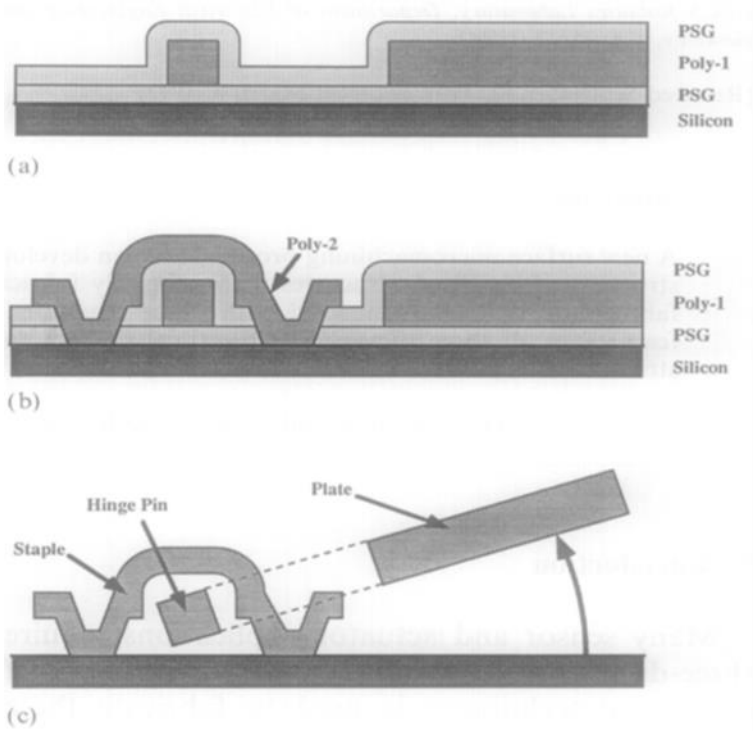
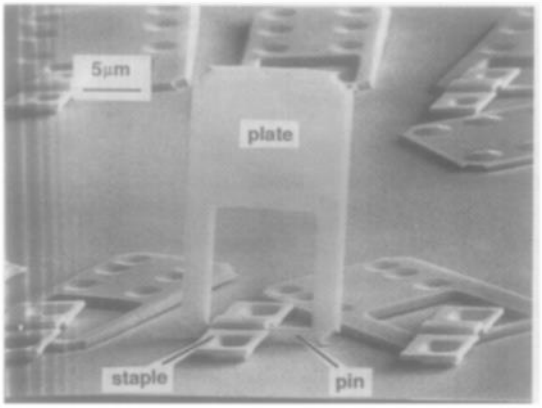
FOLDABLE HISTORY

1992





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1995

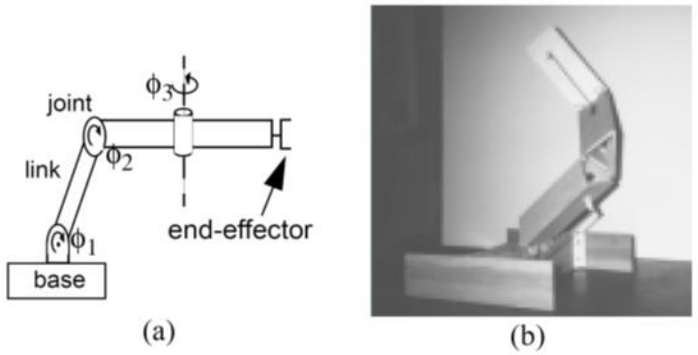

Fig. 1. Robot manipulator. (a) Structure of an articulated manipulator with revolute joints and mechanical links. (b) Photograph of an operational macroscopic articulated manipulator.

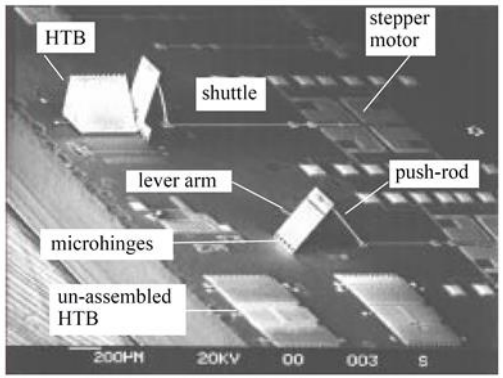

Fig. 2. SEM picture of 1-DOF robotic test structures.

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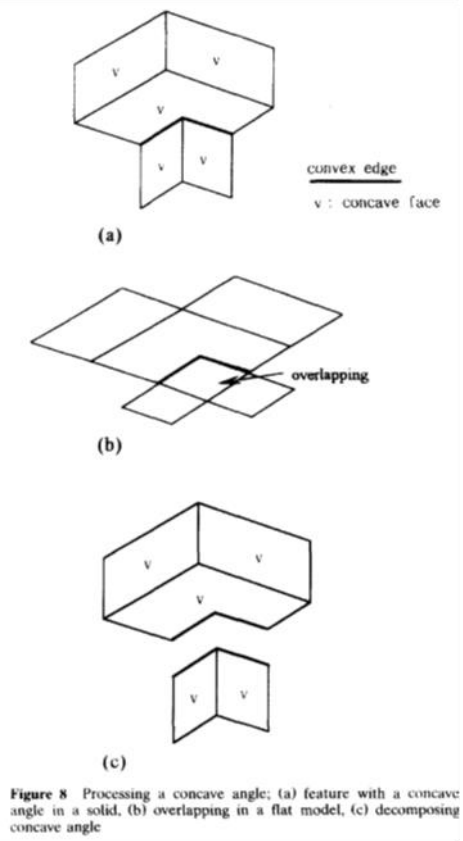
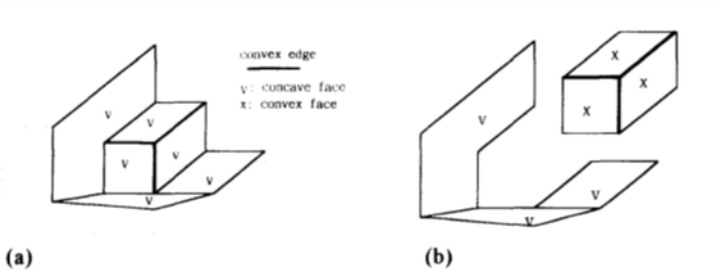


Figure 8 Processing a concave angle; (a) feature with a concave angle in a solid, (b) overlapping in a flat model, (c) decomposing concave angle



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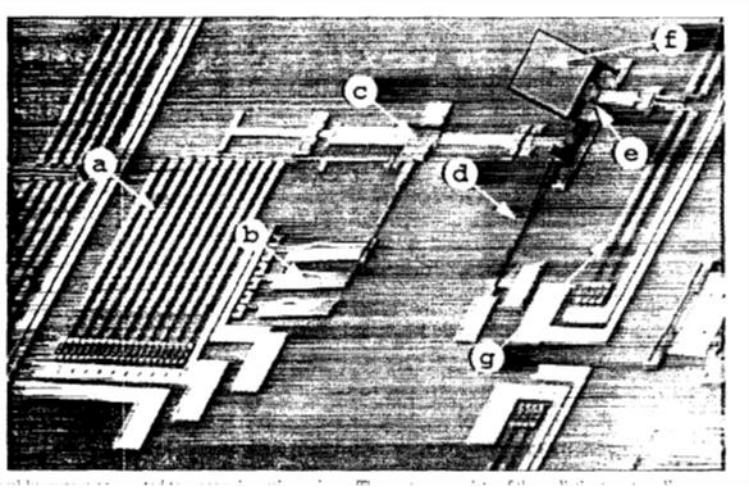

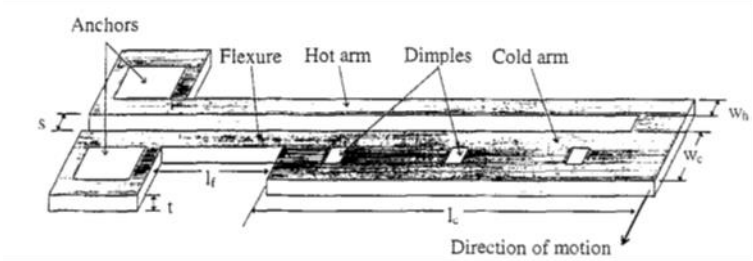

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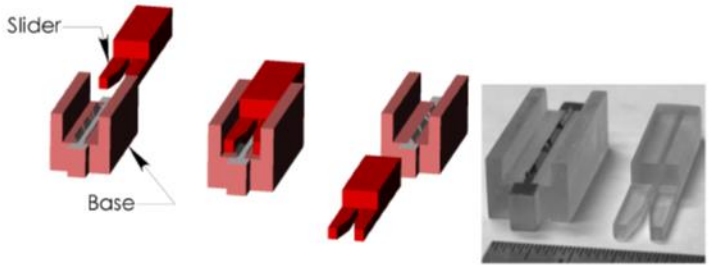
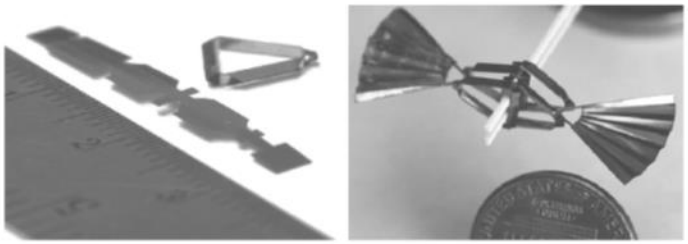


Figure 16: Folding with fixtures.



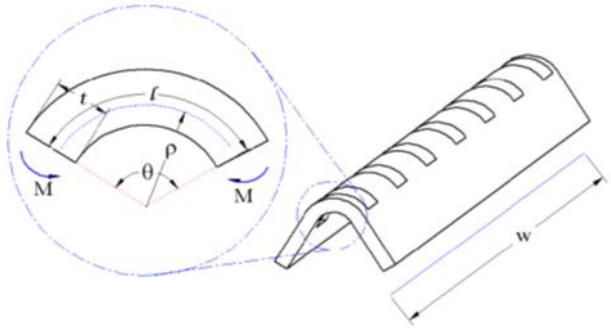


Figure 15: Sheet metal folding

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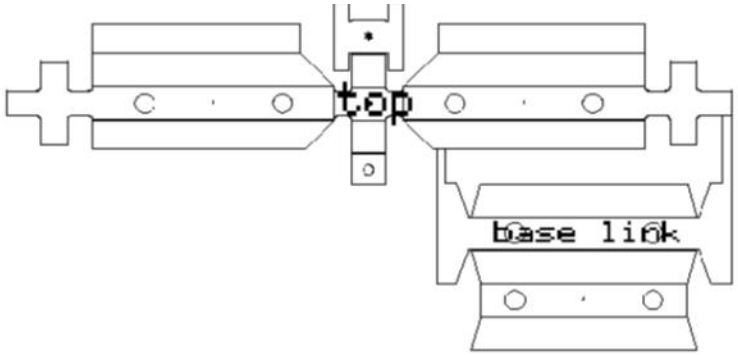

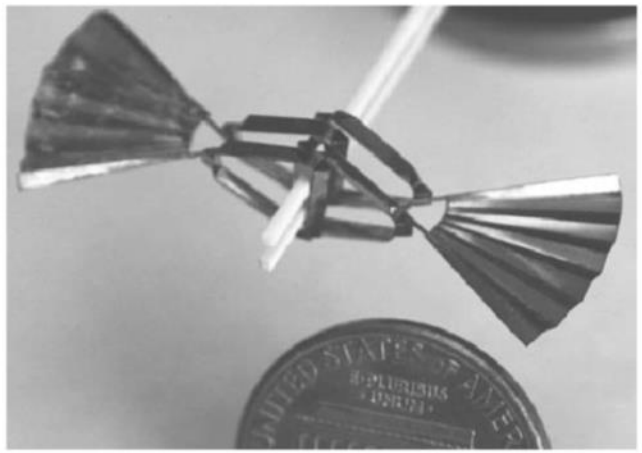

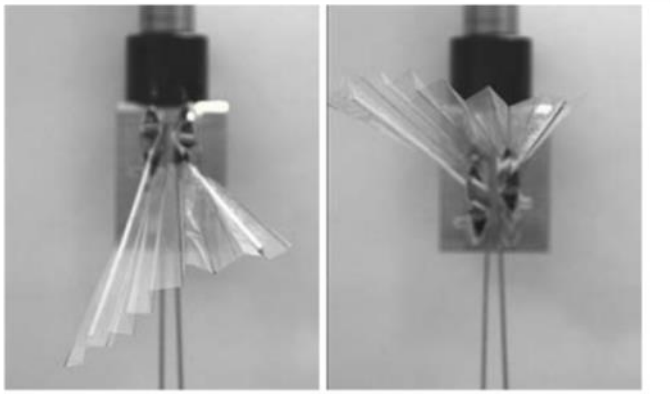

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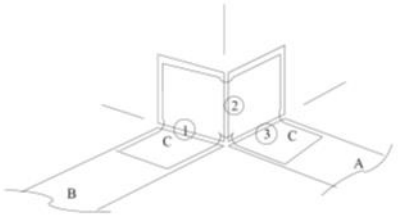


Figure 6: Spherical joint design

An assembled wing differential, attached to two four-bars, is shown in Figure 7. Experimental results with this mechanism with a wing attached are discussed in section 3.

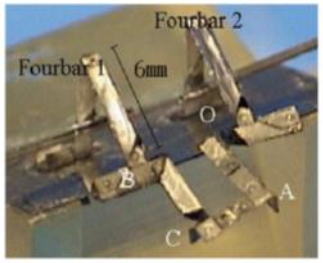
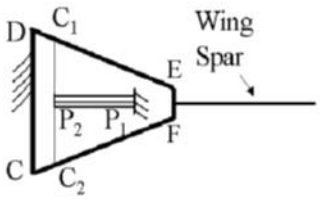
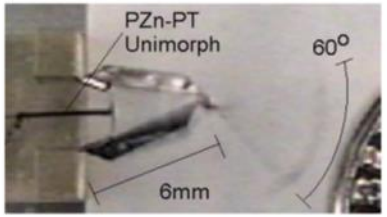
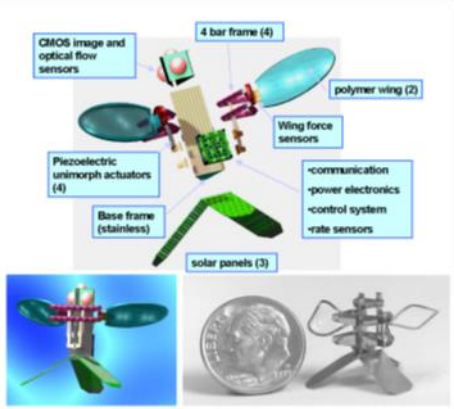


Figure 7: Photo of wing differential mounted on 2 four-bars (labels correspond to those of Figure 5).







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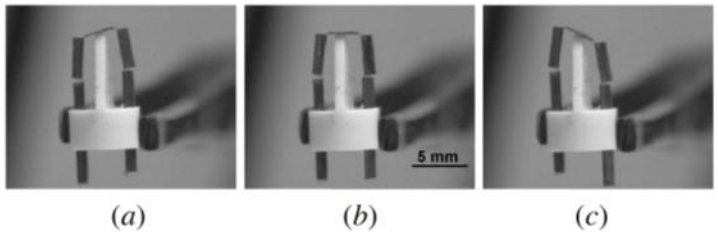

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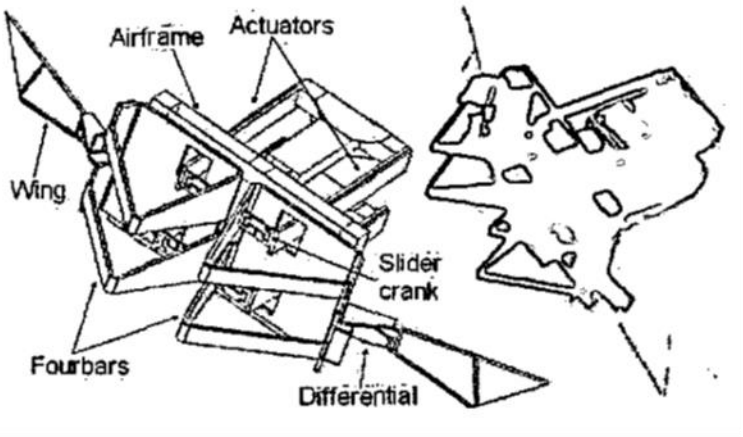

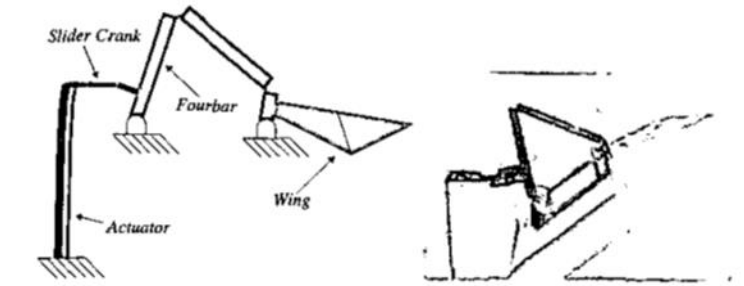

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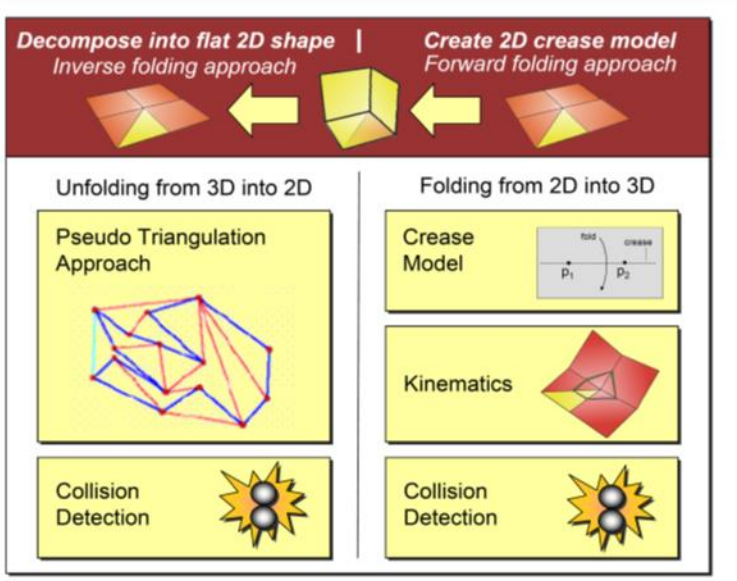

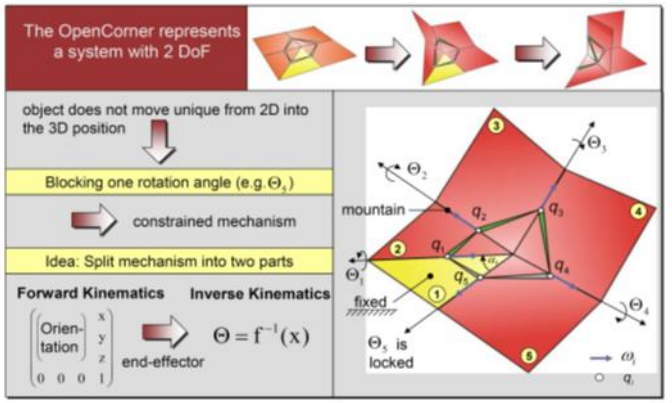

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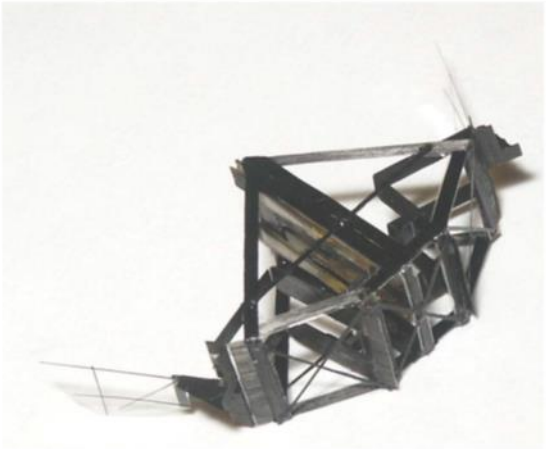
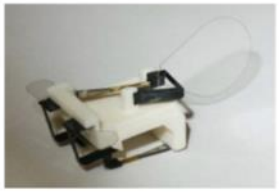
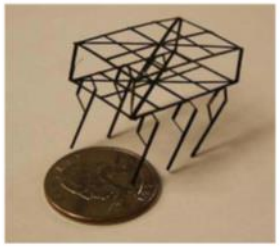


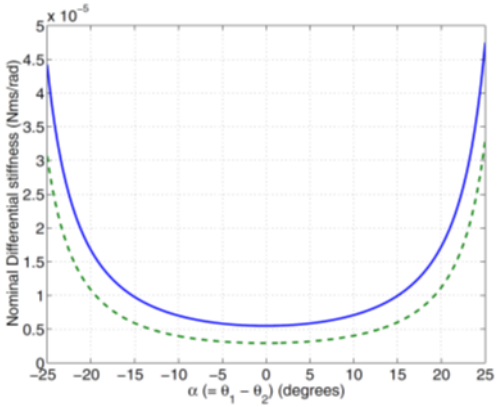
(a) Latest airframe structure of the Micromechanical Flying Insect



(b) Biomimetic Fishbot [14]



(c) Microrobotic Crawler



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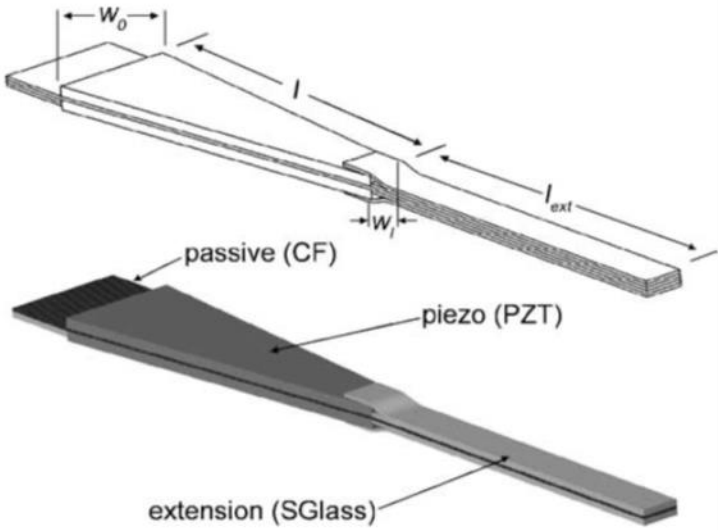


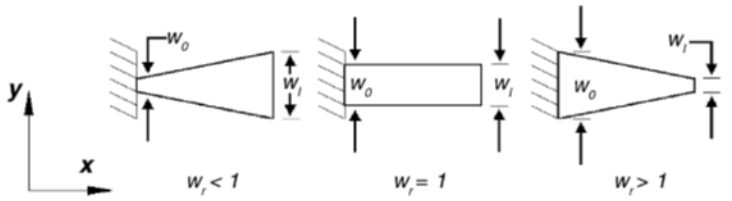
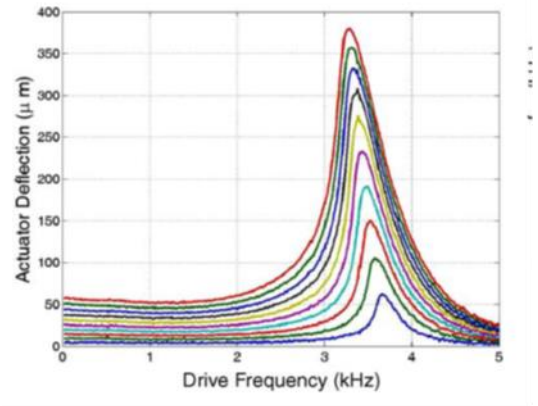


Fig. 5. Three representative width profiles.



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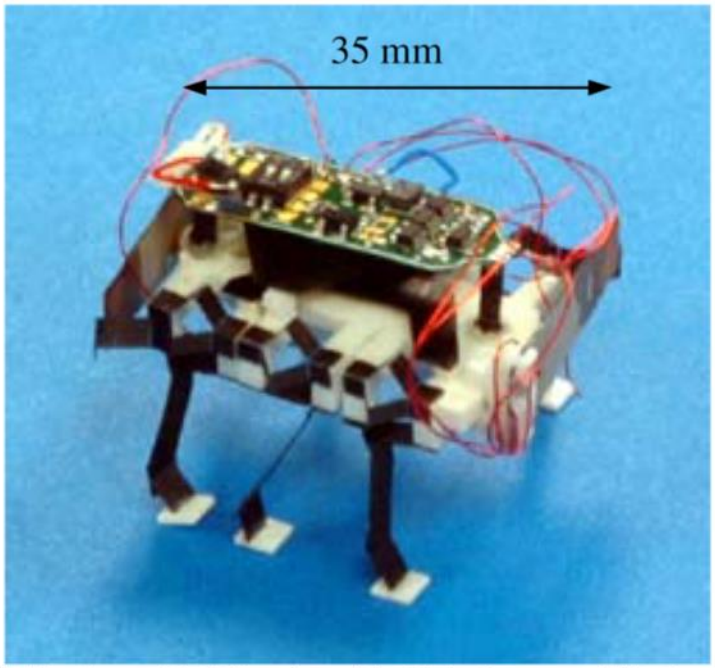

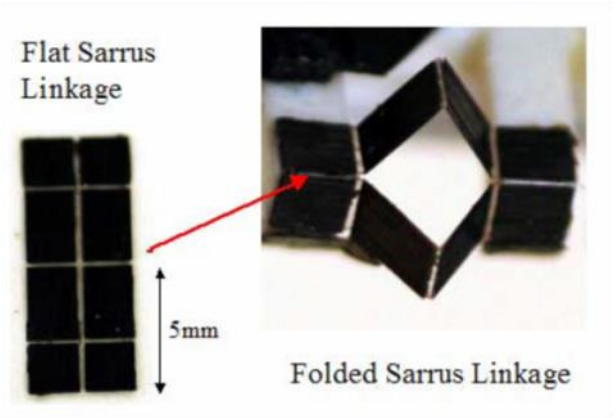

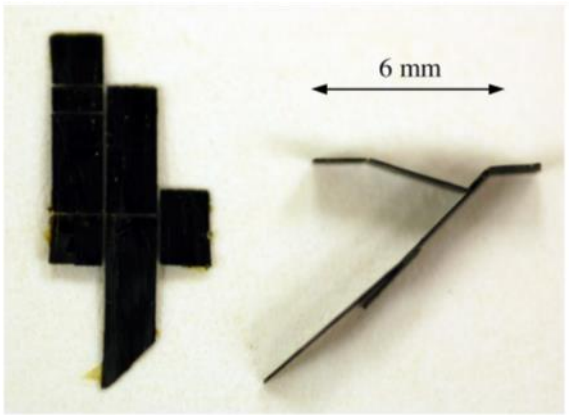

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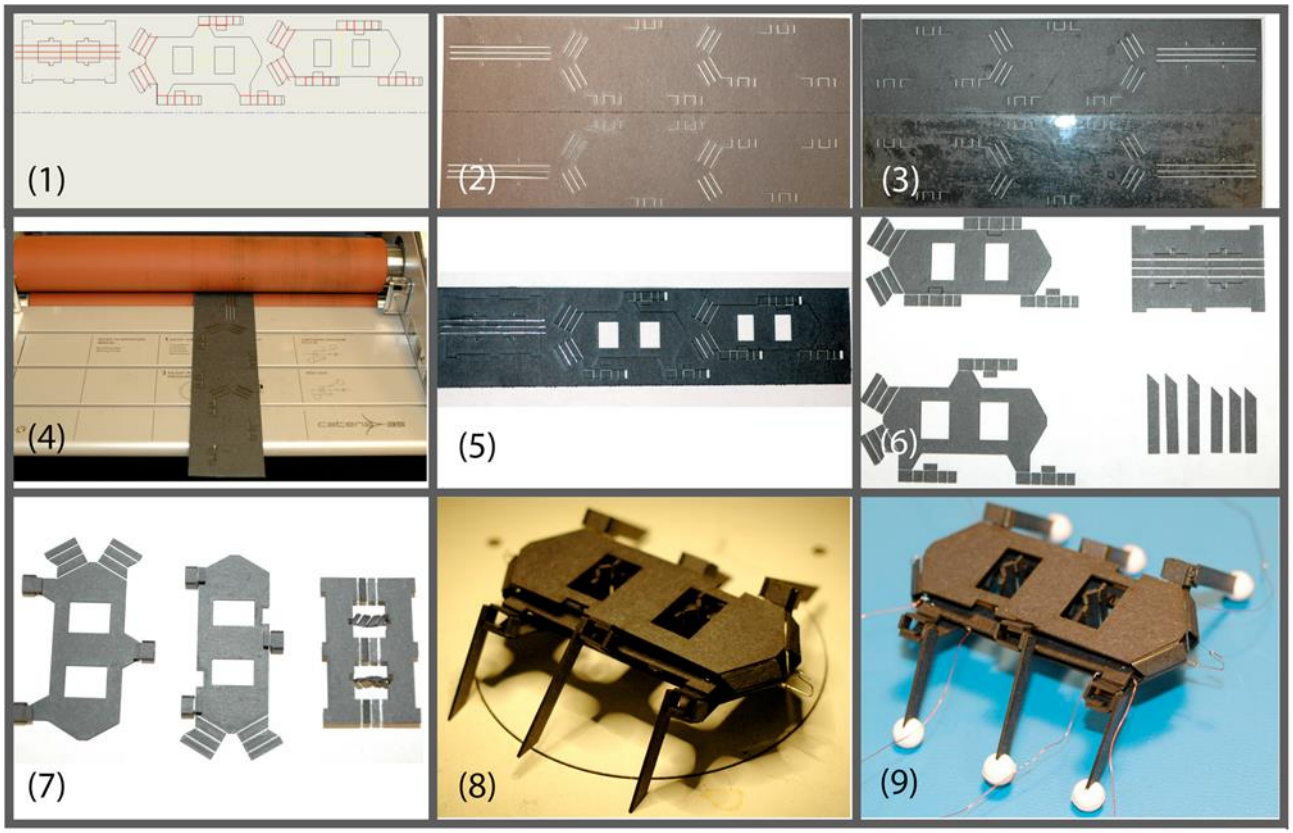

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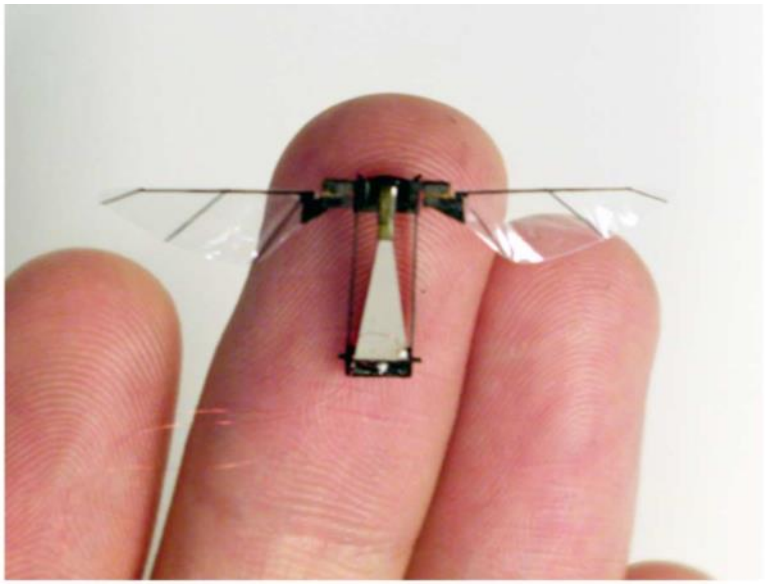
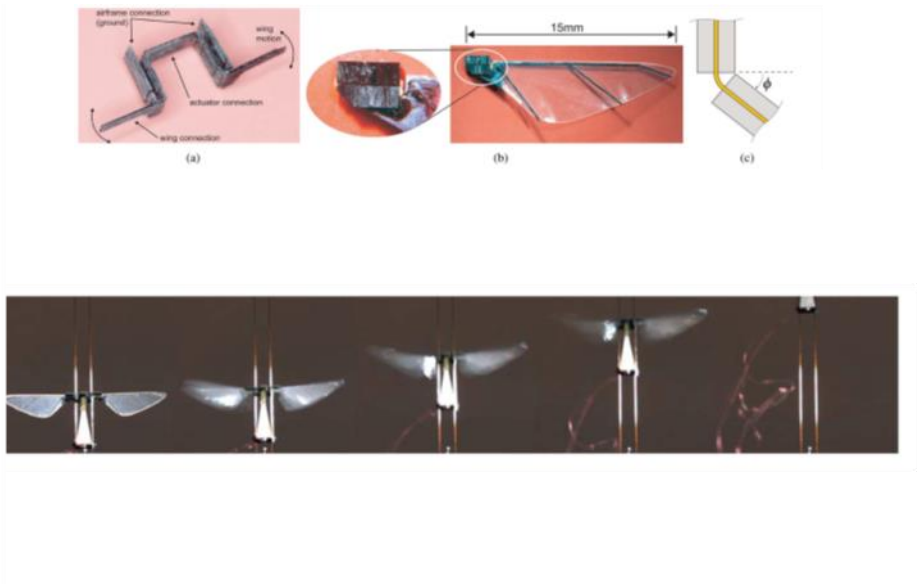
2008





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Bipedal Ornithopter
for Locomotion Transitioning
Kevin Peterson and Ronald S. Fearing
Biomimetic Millisystems Lab
University of California, Berkeley
K. Peterson and R. Fearing, "Experimental Dynamics of Wing Assisted Running for a Bipedal Ornithopter," IEEE International Conference on Intelligent RObots and Systems (IROS), San Francisco, CA, Sep. 2011.

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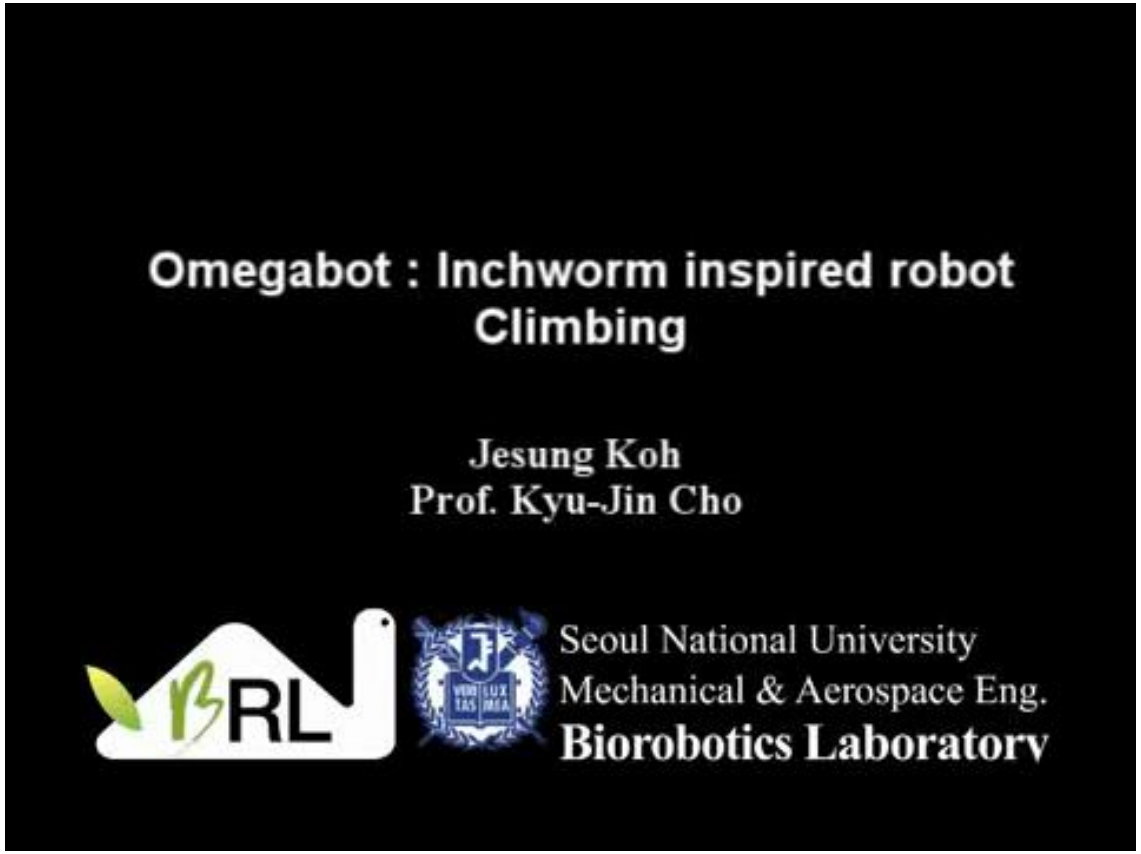

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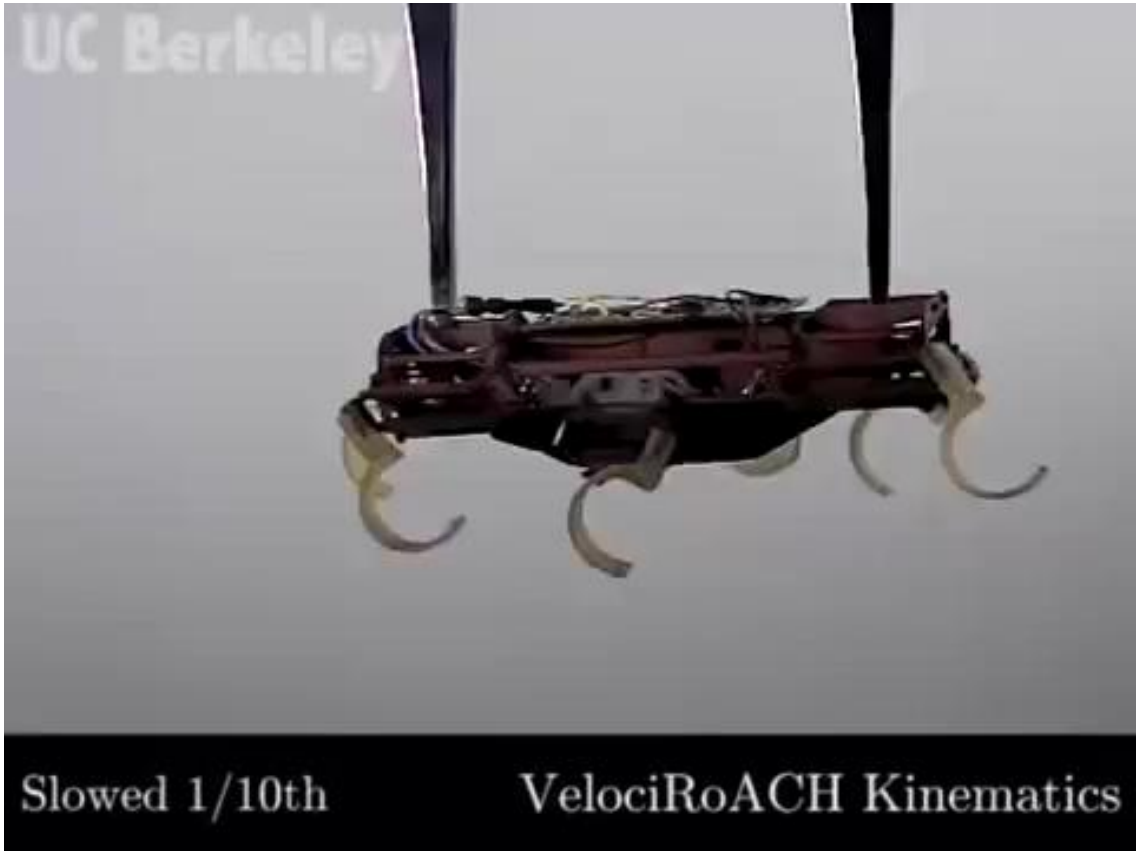

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Wheel Robot

Origami Wheel Robot

based on Magic-ball Origami Structure

Seoul National University
Biorobotics Laboratory
School of Mechanical and Aerospace Engineering

Dae-Young Lee, Ji-Suk Kim, Jae-Jun Park, Sa-Reum Kim
Prof. Kyu-Jin Cho

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Gripper

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Self Folding

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Venus Flytrap

Flea Inspired

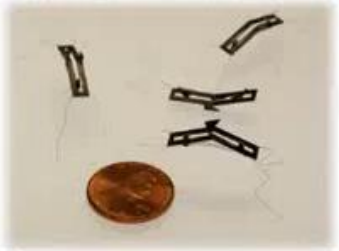
2013 IEEE International Conference on Intelligent Robots and Systems
November 3-8, 2013 at Tokyo Big Sight, Japan

A Jumping Robotic Insect Based on Torque Reversal Catapult Mechanism

Je-Sung Koh[1], Sun-Pill Jung[1], Robert J. Wood[2] and Kyu-Jin Cho[1]

[1] Dept. of Mechanical and Aerospace Eng., Seoul National University, Korea

[2] SEAS and the Wyss Institute for Biologically Inspired Engineering, Harvard University, USA



Seoul National University
Mechanical & Aerospace Eng.
Biorobotics Laboratory

HARVARD MICROROBOTICS LABORATORY

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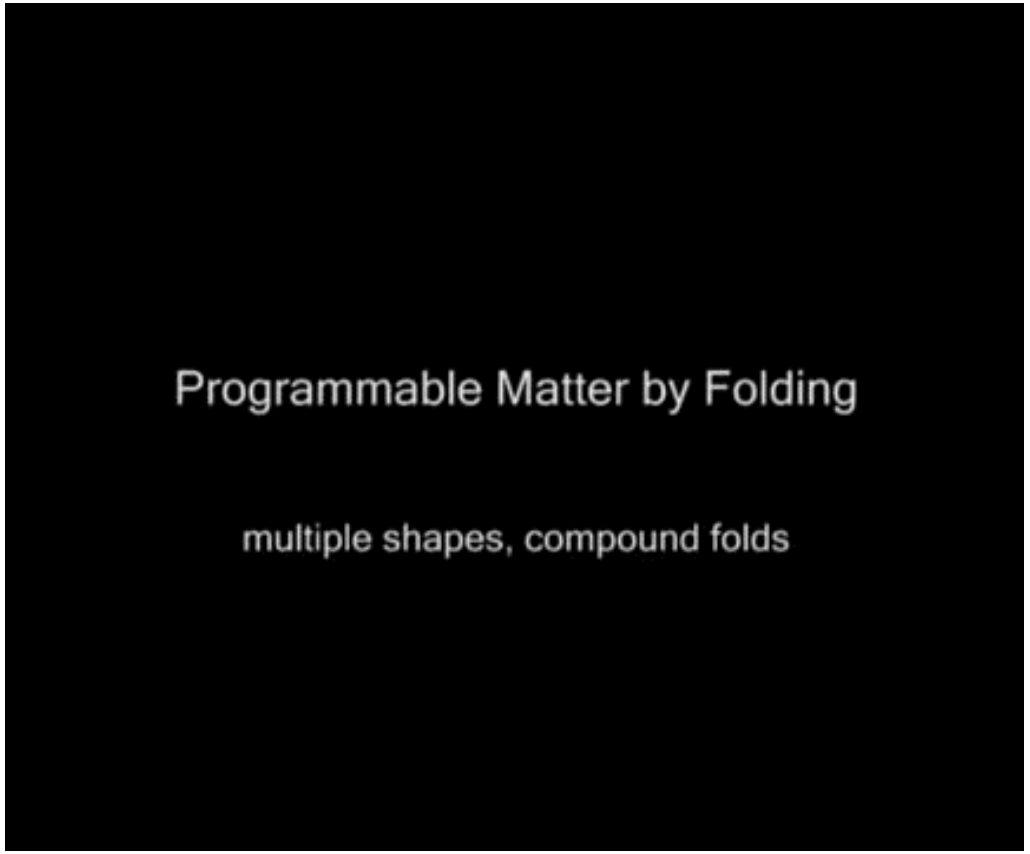
Programmable Matter by Folding
multiple shapes, compound folds

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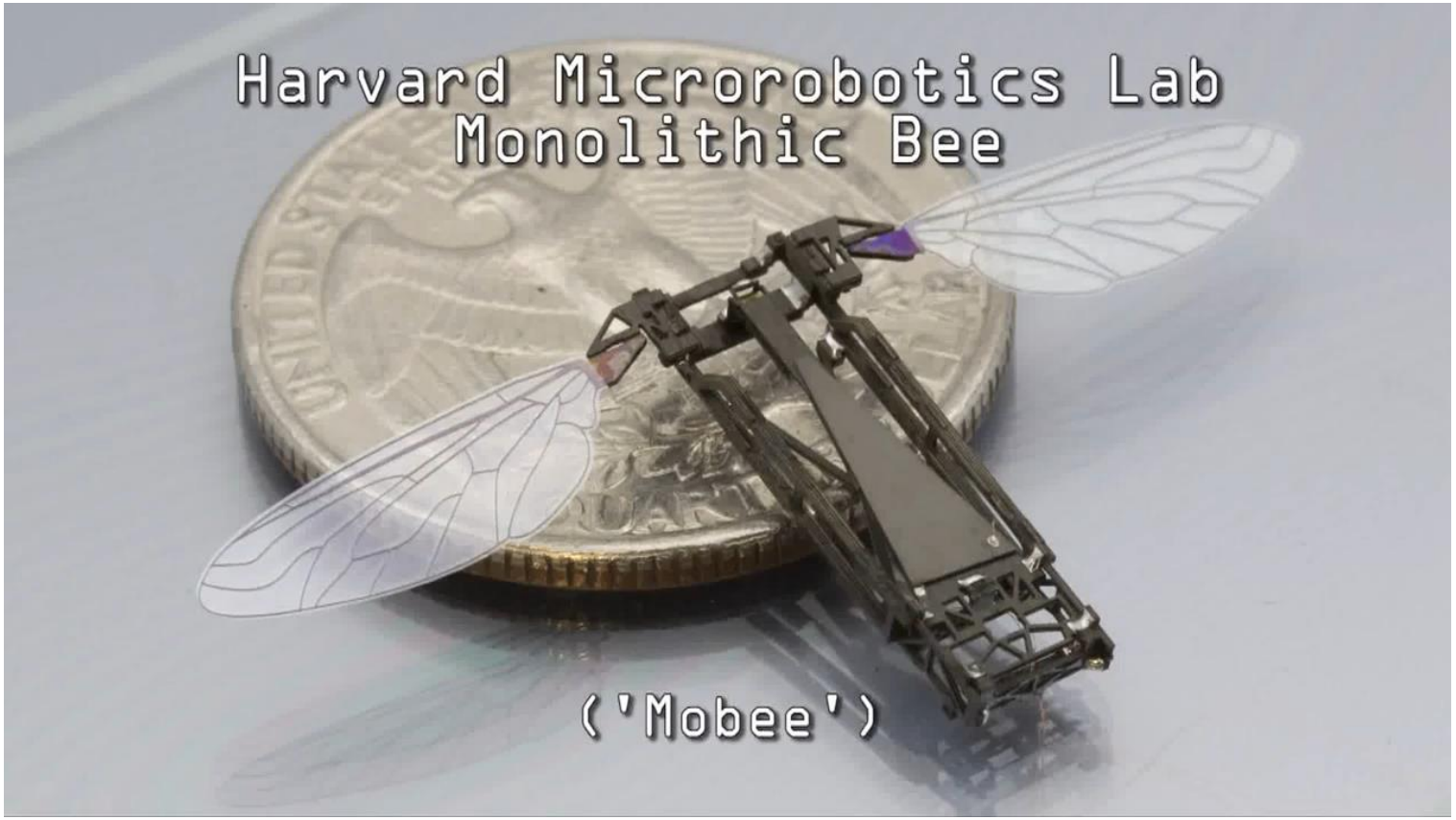

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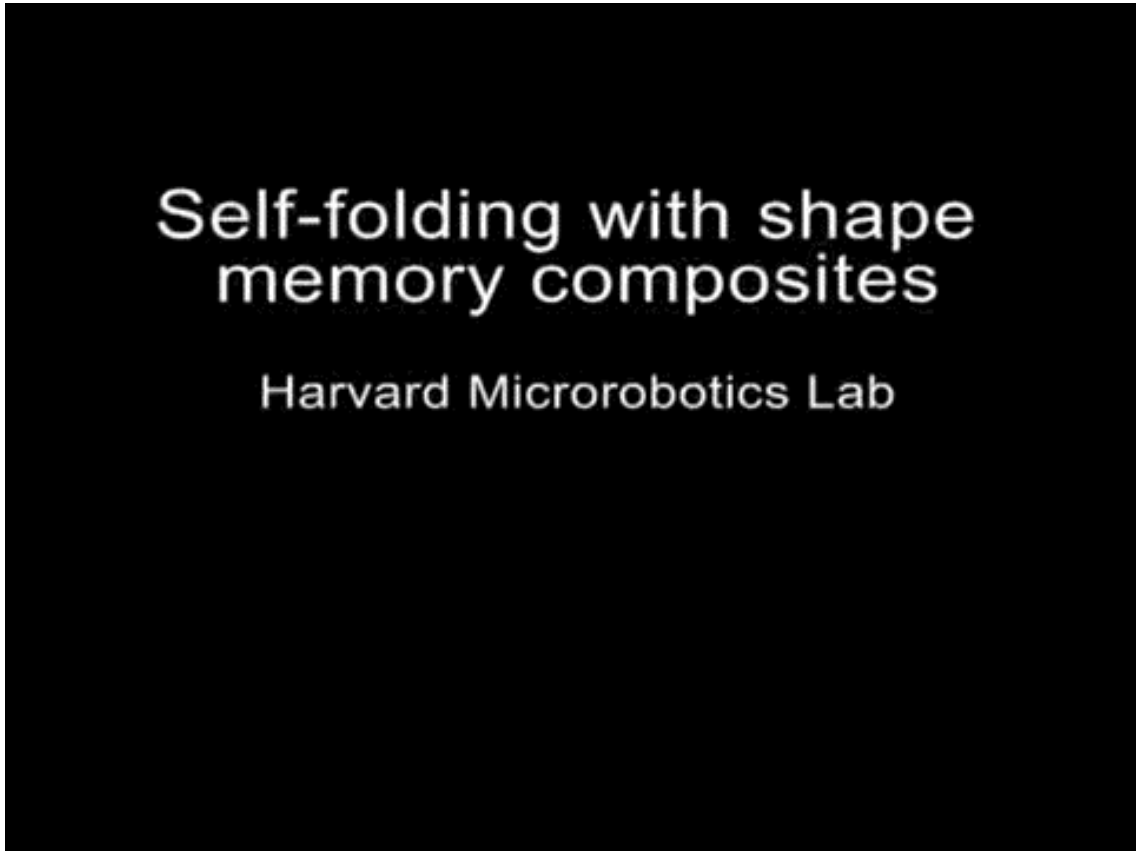

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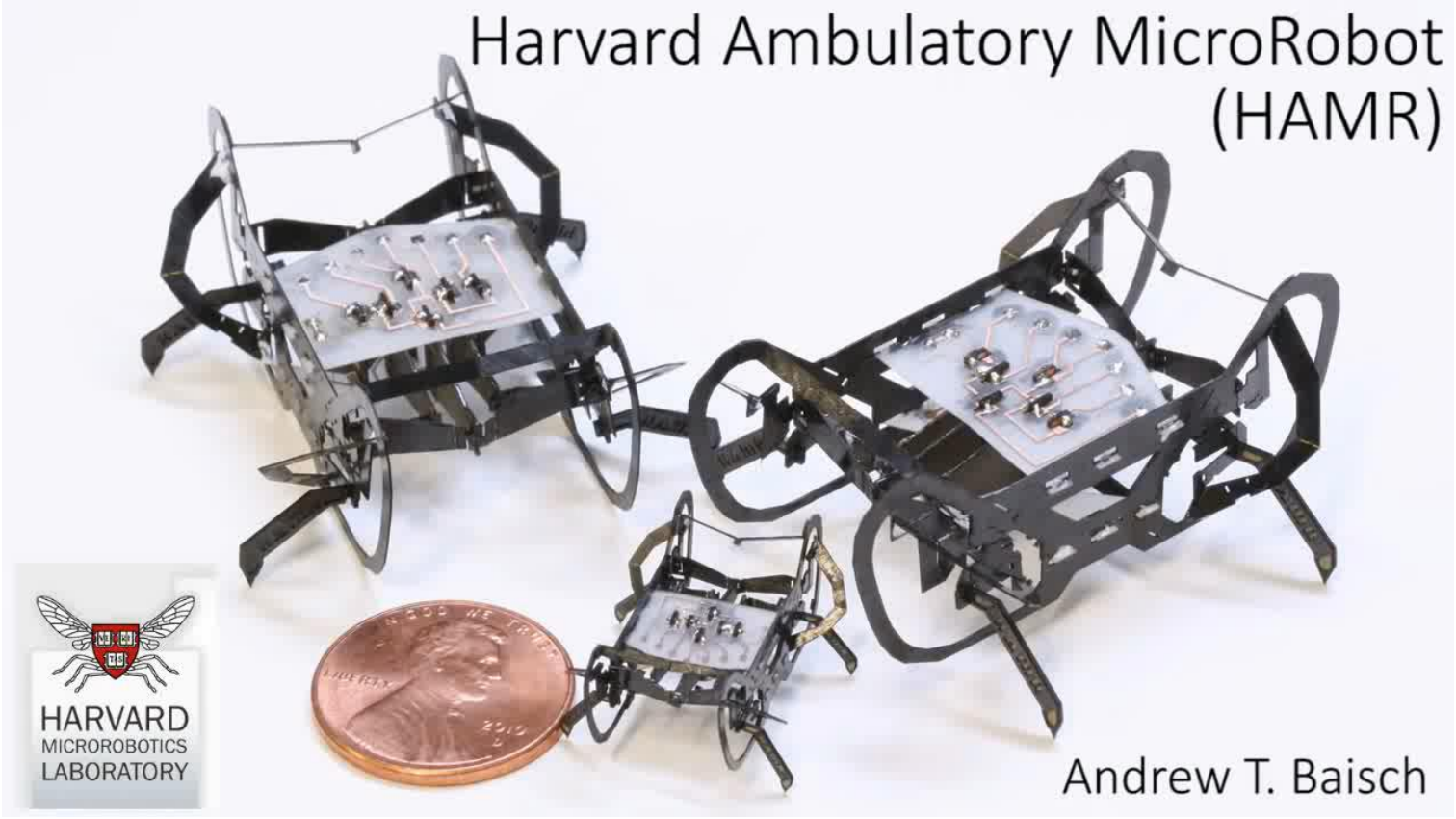
2014



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2016

The Flying Monkey: a multifunctional mesoscale robot that can run, fly, and grasp

Yash Mulgaonkar
Luis Guerrero
Anurag Makineni
Vijay Kumar

Brandon Araki
Daniela Rus

Je-sung Koh
Daniel M. Aukes
Robert J. Wood

Michael J. Tolley

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2017

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2017

Karras, J. T. *et al.* Pop-up mars rover with textile-enhanced rigid-flex PCB body. in *2017 IEEE International Conference on Robotics and Automation (ICRA)* 5459–5466 (IEEE, 2017). doi:10.1109/ICRA.2017.7989642

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2017


Artificial muscles
could make soft robots
safer and stronger
5x

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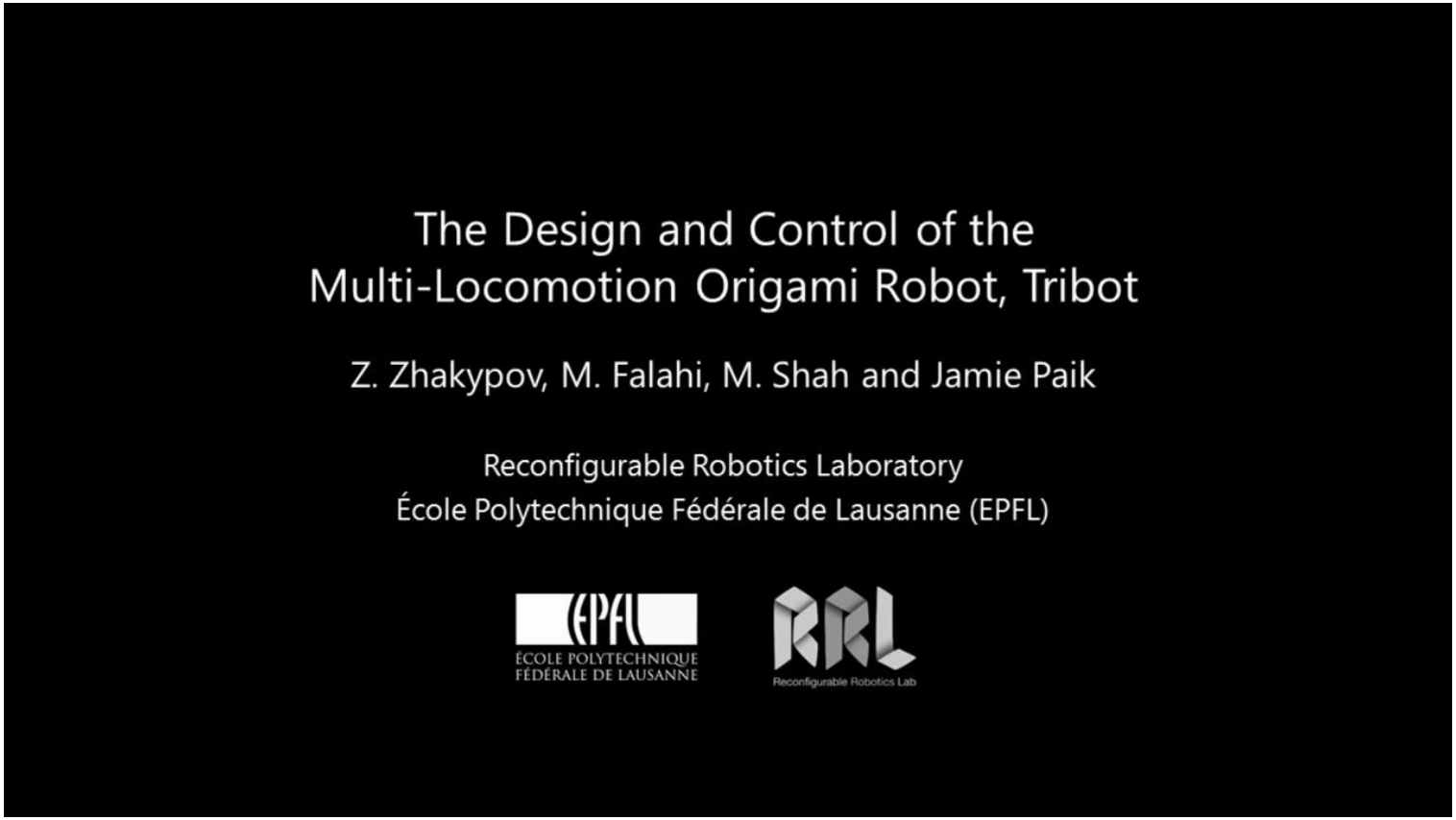
2017


The Design and Control of the
Multi-Locomotion Origami Robot, Tribot
Z. Zhakypov, M. Falahi, M. Shah and Jamie Paik
Reconfigurable Robotics Laboratory
École Polytechnique Fédérale de Lausanne (EPFL)
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FÉDÉRALE DE LAUSANNE
RRL
Reconfigurable Robotics Lab

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