ReMAR 2018 – Full Program

Tuesday 19 June 2018
20:00 – 22:00  Registration      Lagerhuysch

Wednesday 20 June 2018
8:30  Registration      Foyer
9:00 Opening Session     Lecture Room A
9:30  Strandbeest: The Creation of New Forms of Life
      Keynote lecture by Theo Jansen    Lecture Room A
10:30 Fast Forward Session I     Lecture Room A
      Session Chair: Matteo Zoppi

77   A Reconfigurable Asymmetric 3-UPU Parallel Robot
      Soheil Sarabandi, Patrick Grosch, Josep M. Porta and Federico Thomas

15   Classification, Collection, and Simulation of Folding Mechanisms
      Jascha Paris, Judith Merz, Henri Buffart, Susanne Hoffmann, Chantal Weigel,
      Mathias Hüsing, Martin Trautz and Burkhard Corves

25   Group Method for Synthesis of Metamorphic Parallel Mechanism with 1R2T and 2R1T
      Reconfiguration
      Jun Wei and Jian S. Dai

9    Double Bennett Mechanisms with Assembly Modes of Different Dimensions
      Jon Selig and Zijia Li

39   Motion Synthesis in Tensegrity Mechanisms
      Pramod K. Malik, R. Rajput, Anirban Guha and P. Seshu

59   Analysis of a Functionally Graded Compliant Mechanism Surgical Grasper
      Jovana Jovanova, Angela Nastevska, Mary Frecker and Milton E. Aguirre

23   A Bistable Underactuated Finger with Reconfigurable Grasping Modes
      Carl A. Nelson

50   A Planar Mechanism with Variable Topology for Automated Fiber Placement
      Fei Liu, Wuxiang Zhang, Kun Xu, Huichao Deng and Xilun Ding

40   Modified Material Properties in Curved Panels Through Lamina Emergent Torsional
      Joints
      Trent Zimmerman, Jared Butler, Dallin Frandsen, Dakota Burrow, David Fullwood,
      Spencer Magleby and Larry Howell
72 Self-aligning Analysis of the Metamorphic Palm of the KCL/TJU Metamorphic Hand
Rodrigo L. P. Barreto, Andrea P. Carboni, Roberto Simoni, Daniel Martins and Jian S. Dai

53 Reconfiguration Analysis of a Variable Degrees-of-freedom Multi-mode Parallel Manipulator
Xianwen Kong, Jieyu Wang, Jingjun Yu and Duanling Li

34 A Tromino Tiling Theoretic Approach to Path Planning in a Reconfigurable Floor Cleaning Robot
Prabakaran Veerajagsdheswar, Mohan Rajesh Elara, Pathmakumar Thejus and Sivanantham Vinu

p.o. Soft Robotics Challenge
Jamie Paik

11:30 – 13:00 Interactive Session I Lagerhuysch
Session Chair: Ferdinando Cannella
All presenters of Fast Forward Session I

13:00 Lunch served by Foodtruck KoKo LoCo Outside at Lagerhuysch

14:30 A Classification of the Scissor Linkages Based on the Loop Assembly Method
Keynote lecture by Gökhan Kiper Lecture Room A

15:30 Fast Forward Session II Lecture Room A
Session Chair: Shaoping Bai

11 Implementation of Rolling Contacts for SORCE Joints
Todd G. Nelson, Robert J. Lang, Spencer P. Magleby and Larry L. Howell

45 Kinematics of a Novel 3-URU Reconfigurable Parallel Robot
Luca Carbonari, David Corinaldi, Giacomo Palmieri and Matteo-Claudio Palpacelli

64 Design and Motion Analysis of Compliant Omni-directional Spherical Modular Snake Robot (COSMOS)
Akash Singh, Anshul Paigwar, Sai Teja Manchukanti, Manish Saroya and Shital Chiddarwar

13 A Single-Loop 8R Linkage with Plane-Symmetry and Bifurcation Property
Xuheng Chai, Chunsong Zhang and Jian S. Dai

52 The Design of Ortho-Planar Spring for a Normally-Closed Gate Valve
Ruetai Graipaspong and Teeranoot Chanhasopeephan

12 Synthesis of Discontinuously Movable Mechanisms with Bifurcation
Tzu-Chin Lo, Tsung-Ni Yang and Jyh-Jone Lee
| 20 | **Dilational Triangulated Shells Using Pantographs**  
Freek Broeren, Werner van de Sande, Volkert van der Wijk and Just L. Herder |
| 24 | **Adaptive Soft Robotic Gripper Based on Shape Morphing Compliant System**  
Andrija Milojević, Sebastian Linß, Žarko Ćojbašić, Heikki Handroos, Lauri Luostarinen and Lena Zentner |
| 74 | **Design of a Dynamically Reconfigurable 3T1R Parallel Kinematic Manipulator**  
Juan de Dios Flores-Mendez, Henrik Schiøler, Ole Madsen and Shaoping Bai |
| 71 | **Design and Analysis of a Metamorphic Quadruped Robot**  
Kun Xu, Hanxin Ma, Jiawei Chen, Wuxiang Zhang, Huichao Deng and Xilun Ding |
| 46 | **Optimization of the Reconfiguration Planning of Cyber-Physical Production Systems with Delta-Like Architecture**  
Jan Brinker, Dominic Ring, Marco Lübbecke, Yukio Takeda and Burkhard Corves |
| 44 | **Dynamic Modelling and Simulation of a Deployable Quadrotor**  
Haohua Xiu, Tao Xu, Anthony H. Jones, Guowu Wei, Lei Ren and Jian S. Dai |
| p.o. | **Giorgio Scarpa’s Transformable Objects: Geometry as Art, Science, and Play**  
Pino Trogu |

16:30 – 18:00  
Interactive Session II  
Lagerhuysch  
Session Chair: Daniel Martins  
All presenters of Fast Forward Session II

18:00  
Walk to Delft City Hall  
Meeting point / leaving from Foyer

18:30 – 20:00  
Welcome Reception  
Delft City Hall

**Thursday 21 June 2018**

9:00  
**Shape-programmable Magnetic Soft Milli/Microrobots**  
Keynote lecture by Metin Sitti  
Lecture Room A

10:00  
Fast Forward Session III  
Lecture Room A  
Session Chair: Federico Thomas

68  
**A Symbolic-Numeric Method to Capture the Impact of Varied Geometrical Parameters on the Translational Workspace of a Planar Cable-Driven Parallel Robot**  
Felix Trautwein, Philipp Tempel and Andreas Pott

33  
**Design and Application of a 3-DoF Manipulator for Launch and Recovery System**  
Yan Peng, Haijun Chen, Bizhou Lu and Yi Yang
10 Auxetics Abounding
Ciprian S. Borcea and Ileana Streinu

38 Design of the Planar Compliant Five-bar Mechanism for Self-aligning Knee Exoskeleton
Yijun Niu, Zhibin Song and Jian S. Dai

60 PASCAV Gripper: a Pneumatically Actuated Soft Cubical Vacuum Gripper
Ahmad M. Tahir, Giovanna A. Naselli and Matteo Zoppi

16 A 3–RRR Spherical Parallel Manipulator Reconfigured with Four-bar Linkages
Guanglei Wu, Huimin Dong, Delun Wang and Shaoping Bai

54 Compliance Synthesis of a Class of Planar Compliant Parallelogram Mechanisms Using the Position Space Concept
Guangbo Hao, Jingjun Yu and Yufei Liu

49 An Application of the Simultaneous Localization and Mapping (SLAM) Method Based on the Unscented Kalman Filter (UKF) to a Reconfigurable Quadruped Robot with Crawling Locomotion
Takuma Nemoto, Keichi Onodera, Rajesh Elara Mohan, Masami Iwase and Kristin Wood

35 A Shape-Adaptive Mechanism with SMP Jointed Panels - Preliminary Study
Aaron Yu, Fengfeng (Jeff) Xi and Bing Li

55 A 2-DOF Deployable Planar Mechanism with Continuous Rotation Characteristics
Ziming Chen, Xuedan Wei, Zhiwei Yang, Chen Zhao and Jieyu Wang

7 An Origami-based Thickness-accommodating Bistable Mechanism in Monolithic Thick-sheet Materials
Nathan A. Pehrson, Spencer P. Magleby and Larry L. Howell

14 A Mapping Method of Grasping Posture Applying to the Metamorphic Multi-fingered Hand
Yingce Zheng, Zhao Tang and Jian S. Dai

p.o. Foldable Travel Guitar
Patrick Snels

11:00 – 12:30 Interactive Session III Lagerhuysch
Session Chair: Dongming Gan

All presenters of Fast Forward Session III

12:30 Lunch served by Rode Rozen & Tortilla’s Foyer

12:30 – 14:00 Lab visits in small groups Foyer
8 **Operation Mode and Workspace of a 3-rRPS Metamorphic Parallel Mechanism with a Reconfigurable Revolute Joint**
Latifah Nurahmi and Dongming Gan

6 **Self-Calibration for an Object Integrative Handling System**
Tim Detert, Mathias Hüsing and Burkhard Corves

37 **Reconfigurable Generalized Parallel Mechanisms with Coupling Sub-chains** (with reservation)
Chunxu Tian, Q. J. Ge and Yuefa Fang

58 **Origami Carton Non-linear Multi-body Simulation towards Industry 4.0: Preliminary Study**
Mariapaola D’Imperio, Jian S. Dai, Darwin Caldwell and Ferdinando Cannella

48 **sTetro: A Modular Reconfigurable Cleaning Robot**
Yuyao Shi, Mohan Rajesh Elara, Manivannan Kalimuthu and Manojkumar Devarassu

76 **Modelling and Path Planning of Snake Robot in Cluttered Environment**
Akash Singh, Anshul Paigwar, Chaohui Gong and Howie Choset

17 **Design and Workspace Analysis of Reconfigurable 3-RPRP Spherical Parallel Mechanisms**
Ruiqin Li, Jianwen Zhao, Dabao Fan, Shijie Liang, Shengtao Song and Shaoping Bai

65 **Synthesis and Motion Analysis of a Single-Loop 8R-Chain**
Martin Pfurner

42 **Reconfigurable Deployable Umbrella Canopies**
Radomir Jovichikj, Abdullah Yaşır and Gökhan Kiper

18 **Permanent Preloading by Acceleration for Statically Balancing MEMS Devices**
Marije Y. Barel, Davood Farhadi Machehposhti, Just L. Herder, Metin Sitti and Nima Tolou

57 **The Double-Koenigs Mechanism - A Spatial Linkage with Cusp Singularities and Multiple Branches in the Configuration Space**
Pablo Lopez-Custodio, Andreas Müller and Jian S. Dai

21 **Sensor-Driven Algorithm for Self-Reconfiguration of Modular Robots**
Jennifer E. Walter

p.o. **Analytical Models for Nonlinear Stiffness of Flexures & Large Stroke Flexure Joints for High Support Stiffness**
Dannis Brouwer, Marijn Nijenhuis and Mark Naves
p.o.  **Transforming Materials**  
Bas Overvelde

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15:00 – 16:30  **Interactive Session IV**  
Session Chair: Fengfeng (Jeff) Xi  
Lagerhuysch  

All presenters of Fast Forward Session IV

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16:30  Walk to the boats for the canal tour  
Meeting point/leaving from Foyer

17:00 – 18:00  Delft canal tour by boat  
Delft’s canals

18:00 – 18:15  Walk to the Old Church

18:15 – 22:00  Conference dinner  
Old Church (Oude Kerk) of Delft

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**Friday 22 June 2018**

9:00  **Enabling Engineered Properties via Architectured Materials**  
Keynote lecture by Jonathan Hopkins  
Lecture Room A

10:00  **Fast Forward Session V**  
Session Chair: Xianwen Kong  
Lecture Room A

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**22**  **An Approach to the Estimation of the Actuation Parameters for Mobile Tensegrity Robots with Tilting Movement Sequences**  
Philipp Schorr, Valter Böhm, Lena Zentner and Klaus Zimmermann

**32**  **A Configuration-Independent Software Architecture for Modular Robots**  
Lars Grimstad and Pål Johan From

**61**  **Synthesis of Reconfigurable Positioning Parallel Manipulator of a class RoboMech**  
Zhumadil Zh. Baigunchekov, Sayat Ibrayev, Myrzabai Izmambetov, Zhadyra Zhumasheva, Talgat Baigunchekov, Batyr Naurushev, Azamat Mustafa and Mukhagali Sagyntay

**78**  **The Static Balancing of Single-loop Reconfigurable Mechanisms**  
Daniel Robertson, Chin-Hsing Kuo and Just Herder

**43**  **Multistable Trusses of Nonlinear Morphing Elements**  
Chrysoula Aza, Alberto Pirrera and Mark Schenk

**56**  **Experimental and Simulation study of Miniature Robot for Natural Orifice Transluminal Endoscopic Surgery**  
Sarvesh Saini and Pushparaj Mani Pathak
36 Zipper Tube Reinforcement to Mitigate Flexible Shaft Buckling
Brandon Sargent, Maxwell Bean, David Wood, Brian Jensen, Spencer Magleby and Larry Howell

27 Anatomy Optimization and Experimental Verification of a Metamorphic Manipulator
Eleftherios F. Katrantzis, Vassilis C. Moulianitis, Nikos A. Aspragathos and Charalampos D. Valsamos

29 A Metamorphic Hand with Coplanar Reconfiguration - Kinematics, Workspace, and Manipulation Analysis
Xu Cui, Jie Sun, Xin S. Zhang, Shuang J. Xu and Jian S. Dai

30 Static Balancing of a Reconfigurable Linkage with Switchable Mobility by Using a Single Counterweight
Chin-Hsing Kuo, Linh Nguyen-Vu, Lin-Tien Chou

62 A Dual Reconfigurable 4-rRUU Parallel Manipulator
Abhilash Nayak, Stéphane Caro and Philippe Wenger

63 A Data-driven Motion Mapping Method for Space Teleoperation of Kinematically Dissimilar Master/Slave Robots (with reservation)
Yang Lin, Huan Zhao, Yue Zhang and Han Ding

p.o. Compliant Frequency Multiplier Transmission Mechanisms
Davood Farhadi Machekposhti

11:00 – 12:30 Interactive Session V Lagerhuysch
Session Chair: Guangbo Hao

All presenters of Fast Forward Session V

12:30 Conference Closure Lecture Room A

13:00 Farewell Lunch Foyer

14:30 After Conference Activities Foyer