

The 14th Symposium on Theory of Machines and Mechanisms

Date: July 12, 2008

Place: Conference Room 304, 3rd Floor, Ishikawadai 3 Bldg. ,
Tokyo Institute of Technology (Ohokayama Campus)
2-12-1 Ohokayama, Meguro-ku, Tokyo 152-8552
(8 min. walk from Ohokayama Station, Tokyu Meguro-line and Ohimachi-line)

Program:

8:55 Opening Address by Yoshihiko NAKAMURA
President, Jc-IFTToMM (Univ. of Tokyo)

Session 1 : Motion Control of Robot Manipulators (9:00-10:00)
Chair: Norio INOU (Tokyo Tech.)

9:00 Arm Trajectory Planning by Controlling Direction of End-point Position Error
*Tasuku YAMAWAKI (National Defense Academy) and Masahito YASHIMA

9:20 Control of Dynamic Manipulation by Iteration Optimization Learning
*Hideyuki MIYASHITA (National Defense Academy), Tasuku YAMAWAKI and
Masahito YASHIMA

9:40 Algorithm for Passing through the Wrist Singular Point Keeping the Position of the Hand
Byung-Joo LEE (KAIST), Makoto WAKASA (Graduate Student, Univ. of Tokyo) and
Koichi SUGIMOTO (Tokyo Tech.)

Session 2 : Medical and Welfare Devices (10:10-11:10)
Chair: Yoshihiko NAKAMURA (Univ. of Tokyo)

10:10 Research on Rehabilitation Hand with Bilateral Servosystem
*Tadashi YOSHIMURA (Graduate Student, Tokyo Denki Univ.), Yukio SAITO (Tokyo Denki
Univ.), Atsushi UMEMURA and Takanori HIGASHIHARA (Takamatsu Orthotic Device
Production Co.)

10:30 Dental Patient Robot - Operation of Arm in Treatment –
*Takashi ISHIGURO (Kogakuin Univ.), Hideaki TAKANOBU, Kenji SUZUKI, Hirofumi MIURA,
Akito OMATA, Fumihito TAKAHASHI, Mutsumi MADOKORO (Showa Univ.),
Takeshi TANZAWA, Yoshikazu MIYAZAKI, Kotaro MAKI, Akihisa OKINO (Okino Industry Ltd.)
and Atsuo TAKANISHI (Waseda Univ.)

10:50 Drive Mechanisms of Single-Trocar Assemblable Retractor-Hand
*Mikio OSAKI (Graduate Student, Tokyo Tech.), Toru OMATA (Tokyo Tech.), Toshio TAKAYAMA,
Toshiki OHYA (Tokyo Medical and Dental Univ.), Kazuyuki KOJIMA, Kozo TAKASE and
Naofumi TANAKA

Session 3 : Transforming and Evolving Robots (11:20-12:20)
Chair: Masahito YASHIMA (National Defense Academy)

11:20 Research of Swarm Robot - Development of Accumulative Movement Mechanism -
*Masanao FUTAKAMI (Graduate Student, Kogakuin Univ.), Hideaki TAKANOBU (Kogakuin
Univ.), Yoshinobu INADA (JAXA), Hiroaki TOKITA (Kogakuin Univ.), Kenji SUZUKI and
Hirofumi MIURA

11:40 Reconfigurable Modular Robot Adaptively Transforming a Mechanical Structure
- Numerical Expression of Control Algorithm and Motion Experiment –
*Yosuke SUZUKI (Graduate Student, Tokyo Tech.), Norio INOU (Tokyo Tech.), Hitoshi KIMURA
and Michihiko KOSEKI

12:00 Study on Robots that can Grow Like Humans
*Hidenori IMAI (Graduate Student, Kogakuin Univ.), Hideaki TAKANOBU (Kogakuin Univ.),
Keishi YOKOTA, Kenji SUZUKI and Hirofumi MIURA

12:20-13:20 Luncheon

Keynote Speech (13:20-14:00)

Speaker : Prof. Toshiro HIGUCHI
Department of Precision Engineering, The University of Tokyo
2007 IFTToMM Award of Merit

Speech Title: Trend of New Actuator Research and Development
Chair : Nobuyuki IWATSUKI (Tokyo Tech.)

- Session 4 : Robot Mechanisms (14:10-15:10)
Chair: Yukio SAITO (Tokyo Denki Univ.)
- 14:10 Development of the Crawler Unit to Realize Sideway Motion with Circular Cross Section
*Kenjiro TADAKUMA (Univ. of Electro-Communications), Riichiro TADAKUMA (AIST), Hiroaki KINOSHITA (Tohoku Univ.), Keiji NAGATANI, Kazuya YOSHIDA and Karl IAGNEMMA (MIT)
- 14:30 Actuator Reduction for Light-weighted Humanoid Robot Design
*Yosuke SHIMIZU (Graduate Student, Tokyo Tech.), Kenjiro MORITA and Masafumi OKADA (Tokyo Tech.)
- 14:50 Optimal Kinematic Calibration of Robots Based on the Maximum Positioning-error Estimation
Jyunichi IMOTO (Graduate Student, Tokyo Tech.), * Yukio TAKEDA (Tokyo Tech.), Hidenobu SAITO (Kikuchi Seisakusho Co. Ltd.) and Ken ICHIRYU
- Session 5 : Micromechanics and Micromechanism (15:20-16:00)
Chair: Kohei SAIKI (Fuji Heavy Industries Ltd.)
- 15:20 Integration of Micro Artificial Muscle Cells Using Electro-conjugate Fluid
*Fumiya YAJIMA (Graduate Student, Tokyo Tech.), Shinichi YOKOTA (Tokyo Tech.), Kenjiro TAKEMURA (Keio Univ.) and Kazuya EDAMURA (New Technology Management)
- 15:40 Study on Cutting Droplets Using Surface Tension of Liquid Droplets
*Tatsuya MURAYAMA (Graduate Student, Kogakuin Univ.), Kenji SUZUKI (Kogakuin Univ.), Hideaki TAKANOBU, Hirofumi MIURA
- Session 6 : Dynamics (16:10-17:10)
Chair: Haruo HOUJOH (Tokyo Tech.)
- 16:10 Experimental Verification of Blade-shaft Coupled Resonance Vibration
*Norihisa ANEGAWA (National Defense Academy), Hiroyuki FUJIWARA and Osami MATSUSHITA
- 16:30 Evaluation of Damping Ratio of Oil Film Bearing with Dynamic Damper
*Hiroyuki FUJIWARA (National Defense Academy), Hiroto OYAMA and Osami MATSUSHITA
- 16:50 Friction Control Based on Ultrasonic Oscillation for Rolling-element Linear-motion Guide (2nd Report)
*Takaaki OIWA (Shizuok Univ.) and Hikaru TAJIMA
- Session 7 : Gearing (17:20-18:20)
Chair: Takaaki OIWA (Shizuok Univ.)
- 17:20 Nano-precision Pitch Master Gauge Using Self-alignment of Simple-form Element Parts
*Masaharu KOMORI (Kyoto Univ.), Sonko OSAWA (AIST), Osamu SATO, Fumi TAKEOKA (Kyoto Univ.), Takashi KITEN, Daisuke SHIRASAKI and Yohan KONDO (Tokyo Tech.)
- 17:40 Real TCA System of Measured Tooth Flank for Automotive Hypoid Gears
Keiichiro TOBISAWA (Fuji Heavy Industries Ltd.), Masaki KANO and *Kohei SAIKI
- 18:00 Applying Centrifugal Pendulum Vibration Absorber Isochronous even under Large Amplitude Condition to Gear System
*Shigeki MATSUMURA (Tokyo Tech.) and Haruo HOUJOH
- 18:20 Closing Address by Haruo HOUJOH
Vice President, Jc-IFTtoMM(Tokyo Tech.)
- 18:25 Annual Meeting 2008 (18:25-19:10)
Address from president:
Yoshihiko NAKAMURA(Univ. of Tokyo)
Chair : Nobuyuki IWATSUKI (Tokyo Tech.)
- 19:20 Wine party (19:20-20:40)
at Room 305, 3rd Floor, Ishikawadai 3 Bldg.
The fee is 5,000 Jpn yen and free for students.