

Table of Contents

Application of Simulators and Simulation Tools for the Functional Design of Mechatronic Systems

D. Schramm, W. Lalo and M. Unterreiner 1

Determination of Generalized Coordinates and Forces for Generation of the Three Dimensional Curves with Torsion by PKM (Parallel Kinematik Machines)

N.V. Orlandea 15

Automatic Page Turner

A.M. Aluței, B.V. Chetran, I. Lungu and D. Mândru 27

CAD Based Design Optimization of Planar Parallel Manipulators

K.A. Arrouk, B.C. Bouzgarrou, S.D. Stan and G. Gogu 33

Automated Test Bench for Study of the Fuel Injection Process

I. Barabás, I.A. Todoruț, L.B. Kocsis and D.L. Băldean 39

About an Experimental Approach Used to Determine the Kinematics of the Human Finger Movement

C. Berceanu, D. Tarniță and D. Filip 45

Exteroceptive Sensor System of a New Developed Artificial Hand

C. Berceanu, D. Tarniță and D. Filip 51

Mechatronic Design of a Planar Parallel Robot Actuated by Pneumatic Artificial Muscles

S. Besoiu, V. Măties and D. Radu 57

Robot Motion Synchronization in Cooperative Tasks

T. Borangiu, F.D. Anton and S. Anton 63

Method for Planning Multitasking Robot Application Programs in RAPID

S. Brad, E. Brad and C. Ioanes 69

Remote Controlled Video Inspection Manipulator of Sewage Networks Pipes

A. Bruja, M. Dima and C. Frâncu 77

Specific Mechanisms for Construction Mobile Robots

A. Bruja, M. Dima and C. Frâncu 83

Social Interaction in Systems of Humans and Mobile Robots

O. Budisan, I. Ignat, L. Vacariu and C. Florea 89

Software System for Mechanism and Robot Simulation

F. Buium, V. Atanasiu and D. Rusu 95

Some AI Based Approaches on Mobile Robots Motion Planning

A. Burlacu, M. Kloetzer and D. Panescu 101

Actuation Strategy for a New Driving Simulator Setup

A. Capustiac, M. Unterreiner and D. Schramm 109

Wearable Exerciser

B. Chetran, I. Lungu, A.M. Aluței and D. Mândru 115

Scaled Experimental Stand for Testing Control Algorithms on Brake Systems with Anti-Lock Capability

V. Ciupe, S. Vatau and I. Maniu 121

3D Control for a Truncated Cone Tentacle Kinematics

D. Cojocaru, G. Boccolato, I. Dinulescu, A. Predescu, F. Manta and S. Dumitru 127

Modeling and Analysis of Soccer Robot Tasks Using Generalized Stochastic Petri Nets

D. Coman, N. Bizdoaca, A. Petrisor, A. Ionescu and M. Florescu 133

Video Camera Measuring Application Using Matlab

M. Coman and B. Radu 139

Triangulation 3D Scanning Method in Biomedical Reconstruction

A. Comsa, I. Maniu and E.C. Lovasz 145

Modeling of Shape Memory Alloy Actuators Using Matlab and dSpace Platform

I.A. Cosma, V. Măties, C. Lapusan and R.C. Mîndru 149

Workspace Analysis of the 6 Degrees of Freedom PARTNER Parallel Robot

A. Csíszár and C. Brisan 155

Path Following System for Cooperative Mobile Robots

I. Dinulescu, D. Popescu, M. Nitulescu and A. Predescu 161

The Design Approach of Human Prostheses and Intelligent Robot End Effectors Based on Mechatronic Philosophy	167
V. Dolga and L. Dolga	
Design, Modeling and Control of an Omni-Directional Mobile Robot	173
I. Doroftei and B. Stirbu	
Intelligent Robot with Microcontroller for Obstacles Avoiding	179
F. Dragomir, P.C. Patic and O.E. Dragomir	
Designing of Virtual Reality Environments for Mobile Robots Programming	185
M. Duguleana and F.G. Barbuceanu	
Fuzzy Reasoning in Mobile Robots Control	191
A. Dumitriu	
Mobility and Direct Kinematics of Parallel Manipulators RSS Type - 3 Actuators	197
V. Filip and O. Antonescu	
The Analysis of the Weaving Wire' Mechanism Using CosmosMotion under SolidWorks	203
V. Filip, A.D. Negrea and G. Dobra	
Dynamical Analysis of the 2-Dimensional Tentacle Robot	209
M. Florescu, A. Petrisor and D. Coman	
Trajectory Planning for Mobile Car-Like Robot Navigation in an Extra-Road Environment	215
R. Gall, F. Tröster, G.L. Mogan and R. Luca	
A Fuzzy Model for Establishing Two Main Parameters of GTAW Process	223
G. Gorghiu, P.C. Patic and D. Cârstoiu	
Kinematic-Dimensional Analysis of Parallel Robot Used for Orientation	229
T.P. Itul and D.L. Pisla	
Specialized Positioners and Manipulators for Robotic Welding	235
N. Joni and A. Dobra	
Automation of Logistics Processes by Using a Universal Control	241
A. Kirchheim and W. Echelmeyer	
Rapid Control Prototyping in Design Process of Mechatronic Systems	247
C. Lăpușan, V. Maties, R. Balan and O. Hancu	
Development of Riding Robot System for Entertainment and Healthcare Service	253
M.S. Lim, H.B. Park and J.H. Lim	
Self-Balanced Conco-Balancer Manipulator with Band Mechanism	259
E.C. Lovasz, D. Perju, N.M. Dehelean, L.M. Dehelean, I. Maniu and C. Moldovan	
Feature Based Mapping Procedure with Application on Simultaneous Localization and Mapping (SLAM)	265
R. Luca, F. Tröster, R. Gall and C. Simion	
Extended Mobility Carried Out with a Double Hexapod Robot	271
M. Margaritescu, A.M.E. Ivan, V. Vaduva and C. Brisan	
Development of a Tactile Sensor Array	277
N. Marian, A. Drimus and A. Bilberg	
The Palletization of Car Batteries Produced by S.C. ROMBAT S.A, Bistrița, Romania, Using the Serial Robot TRTR1	285
L.C. Mic, V. Ispas and A.C. Horvat	
Aspects Regarding Pneumatic System Simulated Control	291
R.C. Mîndru, V. Maties, C. Lăpușan and I.A. Cosma	
Analysis of Jansen Walking Mechanism Using CAD	297
F. Moldovan and V. Dolga	
Dynamics of Hybrid Robot Structures Using Variational Principles	303
I. Negrean, I. Vuscan, C. Schonstein, K. Kacso, A. Duca and C. Negrean	
Formulations about Dynamics of Mobile Robots	309
I. Negrean, C. Schonstein, K. Kacso, C. Negrean and A. Duca	
Socially Assistive Robots and Autism	315
C. Nikolopoulos, D. Kuester, M. Sheehan, S. Dhanya, W. Herring, A. Becker and L. Bogart	
Research Concerning the Ramp and Sinusoidal Command Signals of the Piezoelectric Miniactuators	321
S. Noveanu, D. Mândru, A. Ivan and V.I. Csibi	

Aspects Regarding the Configuration of a Functional Node in a Distributed Data Acquisition System, Based on PC/104 Compatible Modules	
I. Purcaru and D. Purcaru	327
Kinematics Investigation, Workspace Analysis and Actuators Design for a 2-DOF Redundant Parallel Robot	
C. Rad, C. Rusu and R. Balan	333
Modeling of the Control Algorithms in Case of a Self Reconfiguring Mobile Robotic System	
M.G. Raducu and M. Nitulescu	339
Comparative Dynamic Analysis of Two Parallel Robots	
N.R. Rat, M. Neagoe and S.D. Stan	345
A Novel Method for Automated Tool Path Optimisation for CNC Machining Operations	
S. Shojaeipour	357
A Novel Method for Rural Road Construction Planning Using Quad-Tree Decomposition on the Satellite Image	
S. Shojaeipour, A.T. Nejad, M.S. Masoomi, H.R. Mokhtarian and A. Jahanshahi	363
Path Planning for Two-Link Navigation in an Unknown Environment Using Webcam	
S. Shojaeipour, A.K. Sedigh, A. Shojaeipour, E.N.G. Weng and N. Hadavi	369
Optimum Design of Industrial Robot Grippers	
I. Simionescu, I. Ion and L. Vladareanu	375
Main Aspects Regarding the Mechanism of the Prosthesis for Human Hand - Synthesis, Analysis, Design and Functional Simulation	
I. Staretu	383
Motion Identification of the Human Agent's Arm in Case of Grabbing a Cylindrical Object and Transposing these in Control Rules for an Industrial Robot	
M. Stoica, G.A. Calangiu and F. Sisak	389
On the Control of Tendon Based Parallel Manipulators	
C. Sturm and D. Schramm	395
Modular Robotic System for Moving Inside of Pipelines - Part 1	
M.O. Tatar, A. Alutei and C. Cirebea	403
Modular Robotic System for Moving Inside of Pipelines - Part 2	
A. Alutei, M.O. Tatar and C. Cirebea	409
Structural and Constructive Modelling of One-Loop Linkages Applied in Robotics	
I. Tempea and A. Livadariu	415
Non-Overshooting Force Control of Series Elastic Actuators	
O. Tokatli and V. Patoglu	421
Aspects Concerning Voice Cognitive Control Systems for Mobile Robots	
T.S. Topoleanu and G.L. Mogan	427
Simulating the Control of a Scara Robot by Means of a 3D Hand Position Sensing System	
R. Tarca, O. Moldovan and C.L. Szabolcs	433
Aspects Regarding 3D Road Modeling in Virtual Reality Scenarios for Driving Simulators	
R.V. Vasiu and C. Brisian	439
Java Simulator for Quadruped Walking Robot	
S. Vatau, V. Ciupu and I. Maniu	445
Calculation of Forces and Reactions from Kinematical Joints of Double Harmonic Transmission with Wave Generator Dephased with $\pi/2$ Used in Industrial Robots Structure	
D.G. Vela, L. Madaras, C.O. Miclosina and I. Vela	451
Modelling and Simulation of a Isoglide T3R1 Parallel Robot	
D. Verdes, R. Balan and M. Koppány	457