1st IFTOMM Asian Conference on Mechanism and Machine Science 2010

(Asian MMS 2010)

Taipei, Taiwan
21 - 25 October 2010

ISBN: 978-1-61782-916-1
A Reliability Study On The Power System Of Hybrid Electric Vehicle
Chang-Pin Lin, Yu-Tsun Huang, Dar-Zen Chen

MECHANISM DESIGN II:

Toggle Mechanism Derived Nanometer Resolution X-Y-Z Micro-Positioning Stage

The Use Of Homotopy Method On The Path Generation Of Planar Four-Bar Mechanisms With Multiple Precision Points
Pei-Chih Chu, Kun-To Yang, Yi-Sheng Lin

Task Based Design Method For High Accuracy And Low Degree-Of-Freedom Mechanisms
Shoichiro Kamada, Youngwoo Kim, Goro Obinata

Fusing The Virtual Game Environment And The Reality World - A Cyber-Physical Game Using Interactive Robotic Marionettes
Chen I. Ming, Tee Ke Yong

DYNAMICS OF MACHINERY II:

Dynamic Characteristic Analysis Of Heavy Duty Truck Using Simplified Tandem Suspension Model
Fei Ding, Nong Zhang, Xu Han, Tingfeng Zhang

New Turning Motions For Asterisk's Dynamic Rotational Walking Motion
Choyooth Theeranathapanyagbara, Tomochika Takahashi, Kenji Oka, Yasuhisa Moe, Tatsu Arai

Linearization And Parametric Vibration Analysis Of Transmission Mechanisms With Elastic Links
Nguyen Van Khang, Nguyen Phong Dian, Vu Van Khiem

BIO-MECHANISMAND MIO-MECHANICS:

High Performance Bio-Implantable Strain Sensor For Bone
Ya-Ting Huang, Shyh-Chour Huang, Chih-Chou Hsu, Yo-Ien Hsiao

Development Of 3-D Motion Display System To Assist Diagnostic Treatment Of Occlusal Disorder
Kiwamu Saitou, Norio Inou, Hidotsuki Kimura, Mitchiko Kaseki, Taishi Fujikawa, Yasuke Asama, Naoki Osa, Mariko Takahashi, Koutaro Maki

Miniature PDMS Compliant Grippers For Bio-Micromanipulation
Santosh D. B. Bhargav, G. K. Ananthasure

Development Of A Leg Mechanism For Soft Landing Based On Biological Motion
Hidotsuki Kimura, Yoshihiko Ono, Shusuke Ito, Norio Inou

Development Of Automatic Cell Dispensing System - Application To Single Oocyte Dispensing -
Tomohiro Kawahara, Takehito Misunuma, Masaya Hagiwara, Yoko Yamanishi, Fumihito Aral

Visual Sensor Approach For The Determination Of Mechanical Properties Of Soft Biological Tissues

MECHANISM DESIGN III:

Optimal Design Of Cable-Driven Parallel Mechanism For Workspace With Stiffness Condition
Yaojun Zhang, Yuru Zhang, Xiaowei Dai

On The Design And Synthesis Of Parallel Motion Generators
Po-Yang Lin, Dar-Zen Chen, Win-Bin Shieh, Jing-Heng Chen

A New 3-Dof Parallel Manipulator With Two Rotational And One Translational Motions
Z. M. Chen, J. F. Liu, S. C. Liu, Z. Huang

Flexibility Control Of Redundant Closed-Loop Mechanisms With Elastic Elements
Nobuyuki Iwatsuki, Nobuhiro Terasima

Research On F-E-P-A-M Function Solving Model Of Mechanical Product Creative Design
Zou Huijun, Liting Qinghua
GEARING AND GEARED MECHANISM I:

Study On Movable Pins Input Type Trochoid Gear Reducer .................................................................................. 224
M. Mizukami, H. Terada
Tooth Contact Analysis In Modified Face-Hobbed Spiral Bevel Gears ...................................................................... 231
Vilmos Simon
Generation Of The Tooth Surface Of Face-Milled Hypoid Gears On Cnc Hypoid Generating Machine ......................... 239
Vilmos Simon
Contact Stress Analysis Of Concave Conical Gear Drives ...................................................................................... 247
S.-H. Wu, S.-J. Tai
Static Stress Calculation Of Straight Bevel Gears Applied To A Pv Tracking System ...................................................... 253
Gheorghe Moldoveanu, Ion Visa, Radu Velicu, Bianco Butuc

MICRO-MECHANISM AND MICRO MACHINES:

Force-Amplifying Compliant Mechanisms For Micromachined Resonant Accelerometers ........................................... 261
Shyamsananth Madhavan, G. K. Ananthasuresh
Study Of A Micro Feeding Tool Holder With Bellowstype Displacement Amplification Mechanism .......................... 268
Yung-Tien Liu, Li-Liang Chang
Micro-Manipulation System With Straw Interface Based On Body Image Embedding ............................................... 275
Tuki Shirato, Hiromi Mochiyama, Hiroyuki Konohata, Junya Tazuma, Hiroyuki Kanai
Electromechanical Coupling Of Cross-Mems Testkey For Extracting Material Properties ........................................... 281
Wan-Chun Chuang, Hsin-Li Lee, Tuh-Cheng Hu, Wen-Pin Shih, Pei-Zen Chang
Analysis Of U-Shape Electrothermal Microactuators ................................................................................................. 285
Yu-Chi Wang, Wen-Pin Shih

LINKAGE AND MANIPULATORS:

Kinematic Analysis For 4-DOF Spatial Parallel Manipulators ..................................................................................... 289
Yunli Zhu, Yanjun Zhang, Hongze Mo, Shutang Ren
Measurement Of Thin Sheet Thickness With Rough Precision Manipulator ................................................................. 295
Yun Zhao, Yasumichi Aiyama
Derivation Of The Parametric Equations Of Ellipses Traced Out In The Cardan Motion ............................................. 300
Chintien Huang, Yu-Hsuan Wu, Chuan-Lien Chen
Forward Kinematics And Numerical Verification Of Four Novel Parallel Manipulators With
Schoenflies Motion ...................................................................................................................................................... 304
Po-Chih Lee, Jyh-Jone Lee
Jacobian Analysis Of Parallel Robotic Manipulators With A Passive Constrained Leg ................................................ 312
Chin-Hsing Kuo, Jiong S. Dai

GEARING AND GEARED MECHANISM II:

Application Of The Noncircular Gears In The Multi-Wheeled Steering Mechanism .................................................. 320
Design Of A Novel Multi-Speed Transmission Hub For Bicycles ............................................................................... 327
Yi-Chang Wu, Feng-Ming Ou, Chao-Hsia Li
Path Generation Of Moving Pivot-Adjustable Geared Five-Bar Mechanism ................................................................. 333
Wen-Tsang Lee
The Design Of Two-Speed Front Gear Hub For A Bicycle ............................................................................................ 339
Long-Chang Hsueh, Hsueh-Chen Tang
Embodiment Design Of A Planetary Chain Speed Increaser For Small Hydropower Plants ........................................ 345
Codruta Jaliu, Ion Visa, Dorin Valentin Diaconescu, Radu Satulescu, Oliver Climescu

HISTORY AND EDUCATION IN MECHANISM AND MACHINE SCIENCE:

Development Of An Inverted-Pendulum Type Mobile Robot For Education Purposes .................................................. 353
Jorge Solis, Przemyslaw Kryzczak, Yuki Takezaki, Junichi Kinoshita, Ryu Nokodate, Fumiya Iida, Atsunori Takarishi
Complex Research Of Mechanisms In Educational Designing ...................................................... 359
V. Kozhukhina, E. Romhina
Status Of Education And Training In The Field Of Machines And Mechanisms With Special
Reference To The Developing Countries Like Saudi Arabia ......................................................... 364
Ibrahim Abdulaziz Al-Darrab, Syed Wasiul Hasan
A New Robotics Laboratory And An Evolution Of Teaching Methods .............................................. 370
Romeo Ionescu, Traian Severin
Models Of The Gearing Drives With Variable Gears Ratio In The Collection Of Bauman Moscow
State Technical University .............................................................................................................. 376
E. Mikhailov, V. Tarabarlin
Static Balancing – An Overview .................................................................................................. 381
Liviu Ciupitu, Ion Simionescu, Chung-Ching Lee

INDUSTRIAL APPLICATIONS I:

Design Of External Lens Module With Liquid Filled Lens Of A Cell Phone ........................................ 389
Dein Shan, S. P. Cuo, F. T. Liu
Relation Of Friction Resistance And Surface Topography On Soft Coating Film .................................. 394
J. H. Horng, C. C. Wei, C. H. Wu, C. C. Chen
Development Of A High Precision Stage For Vacuum Environment Using Parallel Mechanism With
Double Ball Joints .......................................................................................................................... 401
Yasushi Yoshida, Ken Ichimura, Yukio Takeda, Kazuya Hirose
Electrostatic-Assisted Photoelectro Spray Coating And Stepped Lithographic Technique For Directly
Fabricating Rigid Microstructures Onto Metal Rollers ........................................................................ 408
Sheng-Hsin Wu, Jing-Tang Wu, Shien-Yu Yang, Tai-Jung Chiang, Tsu-Chien Huang
A New Linkage With Linear Actuator For Tracking Pv Systems With Large Angular Stroke ................ 413
Viva Ion, Diaconescu Dorin, Salavescu Rodu, Vatasescu Montico, Burdaunga Bogdan

REHABILITATION ENGINEERING I:

An Experimental Validation Of Trajectory Planning For Larm Clutched Arm ...................................... 421
Hao Gu, Marco Ceccarelli
Machinery Health Condition Monitoring By Using Modified Standard Normal Distribution Method ........ 429
Jung-Yann Lin, Chien-Feng Wu, Ching-Chi Liao
The Effect Of Impedance Parameters In 7dof Upper-Limb Power-Assist Exoskeleton Robot ................... 433
Kazuo Kiguchi, R. A. R. C Gopura, Yoshikatsu Hayashi, Yang Li
Highly Coupled And Self-Adaptive Humanoid Robot Hand With Gear-Rack And Pulley-Belt
Mechanisms ..................................................................................................................................... 437
Guassam Li, Wenzeng Zhang
Dynamic Analysis Of Static Balanced Robot Arms ............................................................................. 445
Ion Simionescu, Liviu Ciupitu, Marin Ene, Luciana Ionita

THEORETICAL KINEMATICS I:

A General Mobility Methodology Based On Reciprocal Screw Theory .............................................. 451
J. F. Liu, Y. W. Li, Z. M. Chen, Z. Huang
Irregular Polygonal And Polyhedral Linkages Comprising Scissor And Angulated Elements ................. 455
Gökhan Kiper, Eras Söylemez
A New Geometric Derivation Of The Plane-Symmetric Rprp Linkage Of Delassus ................................. 460
Chung-Ching Lee, Jacques M. Hervé

INDUSTRIAL APPLICATIONS II:

Driving Evaluation Of Snake Like Robot In The Practical Gas Pipe .................................................... 465
O Nakai, Shuichi Wakimoto, Keiichi Sazumori, Hiroki Matsushita
Design Of A High Thermal Stability Feed Drive System For Machine Tools ....................................... 470
Feng-Ming Ou, Chung-Yuan Lin
A Novel Mechanism Design For Retractable Rectangular Table ................................................................. 474
Ching-Kong Chen, Yun-Hao Fan
The Research Of Accuracy Degradation Of Machine Tool Due To The Fits Between The Slideway And Wedge .................................................................................................................. 480
Tsuo-Ihsin Kuo
Vision-Guided-Robotics Grasping System For Random Distributed Objects .............................................. 484
Po-Huang Shieh, Yu-Hsiu Tsai, Shan-Chieh Lo, Kuo-Tong Hang, Bor-Tung Jiang

REHABILITATION ENGINEERING II:

An Experimental Study Of Leg-Exchange Of Passive Walking ...................................................................... 488
Yoshiro Ikemura, Akihito Sano, Masato Kato, Hideo Fujimoto
A Combined Passive And Active Joints Robotic System For Photodynamic Therapy For Port Wine Stains ........................................................................................................................................ 494
Xing-Guang Duan, Guo-Bin Biao, Xing-Tao Wang, Bao-Tao Yu, Ying Gu
Development Of A Joint Rehabilitation Robot Using Parallel Mechanism-Composition Of The Control System ........................................................................................................................................ 501
Tatsuya Koga, Yun Ho Tsoi, Yukio Takada
Development Of The Anthropomorphic Soft Robotic Hand Wsh-IR .............................................................. 506
Nobutsuna Endo, Fumiya Iida, Keita Endo, Yu Mizuguchi, Massimiliano Zecca, Atsuo Takanishi

THEORETICAL KINEMATICS II:

Topology And Configuration Transformation Of Carton Manipulation .......................................................... 513
Guauru Wei, Ruirui Zhang, Jian S. Dai
Kinematic Modeling Of A Finger-Alike Tendon-Driven Articulated Manipulator Based On Human Anatomy ........................................................................................................................................ 520
Win-Bin Shieh, Dan-Zen Chen, Chao-Chih Yu, Yi-Jeng Tsai
Path Generation Of Spatial Mechanism Based On Knot Theory ........................................................................ 527
Lubin Hang, Huiao Fang, Xingyi Yang
Modal And Dynamic Analyses Of Planetary Gear Systems By A Finite Element Approach .......................... 534
Kuo Jao Huang, Shou Ren Zhang

MECHANISM DESIGN IV:

Design And Analysis Of A Mechanical Device To Harvest Energy From Human Footstep Motion .................. 541
Longhan Xie, Ruxu Du
A Simple Adjustable Mechanism For Walking Robots ...................................................................................... 547
Anirban Guha, C. Amarath
Electronic Cams In Serial And Parallel Combination With Conventional Mechanisms In The Drives Of Mechanism Working Links .................................................................................. 555
Miroslav Vasilik, Petr Jirasko
Design Of A New Fluid Pump With Helical Claw Rotors .................................................................................. 563
Tien-Tung Chung, Hsin-Wei Wang, Lin-Yu Kang, Tsung-Lin Hsu, Hong-I Lin
Mechanical Design And Kinematics Of A Spherical Joint Actuator For Wheelchair Seat Posture Control ........................................................................................................................................ 571
Chun-Tzu Chen, Po-Chun Chia, Chun-Hsien Kuo

ROBOTICS AND MECHTRONICS I:

Path Planning Of A Modular Multi-Sectional Mobile Robot ........................................................................ 577
D. K. Biswas, S. Bhaumik, J. Saha
An Experimental Characterization Of Operation Of A Waist-Trunk System With Parallel Manipulator ........................................................................................................................................ 585
Conghua Liang, Marco Ceccarelli, Giuseppe Carbone
A Real Time Path Planning For Weightlifting Manipulator Using D++ Algorithm ........................................ 593
Pi-Ying Cheng, Pin-Jyuan Chen
A Study On Precision Modeling And Analysis Methods For Robot Arm Joints From The Perspective Of Parts
Ding Xilun, Sun Pengfei, Fang Cheng, Xi Tongshun

Workspace Of A 3-Rrps Parallel Robot For A Given Orientation
Xianchao Zhao, Jialun Yang, Chenkun Qi, Jing Wang, Fang Gao

COMPUTATIONAL KINEMATICS:

A Dynamic Loading Algorithm On Trailers Based On 3d Graphics Transformation
Song Jian

FourierDescriptors With Different Shape Signatures: A Comparative Study For Shape Based Retrieval Of Kinematic Constraints
Jun Wu, Q. J. Ge, Feng Gao, Hai-Jun Su

Mechanical Transformation Mechanism For Ultrasonic Dental Tools
T. Y. Lu, H. Y. Chang, S. F. Chang

MECHANISM DESIGN V:

A New Design For Electric Scooter With The Capabilities Of Stair-Climbing And Crossing-Over Obstacle
Ching-Kong Chen, You-Chuan Chang, Chi-Hung Wang

Orbiting Mechanism – Computer Aided Development (CADE)
Aksamadar Veg, Goran Sinkovic, Emil Veg

The Synthesis Of Four-Bar Linkages For Path Generation Using Hybrid Particle Swarm Optimization
Yun-Hong Kang, Chun-Te Lee

A Unitary Method For Spatial Linkages Modeling Using Mbs
Chen Tira

Stability Analysis Of The Tower Of The Wind-Turbine With Horizontal Axis
Cherkasov O. Tu, Zenchkin V. A.

ROBOTICS AND MECHATRONICS II:

Development Of Viscoelastometer Using Repetitive Control
Hiroyuki Nabae, Wosang Rhee, Toshio Higuchi

Study On The Control Of A Long-Range Single-Axis Nanometer Positioning System
Ju-Liang Chen, Sin-Yi Li

Errors Analysis And Compensation Of A Six-Axis Force Sensor Based On Stewart Platform
Zhi-jun Wang, Hang Wang, Jian Tao, Yongzheng Zhou

Development Of A Reel-Out Mechanism With Large Dynamic Range Tension Control Characteristics For Casting Manipulator
Asuka Shioni, Masaru Higuchi, Yukio Takeda, Hitoshi Arisumi

Torque Sensitive Manipulator With High-Rigidity Torque Encoder
Hiroshi Kaminogawa, Tomohiro Kawakami, Ko Ayusawa, Yoshihiko Nakamura

VEHICLE MECHANISM, DYNAMICS AND DESIGN:

The Phenomenon Of Distraction And Visually Induced Motion Sickness For Passengers Watching In-Vehicle Video
Jung-Huang Liao, Dein Shaw

Analysis Of Dynamic Impact Effects For Light Alloy Car Wheels
Irina Demiyumashko, Violetta Mironova

Dynamic Characteristics Of A Vehicle Fitted With A Roll-Resistant Hydraulically Interconnected Suspension
Nong Zheang, Lifu Wang, Wenlong Hu, Fel Ding

Design And Analysis Of Hybrid Systems For Scooters
I-Ming Chen, Tyng Liu
Power Assist System For Joystick Car Drive ................................................................. 718
Masayoshi Wada, Yukimichi Saito, Fujio Kameda

ADDITIONAL PAPERS:

A New Method For The Singularity Analysis Of Planar Mechanisms With Multi-Degree Of Freedom
And Experimental Research ............................................................................................. 724
Wang San Min, Yuan Ru, Liu Xia
Virtual Link-Lengths Approximating Method For Forward Kinematics Of Multiple Motion-Coupled
Linkage Mechanism ........................................................................................................ 729
Sun Henghui, Luo Minzhou, Lu Wei, Dong Xiang
Shock Response Analysis For A Propulsion Shaft Unit By A Modified Tmt ......................... 738
He Shaohua, Zhang Pinghao, Wu Xinyue
Computerized Enumeration And Identification Of Kinematic Chains Using Identification Codes
(Part 1) .............................................................................................................................. 744
Swarnata Torgal, Ashish Tiwari, A. G. Ambekar
Results Of Enumeration Of Kinematic Chains Using Identification Codes (Part 2) .............. 752
Swarnata Torgal, Ashish Tiwari, A. G. Ambekar
Kinematic Registration Using Contact Sensing .................................................................. 760
Walter Willem Nederbragt, Behram Ravani
Conceptual Designs Of Modern And Ancient Mechanisms .............................................. 781
Hong-Sen Yan
Multi-Objective Optimization Of Cyclogram Mechanisms Machine-Automaton ................. 789
Gakhip Ualiyev, Assylbek Jomartov
Optimum Dimensional Synthesis Of A Novel Press System With Stephenson-I Mechanism ... 793
Wen-Hsiang Hsieh, Chia-Heng Tsai
Design And Dynamics Of Adaptive Transfer Box ............................................................ 800
K. Ivanov
Application Of Kingview Sql Database Technology In Traditional Chinese Medicine Dropping Pill
Packing Control System ................................................................................................. 807
Jujun Cao, Longgang Li, Xiuyu Meng
Finite Element Analysis Of A Precision Hydraulic Component- Jet Pipe Electrohydraulic Servovalve ................................. 811
Somashkhar S. Hiremath, M. Singapersual

Author Index