

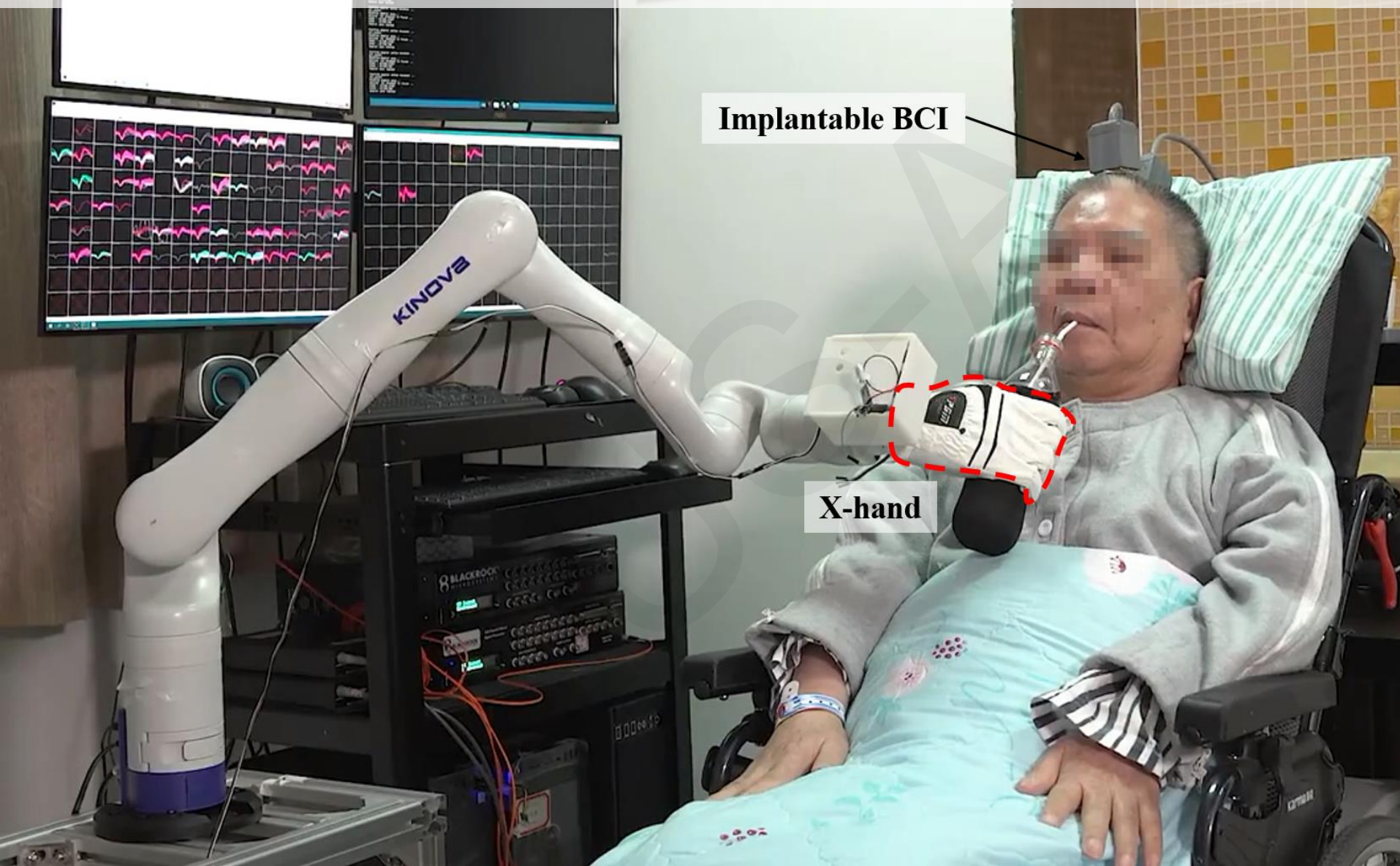
## Anthropomorphic hand based on twisted-string-driven da Vinci's mechanism for approaching human dexterity and power of grasp



### Cite:

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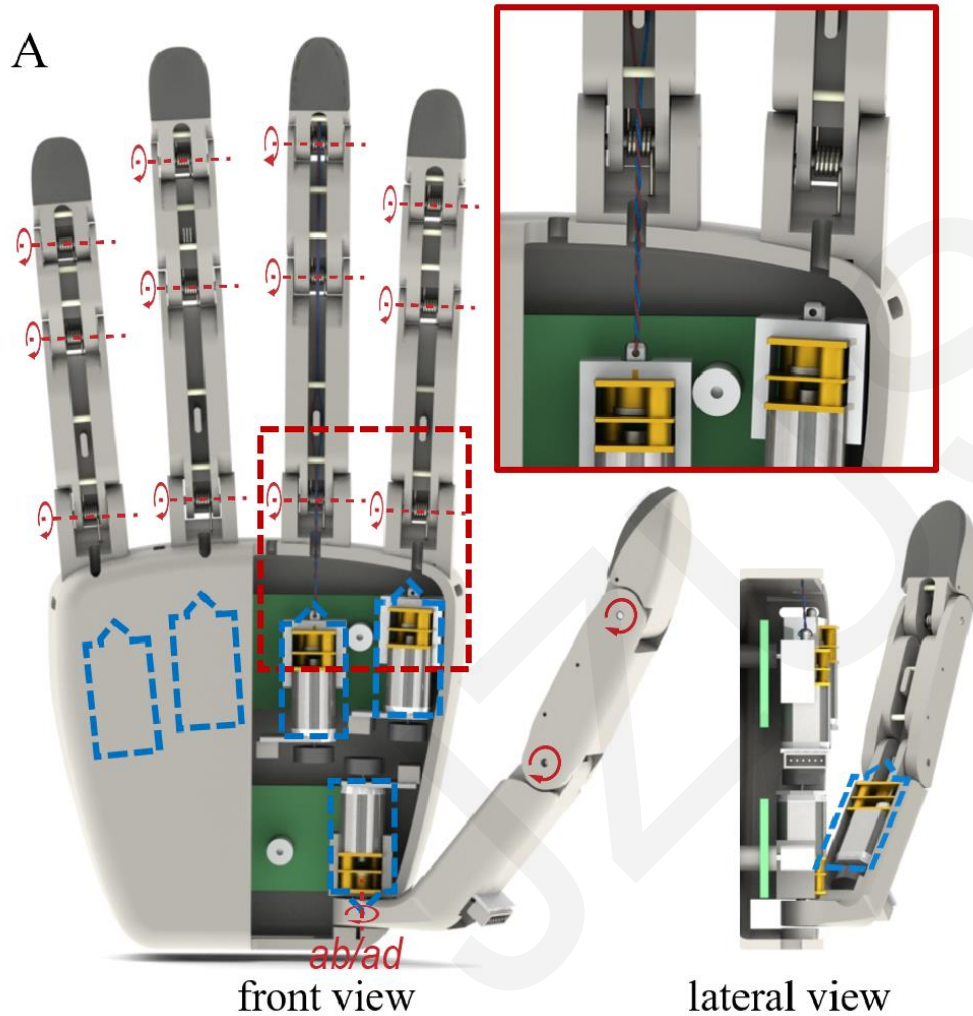
# Application of X-hand in China's first clinical translational study of the implantable brain-computer interface



Implantable BCI

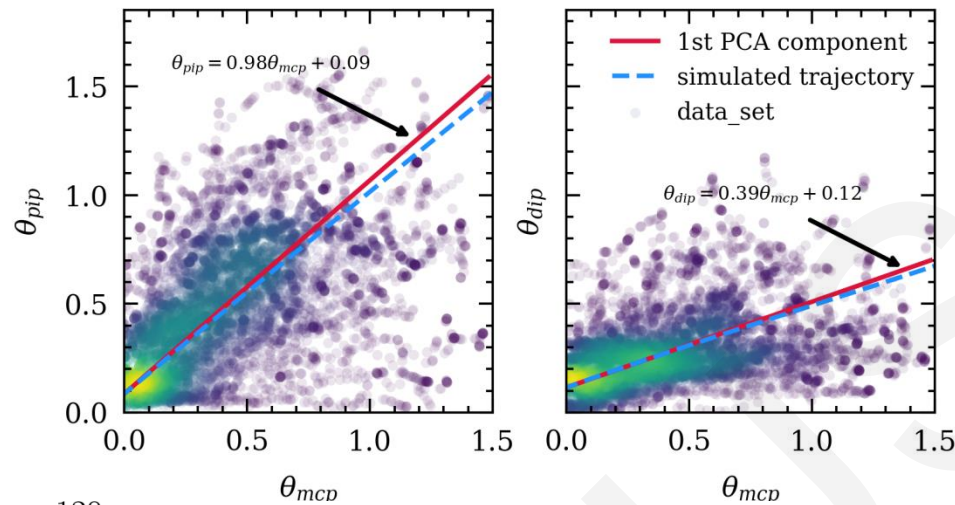
X-hand

**Dexterous** and **powerful** robot hands are essential for humanoid or service robots, especially those which are designed to handle unstructured objects in the human daily living environment.

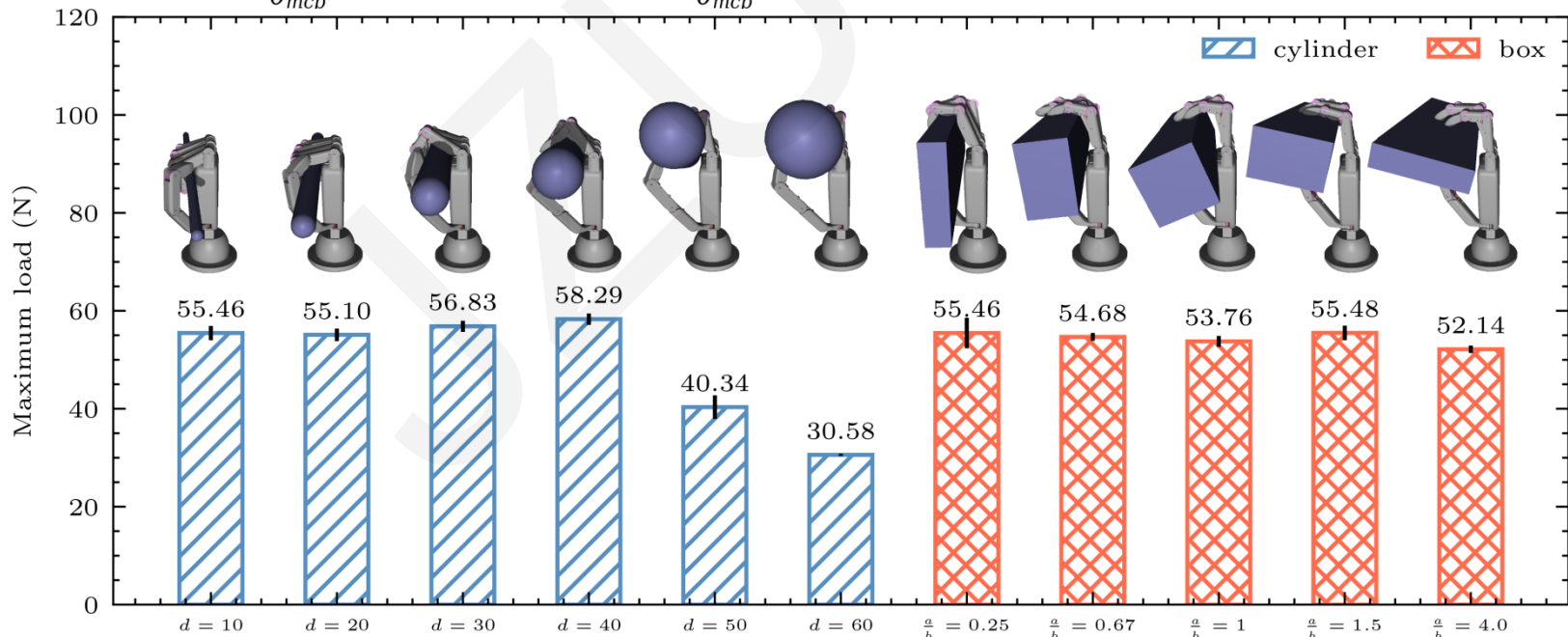


**Intelligent transmission mechanisms** are designed to meet the needs of robot hands for dexterity, compactness, and power.

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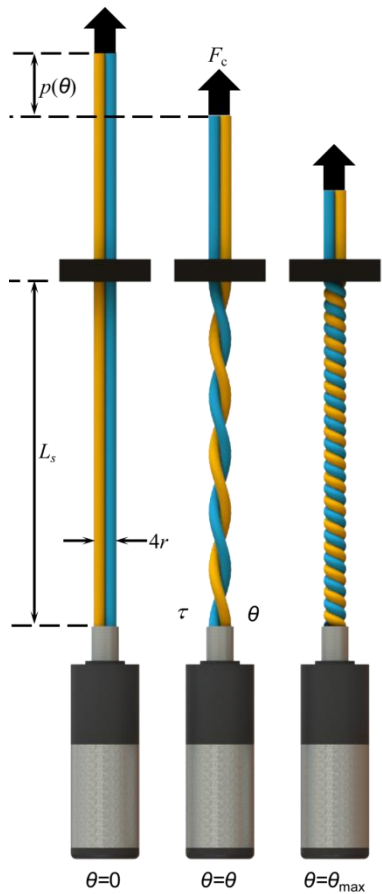


- Optimizing da Vinci's mechanism based on human hand **database**
- **Underactuated** mechanism guarantees good shape adaptation



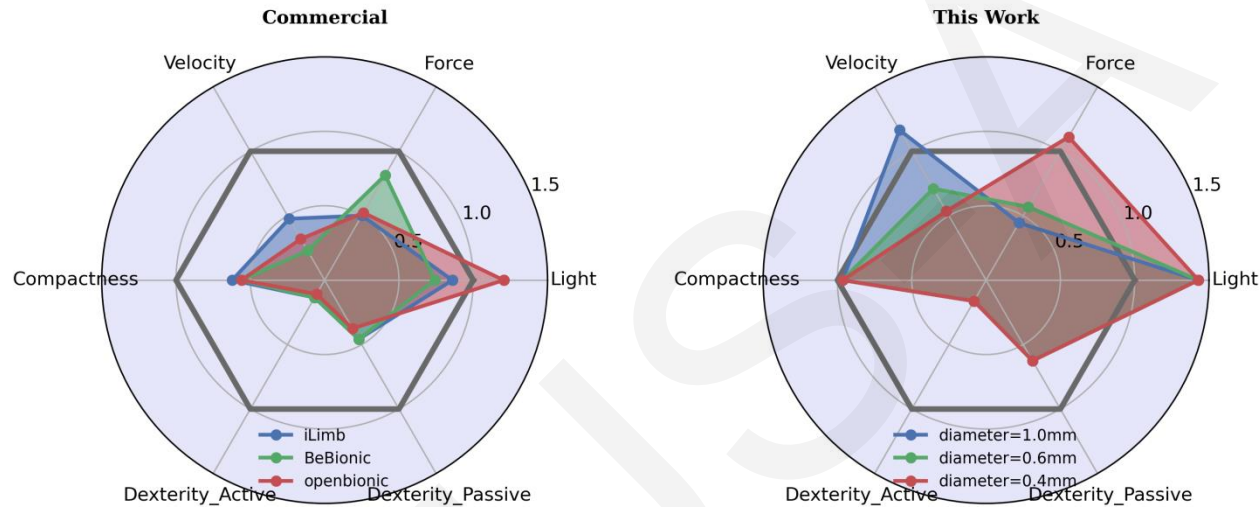
		Power				Intermediate			Precision						
		Palm		Pad		Side			Pad				Side		
		3-5	2-5	2	2-3	2-4	2-5	2	3	3-4	2	2-3	2-4	2-5	3
Thumb Abducted	1: Large Diameter		31: Ring	28: Sphere Finger	18: Extension Type	19: Distal	23: Adduction Grip			21: Tripod Variation	9: Palmar Pinch	8: Prismatic 2 Finger	7: Prismatic 3 Finger	6: Prismatic 4 Finger	20: Writing Tripod
	2: Small Diameter				26: Sphere 4-Finger						24: Tip Pinch	14: Tripod	27: Quadpod	12: Precision Disk	
	3: Medium Wrap										33: Inferior Pincer			13: Precision Sphere	
	10: Power Disk														
	11: Power Sphere														
	17: Index Finger Extension														
Thumb Adducted	4: Adducted Thumb							16: Lateral	25: Lateral Tripod						22: Parallel Extension
	5: Light Tool							29: Stick							
	15: Fixed Hook							32: Ventral							
	30: Palmar														

Anthropomorphic grasping tests. 30/33 gestures are demonstrated in this work.



Lightweight, flexible, and compact twisted string actuator enables robot hand to resolve the paradox between weight, size and power.

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**iLimb**



**BeBionic**



**Openbionic**



**This Work**



- With the novel intelligent mechanism, trade-off between the lightness, fingertip force, grasping velocity, compactness, and dexterity is realized.
- This brings us one step closer to Anthropomorphic hand