Damage Diagnosis of a Gear Using Statistical Parameter

Akimasa Yamamoto, Hiroshima University, Japan
Kiyotaka Ikejo, Hiroshima University, Japan
Kazuteru Nagamura, Hiroshima University, Japan
Qingrong Fan, Hiroshima University, Japan
Masato Kawada, Hiroshima University, Japan

Morning Session 2-2 11:30-13:30

Room A A2 Mechanism Design-1

Co-chairs: Erwin-Christian Lovasz, University "Politehnica" Timisoara, Romania
Hitoshi Kimura, Tokyo Institute of Technology, Japan

11:30 ID 96

Novel Solution for Reel Mechanisms

Erwin-Christian Lovasz, University "Politehnica" Timisoara, Romania
Karl-Heinz Modler, Technical University of Dresden, Germany
Corina Mihaela Gruescu, University "Politehnica" Timisoara, Romania
Dan Perju, University "Politehnica" Timisoara, Romania
Valentin Ciupe, University "Politehnica" Timisoara, Romania
Inocentiu Maniu, University "Politehnica" Timisoara, Romania

11:50 ID117

Development of Adjustable Stiffness Mechanism for Bipedal Walking Robot

Aiman Omer, Waseda University, Japan
Taufik Sulaiman, The University of Tokyo, Japan
Reza Ghorbani, University of Hawaii at Manoa, United States
Kenji Hashimoto, Waseda University, Japan
Hun-ok Lim, Kanagawa University, Japan
Atsuo Takanishi, Waseda University, Japan

12:10 ID 38

Optimal Design of Nonlinear Series Elastic Actuator for Minimization of Actuator Power

Nicolas Schmit, Tokyo Institute of Technology, Japan
Masafumi Okada, Tokyo Institute of Technology, Japan

12:30 ID 81

A New Differential-Velocity-Type Joint Design for Robotic Manipulators

Jwu-Sheng Hu, National Chiao Tung University, Taiwan
Cheng Hua Wu, National Chiao Tung University, Taiwan
Yi-Jeng Tsai, Industrial Technology Research Institute, Taiwan

12:50 ID106

Development of a Three-DOF Spherical Ultrasonic Motor Supported by Electro-Magnets

Chi Nung Huang, National Taiwan University, Taiwan
Chi Nung Huang, National Taiwan University, Taiwan
Chih Lun Chin, National Taiwan University, Taiwan
Shuo Hung Chang, National Taiwan University, Taiwan

13:10 ID 34

Performance Evaluation of Differential Rotary to Linear Conversion Mechanism with Ball Screws and Spur Gears

Masanori Seki, Okayama University, Japan
Yoshiki Ototake, Okayama University, Japan
Takafumi Matsui, Mitsubishi Motors Corporation
Ichiro Shimizu, Okayama University, Japan
Masahiro Fujii, Okayama University, Japan

Room B B2 Parallel Manipulators

Co-chairs: Juan A.Carretero, University of New Brunswick, Canada
Yukio Takeda, Tokyo Institute of Technology, Japan

11:30 ID 28

A Schoenflies-Motion Manipulator and Its Inverse Kinematics

Po-Chih Lee, National Taiwan University, Taiwan

11:50 ID 88

Kinematic Calibration of a 2-DOF Translational Parallel Robot

Pujun Bai, Tianjin University, China
Dong Zhao, Tianjin University, China
Jiangping Mei, Tianjin University, China
Tian Huang, Tianjin University, China

12:10 ID116

A Study of the Effects of Internal Redundancy on the Dynamic Performance of the 3-RRR Manipulator

Soheil S. Parsa, University of New Brunswick, Canada
Juan A. Carretero, University of New Brunswick, Canada
Roger Boudreau, Universite de Moncton, Canada

12:30 ID 24

Inverse Kinematics of a Parallel Manipulator with Cylindrical Joints

Zhumadil Baigunchekov, Kazakh-British Technical University, Kazakhstan
S.Djoldasbekov, Institute of Mechanics and Mechanical Engineering, Kazakhstan
M.Izmambetov, Kazakh-British Technical University, Kazakhstan
N.Baigunchekov, Institute of Mechanics and Mechanical Engineering, Kazakhstan

12:50 ID 36

Application of Topological Model for Analysis of Structure of Mechanisms and Manipulators with Parallel Structure

Korganbay S. Sholanov, Kazakh National Technical University, Kazakhstan

Room-C C2 Medical/Welfare Devices-1

Co-chairs: I-Ming Chen, Nanyang Technological University, Singapore
Takahiro Ito, Kyushu Institute of Technology, Japan

11:30 ID 55

Rood's Sensorimotor Approach-based Design of a Vibrotactile Feedback System for Upper Extremity Stroke Rehabilitation

Albert Causo, Nanyang Technological University, Singapore
Mark Soon, Nanyang Technological University, Singapore
George Yee, Nanyang Technological University, Singapore
Song Huat Yeo, Nanyang Technological University, Singapore
I-Ming Chen, Nanyang Technological University, Singapore

11:50 ID 74

Recovery of 3 Dimensional Human Whole Body Motion from a Monocular Image Sequence by Using Human Behavior Database

Wataru Takano, The University of Tokyo, Japan
Junichi Ishikawa, The University of Tokyo, Japan
Yoshihiko Nakamura, The University of Tokyo, Japan

12:10 ID 75

Active Suppression of User's Tremor Effect and Intentional Motion Recognition for Laser Pointer

Masashi Fujimoto, Tokyo Institute of Technology, Japan
Daisuke Matsuura, Tokyo Institute of Technology, Japan
Yukio Takeda, Tokyo Institute of Technology, Japan

12:30 ID 91

Foot-Driving Mechanism to Improve Riding Comfort and Energy Consumption of Walking Assist Machine Using Crutches

Ryuhei Funato, Tokyo Institute of Technology, Japan
Makoto Ogata, Tokyo Institute of Technology, Japan

Daisuke Matsuura, Tokyo Institute of Technology, Japan
Masaru Higuchi, Nippon Institute of Technology, Japan
Yukio Takeda, Tokyo Institute of Technology, Japan

12:50 ID 89

Integration of Contemporary Technologies for the Development of Rapid Prototyping Transtibial Prosthetic Socket

Lai-Hsing Hsu, National Cheng Kung University, Taiwan
Ming-Ji Tzeng, National University of Tainan, Taiwan
Shu-Min Chen, National Cheng Kung University, Taiwan
Jo-Tong Chen, National Cheng Kung University, Taiwan

13:10 ID100

Development of a Whole Body Motion Support Type Mobile Suit and Evaluation of Cerebral Activity with NIRS

Eiichirou Tanaka, Shibaura Institute of Technology, Japan
Shozo Saegusa, Hiroshima University, Japan
Louis Yuge, Hiroshima University, Japan

Lunch 13:30-15:00

Afternoon Session 2-1 15:00-16:20

Room A A3 Compliant Mechanisms

Co-chairs: Just L. Herder, Delft University of Technology, Netherlands
Nobuyuki Iwatsuki, Tokyo Institute of Technology, Japan

15:00 ID107

Synthesis of Elastic Link Mechanism Made of a Spring Wire

Nobuyuki Iwatsuki, Tokyo Institute of Technology, Japan
Kei Akazawa, Mitsubishi Electric Corp., Japan

15:20 ID 19

Nonlinear Analysis of the Motion Structures

Ren-Zuo Wang, National Center for Research, Taiwan
Bin-Chang Lin, Chung Yuan Christian University, Taiwan
Steve (C.H.) Huang, National Taipei University of Technology, Taiwan

15:40 ID47

Functional Joint Mechanisms with Constant-torque Outputs

Chia-Wen Hou, National Cheng Kung University, Taiwan
Chao-Chieh Lan, National Cheng Kung University, Taiwan

16:00 ID 33

Experimental Assessment of Stiffness Reduction by Static Balancing in a Cross-Flexural Joint and a Compliant Gripper

Jet Human, Delft University of Technology, Netherlands
Femke Morsch, Delft University of Technology, Netherlands
Karin Hoetmer, Delft University of Technology, Netherlands
Just L. Herder, Delft University of Technology, Netherlands

Room B B3 Control

Co-chairs: Gabor Stepan, Budapest University of Technology and Economics, Hungary
Masahito Yashima, National Defense Academy of Japan, Japan

15:00 ID101

Robotic Stabilization with Advanced Arguments

Tamas Insperger, Budapest University of Technology and Economics, Hungary
Gabor Stepan, Budapest University of Technology and Economics, Hungary
Janos Turi, University of Texas at Dallas, USA

15:20 ID 95

Planning Manipulator Trajectories under Dynamics Constraints using Minimum-Time Shortcuts

Quang-Cuong Pham, The University of Tokyo, Japan

15:40 ID 41

Intelligent Synchronous Control for Gantry Position Stage via Three-Degree-of-Freedom Dynamic Model

Po-Huan Chou, Industrial Technology Research Institute, Taiwan
Faa-Jeng Lin, National Central University, Taiwan
Wen-Chuan Chen, Industrial Technology Research Institute, Taiwan
Ying-Min Chen, Industrial Technology Research Institute, Taiwan
Hsin-Chuan Su, Industrial Technology Research Institute, Taiwan

16:00 ID108

Control of Co-existing Attractors

Yang Liu, University of Aberdeen, UK
Marian Wiercigroch, University of Aberdeen, UK
James Ing, University of Aberdeen, UK

Room C C3 Education in Mechanism and Machine Science

Co-chairs: Jorge Solis, Karlstad University, Sweden
Hideaki Takanobu, Kogakuin University, Japan

15:00 ID 49

The First Student International Olympiad on Mechanism and Machine Science – the Challenge in MMS Education

Veniamin Goldfarb, Izhevsk State Technical University, Russia
Eduard Krylov, Izhevsk State Technical University, Russia
Alexander Elensky, Izhevsk State Technical University, Russia

15:20 ID 83

Introduction of Robotics to Master Students at Karlstad University

Jorge Solis, Karlstad University, Sweden

15:40 ID 25

Inspiring the Design Creativity by Bio-robotics Course

Teresa Zielinska, Warsaw University of Technology, Poland

Tokyo TECH Lab Tour 16:30-18:00

Laboratory tour to visit several laboratories of mechanical engineering departments of Tokyo Institute of Technology is scheduled during 16:30-18:00 on November 8, Thursday. Participants for this tour should be divided into 6 groups and each group will visit 3 laboratories. If you want to join this tour, please apply at the reception desk by 18:00 on November 8. Then a student tour guide for each group will pick up you at the conference site, West #9 Bldg and will take you to Ishikawadai area.

Beer & Chips 18:00-19:00

[November 9, 2012]

Keynote Session 3-1 8:30-9:30 Room A

8:30 **Keynote Speech 4** (Chair: Yukio Takeda, Tokyo Institute of Technology, Japan)

Professor Doina Pisla

Faculty of Machine Building, Technical University of Cluj-Napoca, Romania

Innovative Approaches in Surgical Robotics - Past, Present and Future -

Morning Session 3-1 9:40-11:00

Room A A4 Medical/Welfare Devices-2

Co-chairs: Calin Vaida, Technical University of Cluj-Napoca, Romania

Woojin Chung, Tokyo Institute of Technology, Japan/ Korea University, Korea

9:40 ID118

Development of the Airway Management Training System WKA-5: Mechanical Mechanism Design which considers internal Organs and external Appearance in Human Anatomy for Airway Management

Yohan Noh, Waseda University, Japan
Chunbao Wang, Waseda University, Japan
Mitsuhiro Tokumoto, Waseda University, Japan
Yusuke Matsuoka, Waseda University, Japan
Terunaga Chihara, Waseda University, Japan
Chenchun Sher, Waseda University, Japan
Hiroyuki Ishii, Waseda University, Japan
Atsuo Takanishi, Waseda University, Japan
Toshiyuki Takayama, Kyoto Kagaku Co. Ltd., Japan
Satoru Shoji, Kyoto Kagaku Co. Ltd., Japan

10:00 ID 99

A Spherical Robotic Arm for Instruments Positioning in Minimally Invasive Medical Applications

Calin Vaida, Technical University of Cluj-Napoca, Romania
Bogdan Gherman, Technical University of Cluj-Napoca, Romania
Doina Pisla, Technical University of Cluj-Napoca, Romania
Nicolae Plitea, Technical University of Cluj-Napoca, Romania

10:20 ID114

Identification of Kinematic and Inertial Parameters for Subject-specific Human Musculoskeletal Model with Body Shape Information

Yosuke Ikegami, The University of Tokyo, Japan
Ko Ayusawa, The University of Tokyo, Japan
Yoshihiko Nakamura, The University of Tokyo, Japan

10:40 ID110

Control of Lower-Limb Power-Assist Robot Based on EEG Signals

Kazuo Kiguchi, Kyushu University, Japan
Thilina Dulantha Lalitharatne, Saga University, Japan
Yoshiaki Hayashi, Saga University, Japan

Room B B4 Actuators

Co-chairs: Win-Bin Shieh, Ming Chi University of Technology, Taiwan
Takuya Hosobata, The University of Tokyo, Japan

9:40 ID 97

A Robot Hand Using Electro-conjugate Fluid: Grasping Experiment with Balloon Actuators Inducing a Palm Motion

Akihiro Yamaguchi, Keio University, Japan
Kenjiro Takemura, Keio University, Japan
Shinichi Yokota, Tokyo institute of Technology, Japan
Kazuya Edamura, New Technology Management Co., Ltd., Japan

10:00 ID 85

Design Methodology and Verification of High-speed Slim Sensorless Brushless DC Motors with Self-lubricated Bearings

Hsing-Cheng Yu, National Taiwan Ocean University, Taiwan
Chau-Shin Jang, Industrial Technology Research Institute, Taiwan
Wen-Yang Peng, Industrial Technology Research Institute, Taiwan

10:20 ID 82

Experimental Investigation on Performance Degradation of Resonant Electrostatic Induction Motor by Capacitance Unbalance

Takuya Hosobata, The University of Tokyo, Japan
Akio Yamamoto, The University of Tokyo, Japan
Toshiro Higuchi, The University of Tokyo, Japan

10:40 ID102

Resonant type SIDM Actuator for Low Input Voltage Operation

Takeshi Morita, The University of Tokyo, Japan
Takuma Nishimura, FANUC Corporation, Japan
Ryuichi Yoshida, Konica Minolta Technology Center, Japan
Hiroshi Hosaka, The University of Tokyo, Japan

Morning Session 3-2 11:30-13:10

Room A A5 Robotics and Mechatronics-1

Co-chairs: Teresa Zielinska, Warsaw University of Technology, Poland
Masahiro Fujii, Okayama University, Japan

11:30 ID 92

Flexible Mobile Robot for Narrow Terrain with Ciliary Actuators

Hitoshi Kimura, Tokyo Institute of Technology, Japan
Takuya Higashi, Tokyo Institute of Technology, Japan
Mokutaro Kataoka, Tokyo Institute of Technology, Japan
Norio Inou, Tokyo Institute of Technology, Japan

11:50 ID 32

Slip Reduction Control in Mobile Robots

Teresa Zielinska, Warsaw University of Technology, Poland

12:10 ID 77

Development of the Waseda Saxophonist Robot No.2 Refined III: New Air Pump and Eye Mechanism

Jorge Solis, Waseda University/Karlstad University, Japan/Sweden
Klaus Petersen, Waseda University, Japan
Jumpei Kashiwakura, Waseda University, Japan
Yutaka Saitoh, Waseda University, Japan
Massimiliano Zecca, Waseda University, Japan
Atsuo Takanishi, Waseda University, Japan

12:30 ID 65

Design Optimization of Spring Configuration on Statically Balanced Planar Articulated Manipulators

Ya-Yun Lee, National Taiwan University, Taiwan
Dar-Zen Chen, National Taiwan University, Taiwan
Win-Bin Shieh, Ming Chi University of Technology, Taiwan

12:50 ID104

Real-Time Monocular Markerless Motion Capture Combining Particle Filter and Inverse Kinematics

Sebastien Cagnon, The University of Tokyo, Japan

Yoshihiko Nakamura, The University of Tokyo, Japan

Room B B5 Gearing and Transmissions-2

Co-chairs: Shinn-Liang Chang, National Formosa University, Taiwan

Eiichirou Tanaka, Shibaura Institute of Technology, Japan

11:30 ID 73

Characteristics Study on a Novel Worm-Worm Gear Set Used for Backlash Adjustment

Ngoc-Thiem Vu, National Formosa University, Taiwan

Shinn-Liang Chang, National Formosa University, Taiwan

11:50 ID 86

Parabolic Transmission Errors of Curvilinear Gears with Profile Modifications

Yi-Cheng Chen, National Central University, Taiwan

Ming-Lune Gu, National Central University, Taiwan

Chien-Cheng Lo, National Central University, Taiwan

12:10 ID 59

Vibration and Noise Reduction of Composite Structure Gear

Takashi Nishiuwatoko, Hiroshima University, Japan

Kazuteru Nagamura, Hiroshima University, Japan

Kiyotaka,Ikejo, Hiroshima University, Japan

Daisuke Teramoto, Hiroshima University, Japan

12:30 ID 79

Prediction of Natural Frequency of Planetary Gear Sets based on Simplified Torsional Model and Meshing Force Analysis

Longbo Kang, Doshisha University, Japan

Takahiro Miyata, Doshisha University, Japan

Toshiki Hirogaki, Doshisha University, Japan

Eiichi Aoyama, Doshisha University, Japan

12:50 ID 50

Vibration and Mesh Behavior of Elliptical Gears by Non-Uniform Rotation

Satoshi Yoshinaga, Hiroshima University, Japan

Kazuteru Nagamura, Hiroshima University, Japan

Kiyotaka Ikejo, Hiroshima University, Japan

Xing Liu, Hiroshima University, Japan

Kenta Funakoshi, Hiroshima University, Japan

Takehide Araki, Hiroshima University, Japan

Memorial Photo 13:20-13:30

Lunch 13:30-15:00

Keynote Session 3-2 15:00-16:00 Room A

15:00 **Keynote Speech 5**(Chair: Wataru Takano, The University of Tokyo, Japan)

Professor Qiang Huang

Intelligent Robotics Institute, School of Mechatronical Engineering, Beijing Institute of Technology, China

Design and Development of BHR Series Humanoids

Afternoon Session 3 16:10-17:10

Room A A6 Mechanism Design-2

Co-chairs: Jyh-Jone Lee, National Taiwan University, Taiwan

Akihiro Matsumoto, Toyo University, Japan

16:10 ID 30

Analysis of An Underactuated Passively Adaptive Finger Mechanism

Ching-Wei Chuang, National Taiwan University, Taiwan

Jyh-Jone Lee, National Taiwan University, Taiwan

Kuan-Chou Chen,ITRI, Taiwan

16:30 ID 51

Design and Control of a Multi-fingered Robot Hand

Device for Automatic Removal of Faulty Weft of Russian Projectile Loom STB
Assylbek Jomartov, Institute Mechanics and Mechanical Engineering, Kazakhstan
Kylyan Jomartova, Institute Mechanics and Mechanical Engineering, Kazakhstan

Co-chairs: Eres Söylemez, Middle East Technical University, Turkey
Masaharu Komori, Kyoto University, Japan

V-Groove Artifact for Gear Measuring Instrument and its Strength Test Device
 Masaharu Komori, Kyoto University, Japan
 Fumi Takeoka, Kyoto University, Japan
 Aizoh Kubo, Kyoto University, Japan
 Koji Takahashi, Kyoto University, Japan
 Jun Usami, Kyoto University, Japan
 Katsutoshi Tanaka, Toshiba Machine Co., Ltd., Japan
 Masahiko Fukuta, Toshiba Machine Co., Ltd., Japan

Development of a Nano-Scale Height Gauge
 Jingsyan Torng, Taoyuan Innovation Institute of Technology, Taiwan
 Zhi-Yuan Ke, National Taiwan University, Taiwan
 Kuang-Chao Fan, National Taiwan University, Taiwan

Numerical Analysis of Planar Cam Follower Mechanisms
Gökhan Kiper, İzmir Institute of Technology, Turkey
Chintien Huang, National Cheng Kung University, Taiwan
Eres Söylemez, Middle East Technical University, Turkey

The conference banquet will be held at 18:00 on November 9, Friday at the Japanese Restaurant Kisoji which is located 3km far from the conference site. Shuttle Buses take participants to the restaurant. Please wait at the bus stop in front of the conference site (West #9 Bldg.) at 17:10. Participants who want to go directly to the restaurant are recommended to catch a taxi. The information of the restaurant is as follows:

Japanese Restaurant Kisoji Himonya branch
Address: Himonya 3-17-15, Meguro-ku, Tokyo

The map shows the Kisoji area in Tokyo, with various schools and landmarks labeled. Key locations include Toritsudaigaku, Taimarachi, Nakane, Ookayama, Minami, Midorigaoka, and Tamagawa. A red pin marks the 'Conference Site (West 9th bldg.)' near the 'Sound for Jiyugaoka' area. A scale bar indicates 500m and 200m. A compass rose shows North (N) and South (S).

8:30 **Keynote Speech 6** (Chair: Haruo Houjoh, Tokyo Institute of Technology, Japan)

Basic Research Technology Center, Corporate Research and Development Center, NSK Ltd., Japan

State of Art of Rolling Bearing Design

Morning Session 4-1 9:40-11:20

Room A A7 Dynamics of Machinery

Co-chairs: Kai Feng, Hunan University, China

Koji Kimura, Tokyo Institute of Technology, Japan

9:40 ID 72

Response Distribution of Nonlinear Systems Subjected to Non-Gaussian Random Excitations with a Wide Range of Bandwidth

Takahiro Tsuchida, Tokyo Institute of Technology, Japan

Koji Kimura, Tokyo Institute of Technology, Japan

10:00 ID109

Prediction of Dynamic Friction Forces in Bump-Type Foil Bearings

Kai Feng, Hunan University, China

Shigeki Matsumura, Tokyo Institute of Technology, Japan

Haruo Houjoh, Tokyo Institute of Technology, Japan

10:20 ID 35

Distributed Inertia of Spatial Motion of the Rod

Skanderbek U. Joldasbekov, Institute of Mechanic & Mechanical Engineering, Kazakhstan

Yerbol S. Temirbekov, Almaty technological University, Kazakhstan

10:40 ID 57

Modeling and Analysis of the Dynamic Efficiency of Manual Transmission/Reducer

Zhijian Lu, Tongji University, China

Xinbo Chen, Tongji University, China

Hua Xu, Tongji University, China

Room B B7 Mobile Robots and Vehicle Mechanism

Co-chairs: Chintien Huang, National Cheng Kung University, Taiwan

Kazuo Kiguchi, Kyushu University, Japan

9:40 ID 54

Research on the Drive Module for Distributed Drive Electric Vehicle

Xinbo Chen, Tongji University, China

Hao Liu, Tongji University, China

Feng Tang, Tongji University, China

Houzhong Zhang, Tongji University, China

Liang Qiao, Tongji University, China

10:00 ID 52

Simulation and Evaluation of Stability Control Strategies of Four In-Wheel-Motor Drive Electric Vehicle

Pengfei Yang, Tongji University, China

Lu Xiong, Tongji University, China

Chen Yang, Tongji University, China

Zhuoping Yu, Tongji University, China

10:20 ID 78

A Wheel-Drive Mechanism Using Motor as Dynamic Damper and its Dynamics

Xinbo Chen, Tongji University, China

Jingshuang Yang, Tongji University, China

Feng Tang, Tongji University, China

10:40 ID112

Development of Quadruped Walking Robot TITAN-XII and Basic Consideration about Mechanics of Large Obstacle Climbing

Hirone Komatsu, Tokyo Institute of Technology, Japan

Masaru Ogata, Canon Inc., Japan

Ryuichi Hodoshima, Saitama University, Japan

Gen Endo, Tokyo Institute of Technology, Japan

Shigeo Hirose, Tokyo Institute of Technology, Japan

11:00 ID105

Directional Normalized Energy Stability Margin

Shigeo Hirose, Tokyo Institute of Technology, Japan

Evgeny Lazarenko, Tokyo Institute of Technology, Japan

Gen Endo, Tokyo Institute of Technology, Japan

Morning Session 4-2 11:50-13:10

Room A A8 Linkage and Mechanical Controls

Co-chairs: Assylbek Jomartov, Institute of Mechanics & Mechanical Engineering, Kazakhstan
Hidetsugu Terada, Yamanashi University, Japan

11:50 ID 69

Kinematic Degeneration of Non-Fractionated Geared Kinematic Chains with up to Three-DOF and Eight Links

Chia-Ying Lin, National Taiwan University, Taiwan
Dar-Zen Chen, National Taiwan University, Taiwan

12:10 ID 26

Parametric Vibration Analysis of Cam Mechanisms using Newmark Integration Method

Van Khang Nguyen, Hanoi University of Science and Technology, Vietnam
Phong Dien Nguyen, Hanoi University of Science and Technology, Vietnam
Manh Cuong Hoang, Maritime University, Vietnam

12:30 ID 22

Structural Analysis of Lever Mechanisms with Elastic-Plastic Strains Consideration

Skanderbek U. Joldasbekov, Institute of Mechanics & Mechanical Engineering, Kazakhstan
Yerbol S. Temirbekov, Almaty Technological University, Kazakhstan

12:50 ID 23

Kinematic analysis of the special Mechanisms of the High Classes

Bahtgerye Sinchev, Almaty Technological University, Kazakhstan
Assylbek Jomartov, Institute of Mechanic & Mechanical Engineering, Kazakhstan

Room B B8 Robotics and Mechatronics-2

Co-chairs: Gentiane Venture, Tokyo University of Agriculture and Technology, Japan
Masafumi Okada, Tokyo Institute of Technology, Japan

11:50 ID 70

Development of Cable-Driven Force Magnification Mechanism

Maroay Phlernjai, Tokyo Institute of Technology, Japan
Toshio Takayama, Tokyo Institute of Technology, Japan
Toru Omata, Tokyo Institute of Technology, Japan

12:10 ID 66

Design of Statically Spring-Balancing Planar 3-DOF Articulated Manipulator with Changeable Payload

Huan-Hao Chang, National Taiwan University, Taiwan
Dar-Zen Chen, National Taiwan University, Taiwan

12:30 ID111

Rotary Surface Wave Mechanism – Proposition of the Concept and Its Basic Features

Yu Chun Fu, Tokyo Institute of Technology, Japan
Shigeo Hirose, Tokyo Institute of Technology, Japan

Lunch 13:10-14:40

Afternoon Session 4 14:40-16:00

Room A A9 Machine Elements-2

Co-chairs: Kazuteru Nagamura, Hiroshima University, Japan
Hitoshi Yamanaka, Numazu National College of Technology, Japan

14:40 ID113

Development of Damage Diagnosis of a Gear Surface In-Situ Using Laser Light Probing (Fundamental Characteristics of Measurement on Undamaged Gear)

Eiichirou Tanaka, Shibaura Institute of Technology, Japan
Yuta Kojima, Shibaura Institute of Technology, Japan
Kazunari Okabe, Mitsubishi Heavy Industries, Ltd., Japan
Hitoshi Takebe, Mitsubishi Heavy Industries, Ltd., Japan
Satoshi Wada, Mitsubishi Heavy Industries, Ltd., Japan
Kazuteru Nagamura, Hiroshima University, Japan
Kiyotaka Ikejo, Hiroshima University, Japan
Ryozo Nemoto, Tokyo Metropolitan College of Industrial Technology, Japan

15:00 ID 31

Paradox of Mechanics - Basis of Creation of Continuously Variable Transmission

Konstantin Ivanov, Almaty University of Power Engineering and Telecommunications, Kazakhstan

15:20 ID 56

Design Conditions of a Wheel Drive Type Ball Worm Speed up Mechanism

Akinori Iwashima, University of Yamanashi, Japan

Hidetsugu Terada, University of Yamanashi, Japan

Room B B9 Mechanism Design-3

Co-chairs: Ion Visa, Transilvania University of Brasov, Romania

Daisuke Matsuura, Tokyo Institute of Technology, Japan

14:40 ID 93

A New Solar Tracking Linkage with 2 Actuators in Parallel Connected

Ion Visa, Transilvania University of Brasov, Romania

D.V.Diaconescu, Transilvania University of Brasov, Romania

M.D.Moldovan, Transilvania University of Brasov, Romania

15:00 ID 60

Analysis and Design of an Innovative Speed Reduction Mechanism with Self-adaptability of Crossed-Axes Angle

Xin-Bo Chen, Tongji University, China

Jun Yin, Tongji University, China

Xiao-Yu Ding, Tongji University, China

Hao Liu, Tongji University, China

Feng Tang, Tongji University, China

15:20 ID 68

Type Synthesis of a Latch Mechanism in Front Opening Uniform Pod Used in Semiconductor Fabs

Min-Hui Wu, National Taiwan University, Taiwan

Dar-Zen Chen, National Taiwan University, Taiwan

Tzong-Ming Wu, Industrial Technology Research Institute, Taiwan

15:40 ID 58

Development of Mechanism for Higher Efficiency Compressor Using Orthogonal Double-slider Joint

Takumi Yoshizawa, Yamagata University, Japan

Jun Nango, Yamagata University, Japan

Yasuo Yoshizawa, Tac Research Inc., Japan

Closing Session 16:10- Room A

16:10 Closing Session

Farewell Party 17:00-