

## A. Related grants

### 1) EPSRC and Royal Society grants

<b>EPSRC</b>	Stiffness-based dynamic modelling & motion control of a multi-fingered hand with passive joints
<b>EPSRC</b>	Synthesis of orientation capability of serial robot manipulators using rotability of Grashof type equivalent mechanisms.
<b>EPSRC</b>	Manipulation Planning for Handling and Manipulating Complex Cartons
<b>EPSRC</b>	A Feasibility Study into Robotic Ironing
<b>EPSRC</b>	Investigation and development of a new class of mechanisms: metamorphic mechanisms and reconfigurability
<b>EPSRC</b>	Creating Physical Structure from Disarray
<b>Royal Society,</b>	Methodology Study of Spatial Compliant Systems Based on Lie Algebra and Screw System Theory and Its Applications
<b>Government KTP</b>	(Knowledge Transfer Partnership) Grant TCS4294: Manufacturing Modelling & production optimisation
<b>Teaching Company Directorate</b>	Programme to develop a computer integrated scheduling and process planning system with subsystems to improve the efficiency and productivity of manufacturing
<b>Government Link Program Grant (CEMLAKR)</b>	Department for Environment, Food and Rural Affairs (DEFRA) award: Automatic Reconfigurable Confectionery Handling and Packaging System (ARCHAPS)
<b>Nuffield Foundation,</b>	Orientation and Dexterity of Robot Manipulators and their kinematics transformation

### 2) Related European Research Projects

<b>LEAPFROG</b>	Leadership for European Apparel Production From Research along robotic garment manufacturing and handling
<b>DEXDEB</b>	Application of DEXterous hands for DEBoning operation:
<b>V-FEATHER</b>	Innovative Flexible Electric Transport
<b>COSMOS</b>	Cost-driven Adaptive Factory based on Modular Self-Contained Factory Units
<b>TOMSY</b>	Topology-based Motion Synthesis for Dexterous Manipulation
<b>SQUIRREL</b>	Clearing Clutter Bit by Bit

## B. PUBLICATIONS

### Books

1. Dai, J.S., 2014, *Geometrical Foundations and Screw Algebra for Mechanisms and Robotics*, Higher Education Press, Translation from “Dai, J.S. *Screw Algebra and Kinematic Approaches for Mechanisms and Robotics*, to be published by Springer, London”, (in contract agreement with Springer) Beijing, China, ISBN: 9787040334838.
2. Dai, J.S., 2014, *Screw Algebra and Lie Groups and Lie Algebra*, (in Chinese) Higher Education Press, Beijing, China, ISBN: 9787040318456.
3. Rodriguez Leal, E., and Dai, J.S., 2010, *Evolutionary Design of Parallel Mechanisms: Kinematics of a Family of Parallel Mechanisms with Centralized Motion*, Lambert Academic Publishing, Saarbruecken, Germany, ISBN: 3838378768.

4. Yu, J.J., Liu, X.J., Ding, X.L. and Dai, J.S., 2008, *Mathematical Foundation for Robotic Mechanisms* (in Chinese), China Machine Press, ISBN: 9787111242567.

### **Edited Books**

5. Dai, J.S., Zoppi, M. and Kong, X.W. (Eds), 2012, *Advances in Reconfigurable Mechanisms and Robots I*, Proceedings of the Second ASME/IFTOMM International Conference on Reconfigurable Mechanisms and Robots (ReMAR 2012), Springer ISBN: 978-1-4471-4140-2.
6. Dai, J.S., Zoppi, M. and Kong, X.W. (Eds), 2009, *Reconfigurable Mechanisms and Robots*, Proceedings of the First ASME/IFTOMM International Conference on Reconfigurable Mechanisms and Robotics (ReMAR 2009), KC Edizioni, ISBN: 978-88-89007-37-2.

### **Book Chapters**

7. Wei, G., Stephan, F., Aminzadeh, V., Würdemann, H., Walker, R., Dai, J.S. and Gogu, G., "DEXDEB -- Application of DEXtrous Robotic Hands for DEBoning Operation," in *Gearing Up and Accelerating Cross-Fertilization between Academic and Industrial Robotics Research in Europe*, Rohrbach, F. et al. (Eds), Springer Tracts in Advanced Robotics 94, 217-235. 2014.
8. Zhang, K. and Dai, J.S., "Trifurcation of the Evolved Sarrus-Motion Linkage Based on Parametric Constraints," in *Advances in Robot Kinematics*, J. Lenarčič and O. Khatib (Eds), Springer, 345-353, 2014.
9. Wei, G. and Dai, J.S., "Reconfigurable and Deployable Platonic Mechanisms With a Variable Revolute Joint," in *Advances in Robot Kinematics*, J. Lenarčič and O. Khatib (Eds), Springer, 485-495, 2014.
10. Dai, J.S., "Robotics and Automation for Packaging in the Confectionery Industry," in *Robotics and Automation in the Food Industry: Current and Future Technologies*, Caldwell, D.G. (Ed), Woodhead Publishing Ltd, 401-419, 2012.
11. Dai, J.S., "Task Analysis and Motion Generation for Service Robots: With Reference to Region Segregation and Path Generation for Robotic Ironing," in *Service Robots and Robotics: Design and Application*, Ceccarelli, M. (Ed), 30-50, IGI Global, 2012.
12. Kuo, C.H. and Dai, J.S., "A Partially-Decoupled 4-Dof General 3SPS/PS Parallel Manipulator," in *Robotics: State of the Art and Future Trends*, Legnani, G. and Fassi, I. (Eds), Nova Science Publishers, Hauppauge, New York, 29-54, 2011.
13. Cui, L. and Dai, J.S., "Advance in Mechanisms and Robotics in Europe," in *Advances in Mechanisms and Robotics*, 2, Zou, H.J. (Ed), Higher Education Press, 141-158, 2010.
14. Dai, J.S., "Metamorphic Principle and Development of Metamorphic Mechanisms," in *Development of Modern Mechanisms*, Zou, H.J. (Ed), Higher Education Press, ISBN: 704020431, 2008.
15. Dubey, V. N. and Dai, J.S., "Complex Carton Packaging with Dexterous Robot Hands," in *Industrial Robotics: Programming, Simulation and Applications*, Huat, L.K. (Ed), Mammendorf, Germany: pro Literatur verlag Robert Mayer-Scholz/Advanced Robotics Systems International, 583-594, 2007.
16. Dai, J.S., "The Fundamental and Development of Metamorphic Mechanisms," in *Advances in Mechanisms Theory*, Zou, H.J. and Gao, F. (Eds), Higher Education Press, Beijing, 91-111, ISBN 7-0402-0431-2, 2006.

17. Dai, J.S., Kerr, D.R., and Sanger, D.J., "Intelligent Grasping Systems," in *Advanced Robotics and Intelligent Machines*, Gray, J.O. and Caldwell, D.G. (Eds), IEE Control Engineering Series 51, Pentland Press Ltd., Peter Peregrinus, 61-69, ISBN: 0-85296-853-1, 1995.

### **Editorial**

18. Dai, J.S., Guest Editor, Surgical Robotics and Its Development and Progress, *Robotica*, Vol. 28, No. 3, March 2010, special Issue on Surgical Robotics, System Development, Application Study and Performance Analysis.
19. Dai, J.S. (with Zoppi, M. and Kong, X.W.) Preface, *Advances in Reconfigurable Mechanisms and Robots I*, July 2012, Proceedings of the second ASME/IFTToMM International Conference on Reconfigurable Mechanisms and Robots (ReMAR 2012), Springer ISBN: 978-1-4471-4140-2.
20. Dai, J.S. (with Zoppi, M. and Kong, X.W.) Preface, *Reconfigurable Mechanisms and Robots*, June 2009, Proceedings of the first ASME/IFTToMM International Conference on Reconfigurable Mechanisms and Robotics (ReMAR 2009), KC Edizioni, ISBN: 978-88-89007-37-2.

### **Peer-Reviewed Journal Publications**

21. Dai, J.S., Euler-Rodrigues formula variations, quaternion conjugation and intrinsic connections, *Mechanism and Machine Theory*, **92**, 144-152, 2015.
22. Zhang, K. and Dai, J.S., Screw-system-variation enabled reconfiguration of the Bennett plano-spherical hybrid linkage and its evolved parallel mechanism, *Journal of Mechanical Design, Trans. ASME*, **137**(7), 2015.
23. Cui, L. and Dai, J.S., A polynomial formulation of inverse kinematics of rolling contact, *Journal of Mechanisms and Robotics, Trans. ASME*, **7**(4), doi: 10.1115/1.4029498, 2015.
24. Cui, L. and Dai, J.S. 2015 , From sliding-rolling loci to instantaneous kinematics: an adjoint approach, *Mechanism and Machine Theory*, **89**.
25. Li, S., Wang, G. and Dai, J.S., A new structural synthesis method for planar mechanisms based on the Assur group adjacent matrix, *Journal of Mechanisms and Robotics, Trans. ASME*, **7**(4): doi:10.1115/1.4029116, 2015.
26. Zhang, K., Qiu, C. and Dai, J.S., Helical kirigami-enabled centimeter-scale worm robot with shape-memory-alloy linear actuators, *Journal of Mechanisms and Robotics, Trans. ASME*, **7**(4), doi:10.1115/1.4029494, 2015.
27. Gan, D., Dai, J.S., Dias, J. and Seneviratne, L., Forward kinematics solution distribution and analytic singularity-free workspace of linear-actuated symmetrical spherical parallel manipulators, *Journal of Mechanisms and Robotics, Trans. ASME*, **7**(4): 2015
28. Zhao, J.-S., Wang, J.-Y., Chu, F. and Dai, J. S., Independent suspension of invariable alignment parameters by using flexible links with anisotropic elasticity, *Journal of Mechanisms and Robotics, Trans. ASME*, **6**(4): 041002, 2014.
29. Kang, R., Chanal, H., Dai, J. S., Ray, P., Comparison of numerical and neural network methods for the kinematic modeling of a parallel-serial structure robot", *Journal of Mechanical Engineering Science, Proc. IMechE*, DOI: 10.1177/0954406214542169, 2014.
30. Cui, L., Cupcic, U. and Dai, J.S., An optimization approach to teleoperation of the thumb of a humanoid robot hand: Kinematic mapping and calibration, *Journal of Mechanical Design, Trans. ASME*, **136**(9): 091005, 2014.

31. Cui, L., Dai, J.S. and Lee, C.-C., Characteristics of the double-cycled motion-ruled surface of the Schatz linkage based on differential geometry, *Journal of Mechanical Engineering Science, Proc. IMechE*, **228**(11), 2014. DOI: 10.1177/0954406214541430
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35. Kuo, C, Dai, J.S. and Legnani, G., A non-overconstrained variant of the agile eye with a special decoupled kinematics, *Robotica*, **32** (12): 1-17, 2014.
36. Zhang, K. and Dai, J.S., A kirigami-inspired 8R linkage and its evolved overconstrained 6R linkages with the rotational symmetry of order two, *Journal of Mechanisms and Robotics, Trans. ASME*, **6**(2): 021008, 2014.
37. Wei, G. and Dai, J.S., A spatial eight-bar linkage and its association with the deployable platonic mechanisms, *Journal of Mechanisms and Robotics, Trans. ASME*, **6**(2): 021010, 2014.
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39. Gan, D., Dai, J.S., Dias, J. and Seneviratne, L., Unified kinematics and singularity analysis of a metamorphic parallel mechanism with bifurcated motion, *Journal of Mechanisms and Robotics, Trans. ASME*, **5**(3): 031004, 2013.
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47. Qin, Y., Zhang, K., Li, J. and Dai, J.S., Modelling and analysis of a rigid-compliant parallel mechanism, *Robotics and Computer-Integrated Manufacturing*, **29**(4): 33-40, 2013.
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<sup>1</sup> This paper won the 2011 SAGE Best Journal Paper Award of *Journal of Systems and Control Engineering*: <http://pii.sagepub.com/cgi/collection>

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