

Worm-like Extensible and Flexible Robotic Manipulation

VTIP 20-083: “Novel Extensible Continuum Manipulator”

THE CHALLENGE

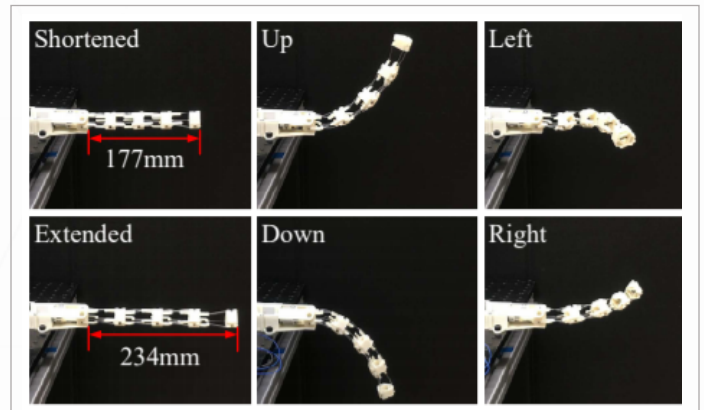
Current generation of continuum manipulators are used across multiple industries – medical, security, and manufacturing – but face limits due to limited degrees of freedom. Medical robotics are unable to reach some targeted locations because the manipulator is either too small or non-extensible.

This also means current generation of continuum manipulators have limited workspace.

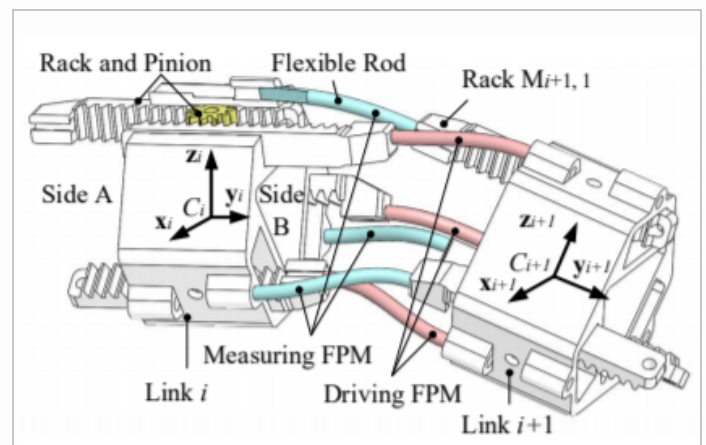
OUR SOLUTION

Ben-Tzvi and team present the first “extensible” continuum manipulator which is modular, scalable, maneuverable, and base-activated. This allows the device to be easily serviced and operated on, and allows utilization in applications previously impossible. The extendable nature increase the degrees of freedom, and the workspace size of the continuum manipulator and the modular nature allow an easy upgrade path based on usage.

While this was developed in the meso-scale, the principles of operation can also be extended to different sizes based on application and actuation limits.



Demonstrating the flexibility and extensibility of the manipulator.



The modified parallel mechanism to allow ‘extensible’ manipulation.



CONTACT:

Grant Brewer
grantb76@vt.edu
 540-231-6648